

## ***Giraffaenictus eguchii* (Coleoptera, Staphylinidae, Aleocharinae), a New Genus and Species of Fully Myrmecoid Myrmecophile from a Colony of *Aenictus binghami* (Hymenoptera, Formicidae, Aenictinae) in Vietnam**

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**Abstract.** *Giraffaenictus eguchii* n. gen. & sp. (Coleoptera, Staphylinidae, Aleocharinae), a fully myrmecoid myrmecophile, is described based on a single specimen collected from a colony of *Aenictus binghami* army ants in Bac Giang Province, northern Vietnam. The systematic position of *Giraffaenictus* is discussed, and it is tentatively placed in the tribe Aenictoteratini due to a close relationship with the type genus *Aenictoteras*.

**Key words:** army ant, myrmecophily, Aenictoteratini, systematic position.

### **Introduction**

In the Asian tropics, there are about 40 known myrmecophilous species of the subfamily Aleocharinae (Coleoptera, Staphylinidae), which is associated with army ants of the genus *Aenictus* Shuckard, 1840. They are classified into the tribes Aleocharini, Aenictoteratini, Lomechusini, Sahlbergiini, and Pygostenini (Kistner, 1993; Kistner *et al.*, 1997), but the systematic positions of some species are highly doubtful.

Two species of Aleocharinae (*Aenictonia thailandica* Seevers 1965 of Lomechusini, and *Aenictophila thailandica* Seevers 1965 of Aenictoteratini) described from Thailand are associated with *Aenictus binghami* Forel, 1900. Recently, a single specimen of an extraordinary beetle was submitted by Dr. Katsuyuki Eguchi. It was collected from an emigration column of *A. binghami* in northern Vietnam, and is an obvious myrmecoid species that has not yet been described and does not belong to any known genus. This paper describes this specimen as a new genus and species, and discusses its systematic position. The technical procedures and terminology adopted here are generally as in Maruyama (2006). Measurements are all in millimeters.

### ***Giraffaenictus* n. gen.**

*Type species.* *Giraffaenictus eguchii* n. sp.

*Etymology.* A combination of the latin “*Giraffa*” meaning giraffe and the ant genus “*Aenictus*”, referring to the long head and legs of the beetle, and its association with ant colonies. Gender, masculine.

*Diagnosis.* This genus is similar to the genera *Aenictoteras* Wheeler, 1932, and *Rosciszewska* Kistner, 1993, of the tribe Aenictoteratini, in several characteristics including a cylindrical 3rd abdominal segment, but is easily distinguished from them by the 5th to 8th abdominal segments not being shaped like a dumbbell.

#### **Description.**

Body (Figs. 1-2) myrmecoid, elongate, covered with erect macrosetae.

Head (Figs. 1-2) elongate, widest at eyes, narrowed posteriad, spread and margined near base; base constricted to form a neck; gula subparallel-sided. Eyes prominent, situated near apex of head. Antennae long, filiform, with all segments longer than wide.

Mouthparts: Labrum (Fig. 3) simplified, without pseudopores. Epipharynx (Fig. 4) with three long apical setae antero-medially and with three minute setulae antero-laterally. Mandibles (Fig. 5) long, acute, almost symmetrical, with inner margin slightly sinuate, basal

area moderately covered with minute pseudopores. Mentum (Fig. 6) subtrapezoidal, with two setae and a few pseudopores antero-laterally; anterior margin deeply and roundly emarginate. Maxilla (Fig. 7): palpus stout; 1st segment without seta; 4th segment long, slightly shorter than 3rd segment, pointed at apex; galea gently narrowed apicad, its apex densely with long pubescence; lacinia roundly protruded near base, its inner margin acutely

angulated at middle. Labium (Fig. 8); prementum simplified, without pseudopores, with two large real pores and one setal pore; ligula not projected, broadly and shallowly emarginate; palpus with 2nd short, shorter than half of 1st; 3rd segment long, as long as 1st, slightly dilated apicad. Hypopharynx (Fig. 9) simplified, with several minute sensilla near apex.

Pronotum (Figs. 1-2) somewhat pyriform, thick dorso-

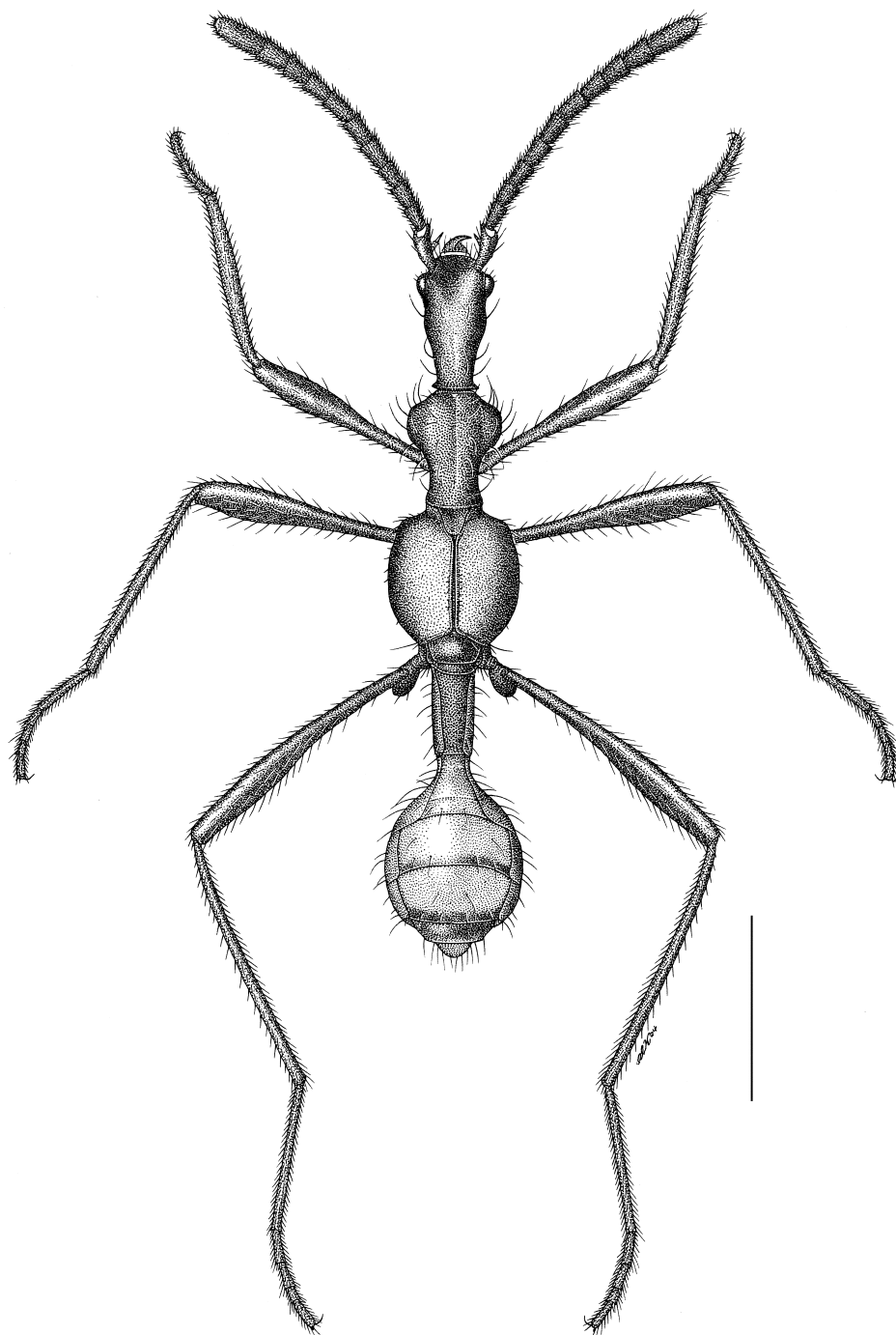


Fig. 1. *Giraffaenictus eguchii* sp. nov. (holotype). Facies, dorsal view. Scale: 1.0 mm.

ventrally; lateral area with base of procoxa protruded ventrad. Prosternum pentangular, deeply hollowed. Elytra, meso- and metaventrites form a ball-shape. Process of mesoventrite long, reach posterior 2/3 of mesocoxal cavity, acutely pointed at apex. Mesocoxal cavity well margined anteriorly, not on metaventrite.

Legs (Figs. 1-2) long; hind coxa narrowed posteriad; hind trochanter oval, visible dorsally with apex of coxa.

Abdomen (Figs. 1-2) with 2nd tergite semicircular; 3rd segment cylindrical, extremely narrowed, slightly dilated anteriorly; 4th to 8th segments subspherical; 4th segment constricted near base.

Male: Median lobe of aedeagus (Figs. 12-13) with compressor plate covered with a part of capsule, with a

large copulatory piece. Paramere (Fig. 14) with paramerite covered with pores; apical lobe short, narrowed apicad.

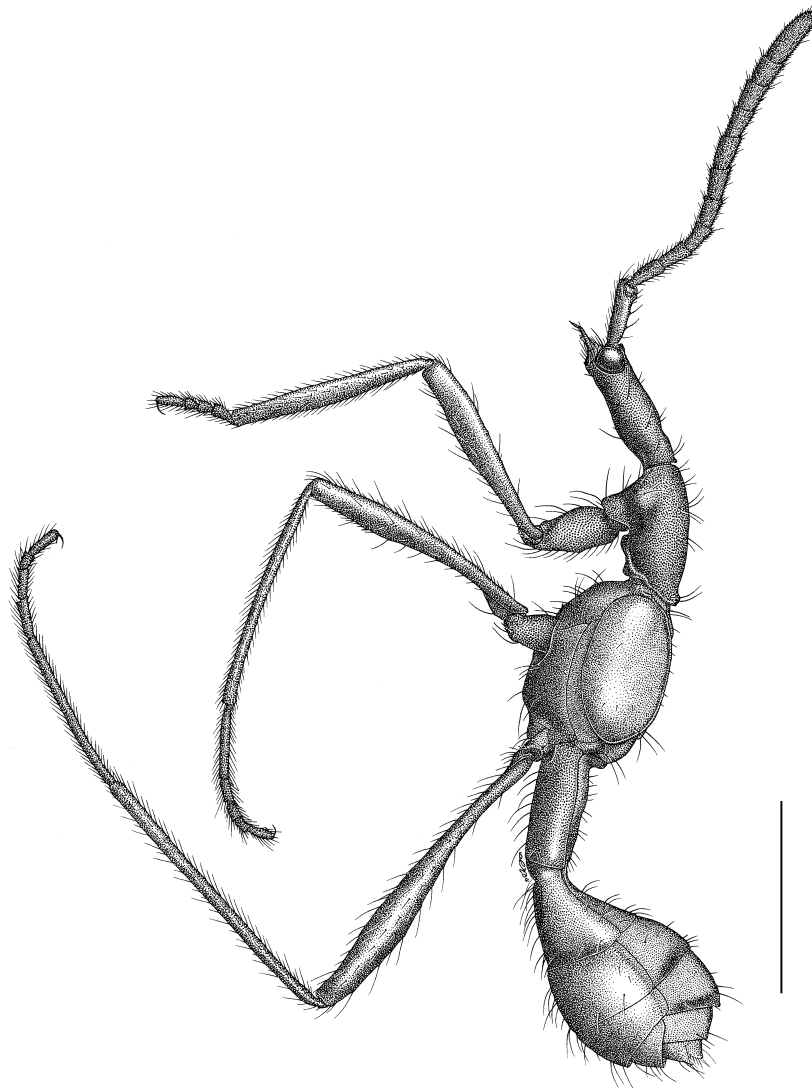
Female unknown.

***Giraffaenictus eguchii* n. sp.**

*Etymology.* Dedicated to Dr. K. Eguchi, collector of the holotype.

*Type specimen.* Holotype, male (Kyushu University Museum): [Vietnam]: W. Yen Tu (637 feet, 21°10'52.2" 106°43'41.3"), Bac Giang Province, 26 III 2003, K. Eguchi (from an emigration column of *Aenictus binghami*).

*Distribution.* Bac Giang Province, N. Vietnam.



**Fig. 2.** *Giraffaenictus eguchii* sp. nov. (holotype). Facies, lateral view. Scale: 1.0 mm.

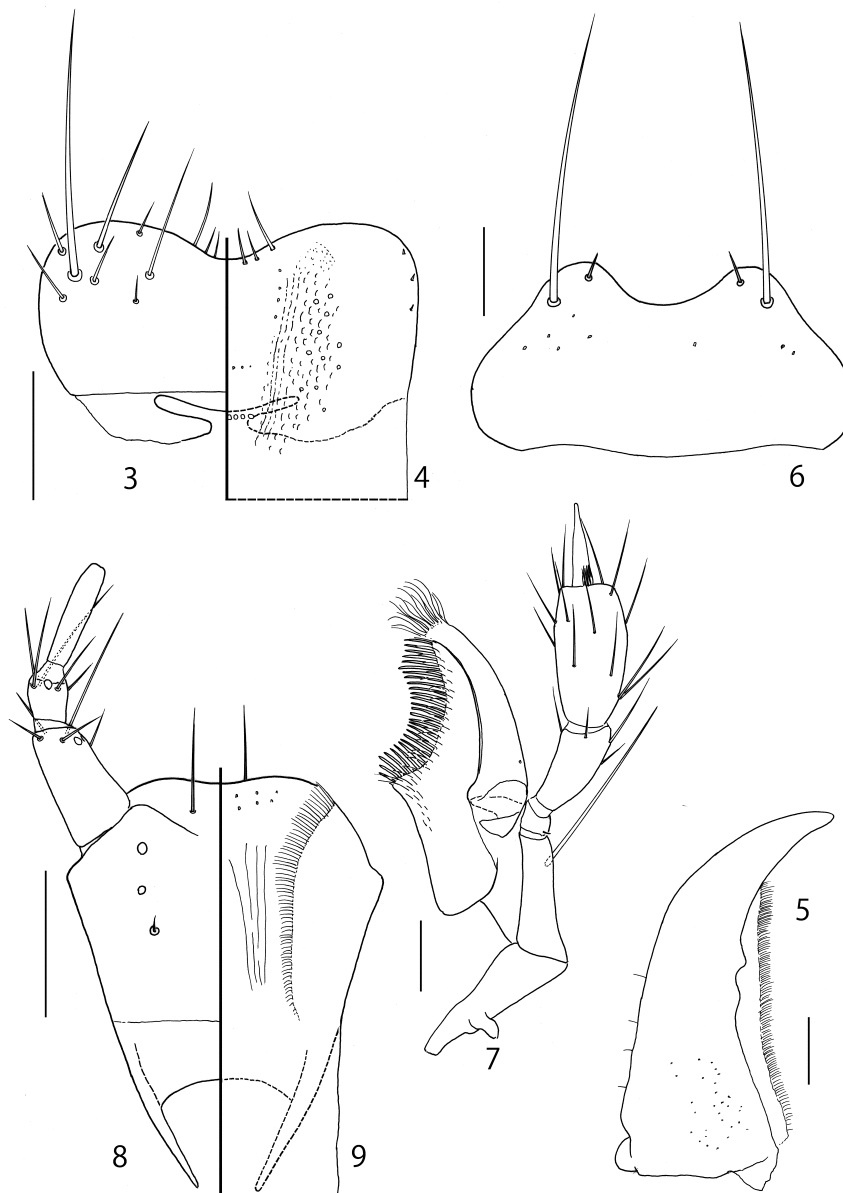
**Diagnosis.** This species is similar to those of *Aenictoteras* and *Rosciszewskia*, but is easily distinguished from them by the 5th to 8th abdominal segments not being shaped like a dumbbell. *Aenictonia thailandica* and *Aenictophila thailandica* are associated with the same host ant, and the latter is also a myrmecoid species. *Giraffaenictus eguchii* is easily distinguished from *Aenictophila thailandica* by the elongated head and the completely cylindrical 3rd abdominal segment.

**Description.**

Body reddish brown; antennae, mouthparts, legs and abdomen paler.

Head densely punctate basal 1/5, with 5 macrosetae dorsally, 1 long macroseta side of gula. Eyes 0.22 as long as head. Antennae with 1st segments dilated apicad, punctate, longer than 2nd and 3rd combined; 2nd segment as long as 3rd.

Pronotum widest at anterior 1/4, longer than wide (ratio: 1.26), densely punctate, with a shallow groove



**Figs. 3-9.** *Giraffaenictus eguchii* sp. nov. (holotype). 3: labrum, dorsal view. 4: epipharynx, adoral view. 5: left mandible, dorsal view. 6: mentum, ventral view. 7: right maxilla, ventral view. 8: labium, ventral view. 9: hypopharynx, adoral view. Scales: 0.05 mm.

medially, with 10 macrosetae dorsally. Scutellum densely punctate.

Elytra shining, sparsely covered with short setae, but with long macrosetae on shoulders and apices.

Abdomen sparsely covered with macrosetae, with 2nd to base of 4th segment densely punctate, others shining.

Male: Eighth tergite (Fig. 10) with long basal projections, densely covered with minute pores along basal margin, with three macrosetae and few setae along apical margin; 8th sternite (Fig. 11) glabrous, with three macrosetae and few setae along apical margin. Median lobe of aedeagus (Figs. 12-13) obovate; apical lobe gently and straightly curved paramerad; basal capsule projected paramerad; copulatory piece narrowed apicad, pointed at apex. Apical lobe of paramerite (Fig. 14) oblong-oval,

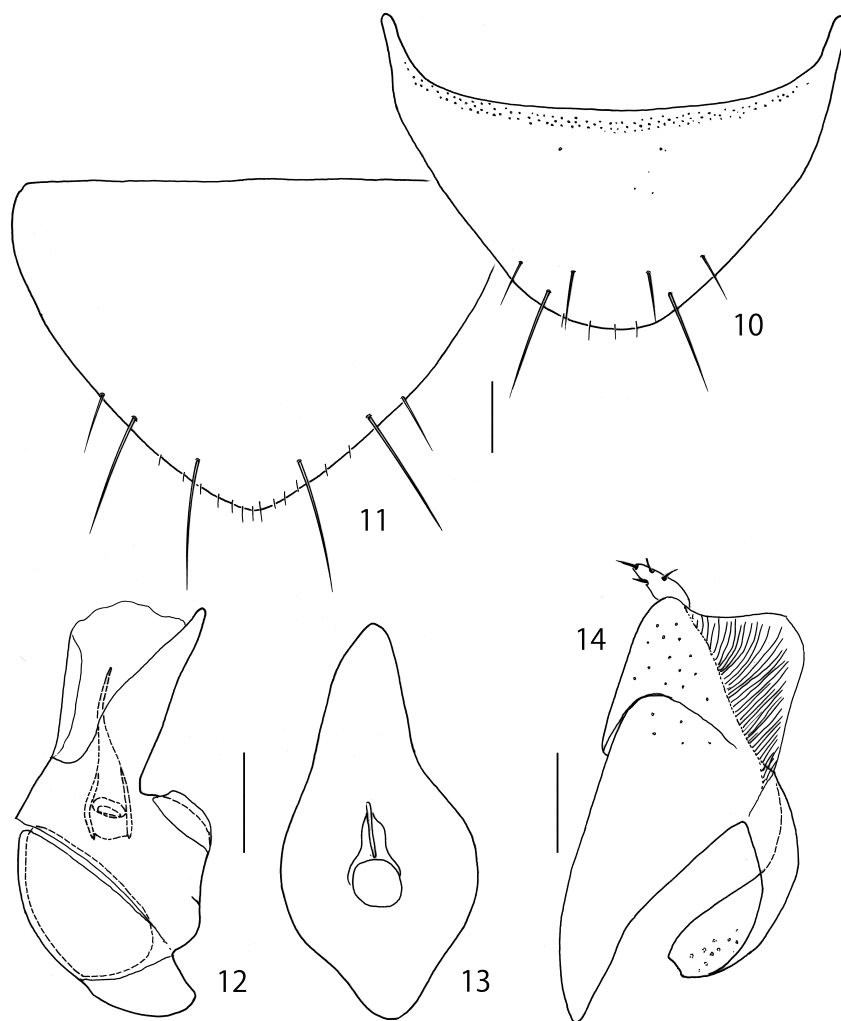
with four setae, that are almost same in length.

Female unknown.

Measurements. Body length: ca. 3.9; head length: 0.728; pronotal length 0.725; pronotal width: 0.575; hind tibial length 1.382.

## Discussion

Kistner (1993) established the tribe Aenictoteratini, which includes the genera *Aenictoteras*, *Aenictophila* Seevers, 1965, *Mimaenictus* Kistner & Jacobson, 1975, *Procanttonnetia* Kistner & Jacobson, 1975, *Steysborgia* Kistner & Jacobson, 1975, *Aenictocupidus* Kistner, 1993, and *Rosciszewska*. Kistner *et al.* (1997) added *Weissflogia* Kistner, 1997. All of the genera are associated with *Aenictus* ants. Kistner (1993) defined the tribe with the



**Figs. 11-14.** *Giraffaenictus eguchii* sp. nov. (holotype). 10: 8th tergite, dorsal view. 11: 8th sternite, ventral view. 12: median lobe of aedeagus, ad-parameral view. 13: ditto, parameral view. 14: paramere. Scales: 0.1 mm.

following main characters: 1) enlarged basal segments of antennae; 2) 2nd and 3rd segments of antenna with dense and prominent polygonal microsculptures; 3) basal segments of abdomen constricted to form a petiole; and 4) 4th to 7th segments of abdomen enlarged to form “pseudo-gaster” (Kistner, 1993). However, 1) and 2) are not specific to the above genera and are common in several other tribes of Aleocharinae, especially in Lomechusini, while 3) and 4) are associated with myrmecoid body shape but also occur in other tribes, particularly those that include myrmecophilous species associated with army ants. Therefore, these states are highly homoplastic, and do not support autapomorphy of Aenictoteratini.

A preliminary phylogenetic analysis based on morphology and mtDNA data revealed non-monophyly of Aenictoteratini, and only *Aenictoteras* and *Rosciszewskia* formed a clade, while the members of the subtribe Aenictobiina (Lomechusini) branched off the clade as a sister group (Maruyama *et al.* unpubl. data). Most members of Aenictoteratini (sensu Kistner, 1993; Kistner *et al.*, 1997), excluding *Aenictocupidus* (not examined), should be transferred to other tribes, and Aenictoteratini should be redefined and reconfigured, considering the relationships with other tribes.

Nevertheless, I tentatively place *Giraffaenictus* in Aenictoteratini due to a close morphological resemblance to core members of the tribe, namely the type genus *Aenictoteras*, and *Rosciszewskia*, which is morphologically an apparent sister group of *Aenictoteras* (based on the dumbbell-shaped 5th to 8th abdominal segments that is unique to these genera in Staphylinidae). The following characteristics are shared by *Aenictoteras*, *Rosciszewskia*, and *Giraffaenictus*: 1) head elongate; 2) body narrowed posteriorly; 3) eyes prominent; 4) eyes situated near apex of head; 5) epipharynx with three apical setae; 6) 4th segment of maxillary palpus long, slightly shorter than 3rd segment; 7) lacinia roundly protruded near base; 8) ligula not projected; 9) ligula broadly and shallowly emarginate; 10) 3rd segment of labial palpus long, as long as 1st segment; 11) process of mesoventrite long, reaching posterior 2/3 of mesocoxal cavity; 12) elytra, meso- and metaventrites ball-shaped; 13) legs long, hind legs twice as long as abdomen; and 14) 3rd abdominal segment completely cylindrical. Of these, 5), 8), 9), 12), and 14) are not observed in Aenictobiina and are considered synapomorphies of these genera. *Aenictoteras* and *Rosciszewskia* have some characteristics that are apparently apomorphic, as compared to *Giraffaenictus*, e.g.,

shortened 2nd segment of maxillary palpus, cylindrical 4th abdominal segment, and 5th abdominal sternite cylindrically protruding ventrad to form the dumbbell-shaped 5th to 8th segments. Although no clear autapomorphy of *Giraffaenictus* was found, it is clearly distinguished from *Aenictoteras* and *Rosciszewskia* by the generalized 2nd segment of the maxillary palpus, the subspherical 4th to 8th abdominal segments, and the 5th abdominal sternite, which does not protrude ventrad. These difference are considered great enough to consider *Giraffaenictus* a distinct genus.

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