Contributions to the Knowledge of the Myrmecophilous Pselaphines (Coleoptera, Staphylinidae, Pselaphinae) from China. VI....

Article *in* Sociobiology · January 2011

CITATIONS
6

READS
24

3 authors, including:

Zi-Wei Yin
Shanghai Normal University
287 PUBLICATIONS **817** CITATIONS
SEE PROFILE

Long Zhe Li
Inner Mongolia OED Engine CO., LTD
34 PUBLICATIONS **179** CITATIONS
SEE PROFILE

Contributions to the Knowledge of the Myrmecophilous Pselaphines (Coleoptera, Staphylinidae, Pselaphinae) from China. VIII. *Myrmicophila tangliangi*, a New Genus and Species of Batrisini from Yunnan

by

Zi-Wei Yin[1], Li-Zhen Li[1] & Mei-Jun Zhao[2]

ABSTRACT

A new genus and species, *Myrmicophila tangliangi* Yin & Li gen. et sp. n., collected from a colony of ant *Myrmica* sp., is described from Yunnan Province, Southwest China. *Myrmicophila* is formally placed in the subtribe Batrisina, but its systematic position within the subtribe remains uncertain. A detailed description, illustrations of male habitus and diagnostic features of the new taxa are provided.

INTRODUCTION

The Chinese fauna of myrmecophilous pselaphines appears to be extremely diverse, especially in subtropical and tropical regions. Yet little has been known about these interesting beetles. Some eight genera of the tribe Batrisini containing myrmecophilous species were known to occur in mainland China: *Batrisus* Aubé, *Dendrolasiophilus* Nomura, *Hingstoniella* Jeannel, *Sinotrisus* Yin & Li, *Songius* Yin & Li, *Tangius* Yin & Li (under review), *Tribasodes* Jeannel and *Tribasodites* Jeannel.

Recently, Dr. Liang Tang conducted an expedition (June, 2010) to the Gaoligonshan Mountains of Yunnan Province, and collected a single pselaphine beetle from an ant colony of *Myrmica* sp. nested under a flagstone. Before this record, only one species of Chinese Pselaphinae, *Hingstoniella lata* Jeannel distributed in the Himalaya region, was reported (Yin, Li & Zhao 2011) to host ants of the genus *Myrmica*. The examination of the specimen revealed a new genus and species of subtribe Batrisina, but the genus could not be conclusively designated into a genus-group according to Nomura and

[1]Department of Biology, Shanghai Normal University, 100 Guilin Road, Shanghai, 200234, P. R. China. E-mails: yin_ziwei@yahoo.com; lizhenli@shnu.edu.cn
[2]Corresponding author. E-mail: mjzhao@shnu.edu.cn

Idris' conception (2003), thus the systematic placement of the new genus remains uncertain.

The purpose of this paper is to provide a detailed description, illustrations of diagnostic characters and discussion of the placement of the new taxa.

MATERIAL AND METHODS

The specimen was captured in an ant colony of *Myrmica* sp. nested under a flagstone. Then it was killed with ethyl acetate and dried. Dissections were made in 75% ethanol; genitalia and small parts were mounted in Euparal (Chroma Geselschaft Schmidt, Koengen, Germany) on plastic slides that were placed on the same pin with the specimen. Photos of habitus and diagnostic characters were taken by use of a Canon EOS 40D camera mounted with an MP-E 65 mm macro photo lens, those of male genital segments were done under an Olympus CX21 microscope mounted with a Canon G9 camera.

The terminology mainly follows Chandler, 2001. Slashes (/) are used to separate different lines on the same label.

The acronyms used in the text are coded as follows: **AL** – maximum length of abdomen; **AW** – maximum width of abdomen; **BL** – length of body (HL+PL+EL+AL); **EL** – length of elytra along sutural line; **EW** – maximum width of elytra; **HL** – length of head, measured from anterior margin of clypeus to posterior apex (excluding occiput); **HW** – width of head, measured across eyes; **PL** – length of pronotum, measured along midline; **PW** – maximum width of pronotum.

The type material is housed in the Insect Collection of Shanghai Normal University, Shanghai, China (**SNUC**).

TAXONOMY

Myrmicophila Yin & Li gen. n.

Type species. *Myrmicophila tangliangi* Yin & Li sp. n.

Diagnosis. Head nearly rectangular, eyes located at the middle of head length. A pair of vertexal foveae large and simple, without sulcus connecting them. Pronotum simple in structure, only a pair of lateral antebasal foveae present. Elytra each with three basal foveae, lacking subhumeral fovea and marginal stria. Abdominal tergites IV–VII subequal in length.

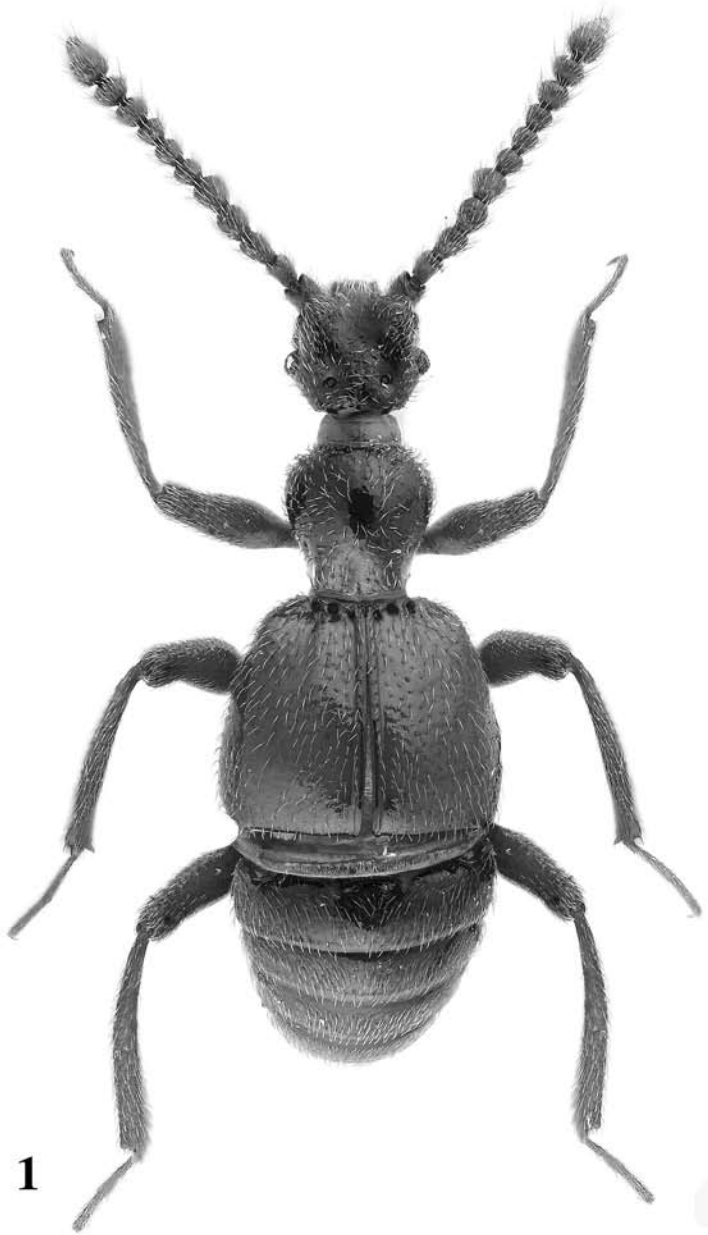
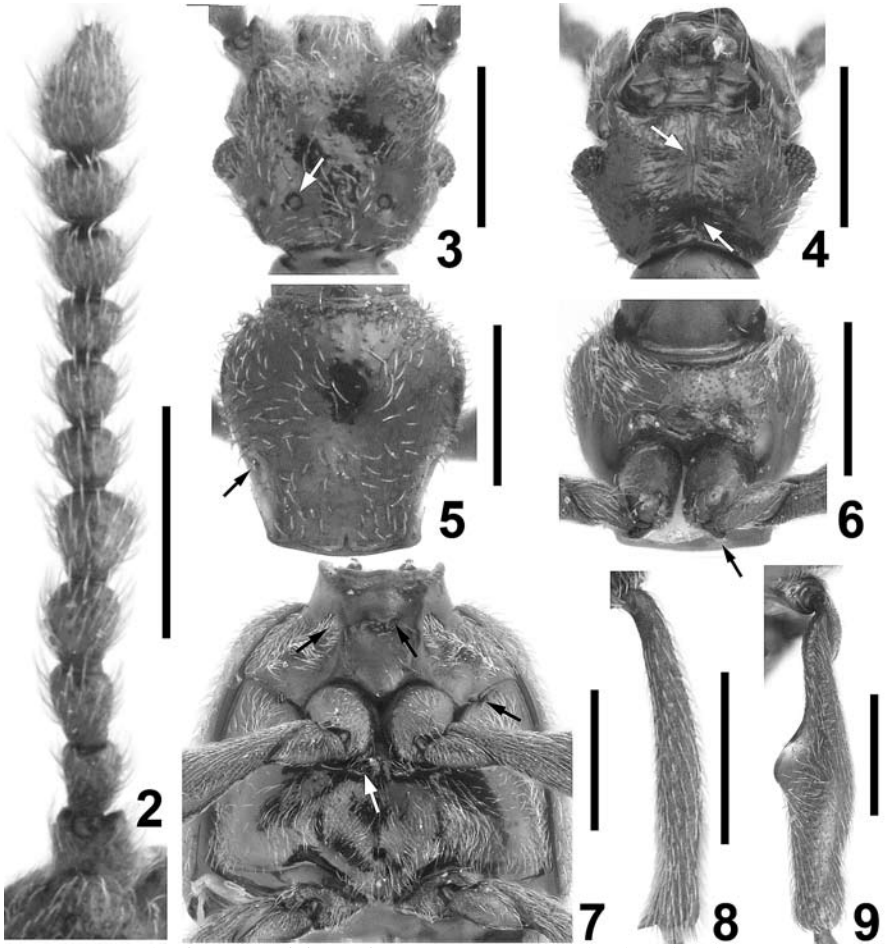


Fig. 1. Dorsal habitus of *Myrmicophila tangliangi*.

Description. Clypeus short from dorsal view, anterior margin arcuate; frons concave medially, lateral parts moderately rise above antennal tubercles; vertex swelled medially, lateral areas slightly depressed, containing vertexal foveae (Fig. 3) remarkably separate from each other; postocular margins successively narrowed; one middle carina extended from posterior margin of head toward level of posterior margin of eyes. Gular area (Fig. 4) slightly depressed; gular foveae close to each other, fall into large fovea-like impression; gular carina extended from impression toward mouthparts. Antennae elongate, setose;



Figs. 2–9. Details of *Myrmicophila tangliangi*. 2 – antenna; 3 – head, in dorsal view; 4 – same, in ventral view; 5 – pronotum; 6 – prothorax; 7 – meso- and metathorax; 8 – mesotibia; 9 – metafemur. Scales: 0.5 mm.

scape thick, segment II as long as III, but slightly wider, segment IV shorter but wider than III, V as long as IV, VI–VIII similar in shape and size, IX about as long as but much wider than VIII, X similar to IX, XI large, broad in basal half, narrowed from middle toward apex.

Pronotum (Fig. 5) constricted at base; lacking foveae and sulci except for one pair of lateral antebasal foveae; lateral procoxal foveae (Fig. 6) present. Each elytron with three basal foveae; discal carina short and shallow, extended from second basal fovea toward about 1/4 of elytral length. Venter (Fig. 7) with lateral mesoventral foveae, median mesoventral foveae, lateral mesocoxal foveae and lateral metaventral foveae present.

Abdomen with tergite IV (visible tergite I) as long as subsequent one; lateral carinae well defined, dorsal carinae absent; three pairs of basal foveae present; tergites V–VII each with one pair of lateral foveae; sternite IV longest, with pair of mediobasal foveae; V–VI subequal in length; VII shortest. Aedeagus asymmetrical; basal bulb and foramen large; ventral stalk large, parameres paired, attached to posterior part of basal foramen; dorsal apophysis immoveable and complicated.

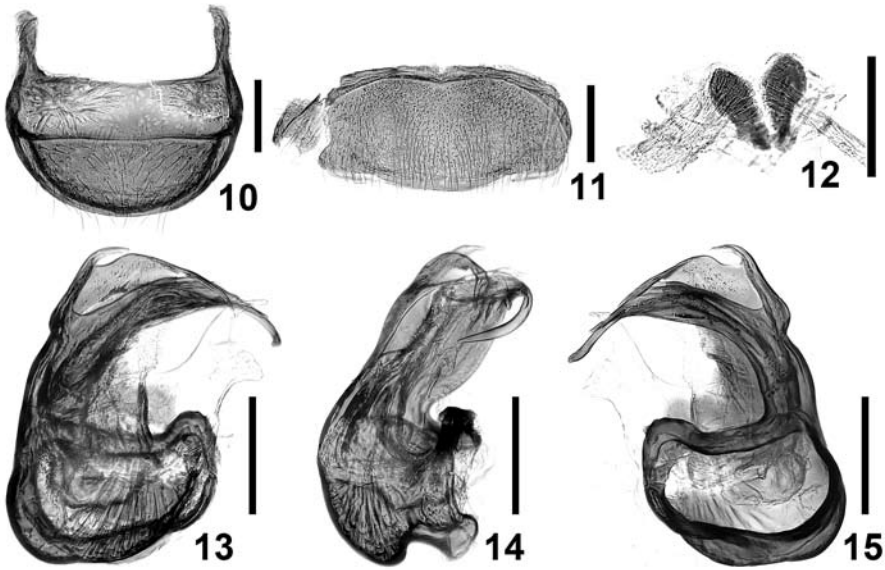
Remarks. Nomura & Idris (2003) classified Asian genera of Batrisini into four genus-groups, *viz*. *Batrisus*-, *Tribasodes*-, *Batrisocenus*- and *Sathytes*-group. The *Tribasodes*-group was defined by three key characters: pronotum with spinose sides (this character is absent in many myrmecophilous genera), metatrochanter protuberant or spinose in male, and symmetrical aedeagus with immovable or incomplete dorsal apophysis. This group contains genera such as *Dendrolasiophilus*, *Songius*, *Sinotrisus*, *Tangius* (Yin *et al*. under review), *Hingstoniella* and *Maajappia* that are known as myrmecophilous, all have modified metatrochanter and immovable dorsal apophysis.

The aedeagus of *Myrmicophila* is typical of the *Tribasodes*-group. It looks very similar to those of *Songius*, *Dendrolasiophilus* and *Tangius* in structure and far from the common structures of three other groups. However, it is quite problematic to place *Myrmicophila* in *Tribasodes*-group because the metachrochanter in the male is obviously simple while the male metatrochanters of all genera of the group are modified. This makes it difficult to make a proper placement of the new genus in Batrisina. We temporarily suppose that in this case, the spine or protuberance of metatrochanter in the male is simply

reduced, but the solid placement of the new genus still requires a complete phylogenetic analysis of all Asian genera of Batrisini.

Myrmicophila looks similar in general aspects to *Dendrolasiophilus*, *Maajappia* and *Tangius*. Despite the unique simple male metatrochanter, *Myrmicophila* may be separated from *Dendrolasiophilus* by the postgenae without dense setae, each elytron with three basal foveae (one in *Dendrolasiophilus*), tergite IV without dorsal carinae and sternites V–VI without basolateral foveae; from *Maajappia* by the head without vertexal sulcus, each elytron with three basal foveae (totally reduced in *Maajappia*) and tergite IV about as long as the subsequent one (tergite IV more than twice as long as next in *Maajappia*), and from *Tangius* by the dorsal side of head not flat, pronotum lacking median antebasal fovea, discal stria of elytra indistinct and tergite IV not the largest.

Etymology. The generic name is combined from '*Myrmica*', the generic name of the host ant, and Latin stem '*phil*', meaning 'be fond of'. Gender feminine.



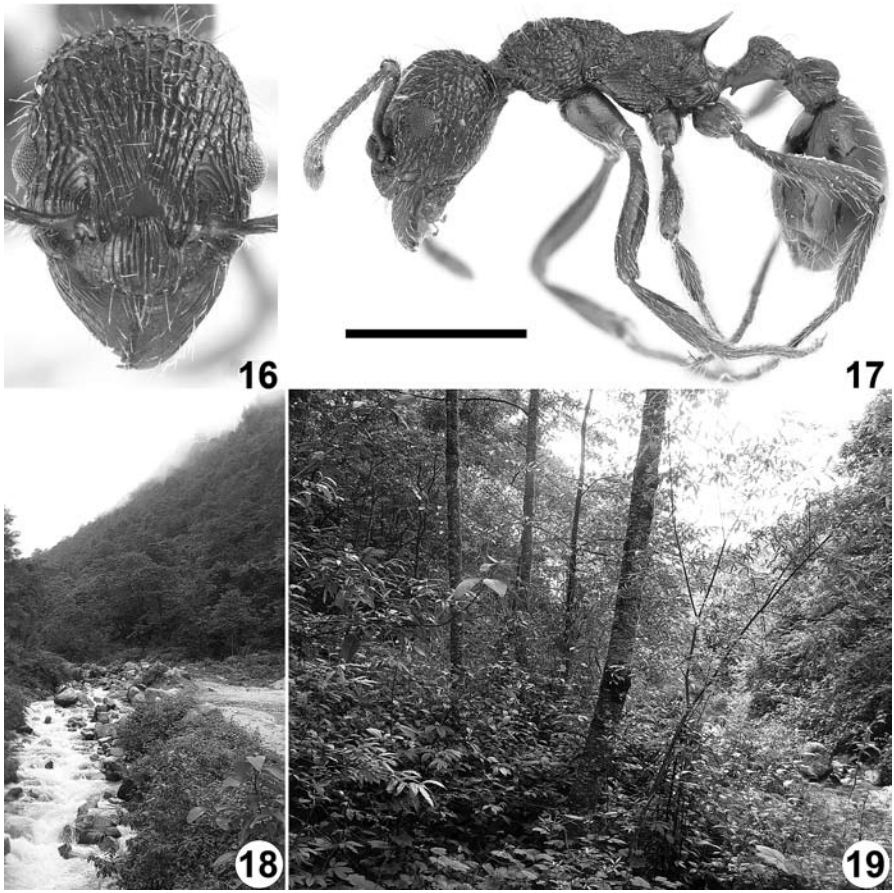
Figs. 10–15. Details of *Myrmicophila tangliangi*. 10 – tergite VIII; 11 – sternite VIII; 12 – paramere, apart from aedeagus; 13 – aedeagus, dorsal view; 14 – same, lateral view; 15 – same, ventral view. Scales: 0.2 mm.

Myrmicophila tangliangi Yin & Li sp. n.

Type locality. Yaojiaping, Lushui County, Yunnan Province, Southwest China

Type material. *Myrmicophila tangliangi*. HOLOTYPE male, '**CHINA:** Yunnan Prov. / Lushui County / Yaojiaping, alt. 2,500 m / 23.vi.2010 / Liang Tang leg.'

Description. Male. Medium sized, BL 2.95 mm (Fig. 1). Head, pronotum and abdomen dark reddish brown; elytra, antennae and legs reddish brown; mouthparts and tarsi lighter.



Figs. 16–19. Host ant of *Myrmicophila tangliangi* (Figs. 16–17) and surroundings of the collecting site (Figs. 18–19). 16 – Head, in anterior view; 17 – lateral habitus. Scale: 1.5 mm.

Head slightly wider than long, HL 0.55 mm, HW 0.61 mm; covered with dense setae except for median part of frons and areas around vertexal foveae. Eyes moderately developed, each comprising of about 60 small facets. The fifth antennomeres (Fig. 2) strongly protuberant mesally. Pronotum about as long as wide, PL 0.62 mm, PW 0.61 mm, sparsely covered with short setae. Elytra together wider than long, EL 0.88 mm, EW 1.17 mm; constricted at base; covered with golden setae. Procoxae with tiny protuberance on posterior margin; mesotibiae (Fig. 8) with apical spine mesally; metafemora (Fig. 9) largely broadened near middle.

Tergite VIII as in Fig. 10, sternite VIII as in Fig. 11. Aedeagus (Figs. 13–15) well sclerotized, length 0.55 mm; basal bulb and basal foramen large; ventral stalk broad at base, gradually narrowed and curled toward right; another long and broad sclerite attached to ventral stalk at base, but shorter, suddenly sharpened near apical 1/3 and pointed at apex; dorsal apophysis broadened at base, bifurcate to two sclerites, each pointed and curled; parameres (Fig. 12) large and paired, attached to posterior margin of basal foramen.

Female. Unknown.

Host ant. *Myrmica* sp. (Figs. 16–17) (det. by A.G. Radchenko). For pselaphine beetles, only *Hingstoniella lata* distrubuted in Himalaya region was previously recorded (Yin, Li & Zhao, in press) host ant of the genus *Myrmica*. This time, the nest was also found under a flagstone. The surroundings nearby are shown as in Figs. 18–19.

Distribution. Known only from the type locality.

Etymology. The specific name is dedicated to Liang Tang, the collector of the holotype.

ACKNOWLEDGMENTS

We thank Liang Tang (SNUC, Shanghai, China) for collecting and providing the material. We are gratitude to Shûhei Nomura (NSMT, Tokyo, Japan) for providing thoughtful advice during the present study. The host ant was identified by A.G. Radchenko (Ukraine). The present study is financially supported by the National Natural Science Foundation of China (No. 30870323) and the Shanghai Natural Science Foundation (No. 10ZR1421600).

REFERENCES

Nomura, S & A. B. Idris, 2003. Faunistic Notes on the Batrisinae species from Malaysia and Singapore (Coleoptera: Staphylinidae: Pselaphinae). Serangga 8: 55–72.

Yin, Z.W., L.Z. Li & M.J. Zhao, 2011. Contributions to the Knowledge of the Myrmecophilous Pselaphines (Coleoptera, Staphylinidae, Pselaphinae) from China. VI. *Hingstoniella* Jeannel is a myrmecophile, with notes on its definition and systematic position (Coleoptera: Staphylinidae: Pselaphinae). Sociobiology 57 (2): 389-396.