

A New Army Ant of the Genus *Aenictus* from Thailand (Hymenoptera: Formicidae)

Weeyawat Jaitrong^{1,2*} and Katsuyuki Eguchi³

¹Natural History Museum, National Science Museum, Thailand,
Technopolis, Khlong 5, Khlong Luang, Pathum Thani 12120, Thailand

²Department of Natural Science, Graduate School of Science and Engineering,
Kagoshima University, Kagoshima-shi 890-0065, Japan

³Department of International Health, the Institute of Tropical Medicine,
Nagasaki University 1-12-4 Sakamoto, Nagasaki City 852-8523, Japan

ABSTRACT: A new species of the ant genus *Aenictus* is described from northern Thailand under the name *A. leptotyphlatta* Jaitrong and Eguchi, sp. nov. based on the worker caste. This ant is black to dark brown and smallest among the species from the Oriental, Indo-Australian, and Australasian regions which have typhlatta spots on the head.

KEY WORDS: Ant, *Aenictus*, new species, taxonomy, Thailand.

INTRODUCTION

The genus *Aenictus* Shuckard, 1840 (subfamily Aenictinae) is one of the large ant genera in the world. The members of this genus are mainly distributed in the Old World tropics and subtropics, from Africa through the Middle East, India, South China, southernmost part of Japan, various countries in Southeast Asia to New Guinea and Australia (Gotwald, 1995; Shattuck, 2008). Currently, 83 species are listed in the Oriental, Indo-Australian, and Australasian regions (Bolton *et al.*, 2006; Shattuck, 2008). Among them only 10 species (*A. alticolus* Wheeler and Chapman, 1930; *A. binghami* Forel, 1900; *A. cornutus* Forel, 1900; *A. currax* Emery, 1900; *A. diclops* Shattuck, 2008; *A. fergusonii* Forel, 1901; *A. gracilis* Emery, 1893; *A. huonicus* Wilson, 1964; *A. laeviceps* (Smith, 1857); *A. luzoni*

Wheeler and Chapman, 1925) bear "typhlatta spots" on the worker head (a pair of yellow patches located on the occipital corners, on upper genae, or overlapping both), and also share the black or dark brown to reddish brown body, and entirely smooth and shiny head (cf. Wilson, 1964; Terayama and Yamane, 1989; Terayama and Kubota, 1993; Xu, 1994; Tang *et al.*, 1995; Shou and Chen, 1999; Zhou, 2001; Shattuck, 2008). Although Wilson (1964) thought the "typhlatta spots" might have independently evolved more than one time, we think this character has at least some importance in establishing species groups.

In the course of our examination of *Aenictus* specimens collected from Southeast Asia, we found a single colony from northern Thailand of a species, which is black, very small, and seems closely related to the species above mentioned. In this paper it is described as a new species based on the worker caste.

* Corresponding author.
E-mail : polyrhachis@yahoo.com

MATERIALS AND METHODS

Most observations were made with a Nikon SMZ1000 stereoscope. Ten workers were measured using a micrometer; all measurements are expressed in millimeters, representing to the second decimal place.

The Abbreviations used for the measurements and indices are as follows: TL, total length; HL, maximum head length in full-face view measured from the anterior clypeal margin to midpoint of a line drawn across the posterior margin of head; HW, maximum head width in full-face view; SL, scape length excluding the basal of constriction and condylar bulb; ML, mesosomal length measured from the point at which the pronotum meets the cervical shield to the posterior margin of the metapleuron in profile; MTL, maximum length of mid tibia excluding the proximal part of the articulation which is received into the distal end of the femur; PL, petiole length; CI (cephalic index), $HW/HL \times 100$; SI (scape index), $SL/HW \times 100$.

Multi-focused montage images were produced using Helicon Focus 4.30 Pro (MP) from a series of source images taken by a Nikon Coolpix 8400 digital camera attached to a Nikon AZ100 microscope. When fine hairs and other parts which were not recognized automatically were found, the focused parts from the source images were copied to the montage image using the retouching function of Helicon Focus. Artifacts (ghost images) and unnecessary parts (unfocused appendages, etc.) surrounding or covering target objects were erased and cleaned up using the retouching function of Helicon Focus. Finally, the background was cleaned up, and the color balance, contrast and sharpness were adjusted using Adobe Photoshop CS2.

Abbreviations of the type depositories are as follows: ACEG, Ant Collection of Katsuyuki Eguchi (see his contact address given under the title of this article); BMNH, Natural History Museum, London, UK; MCZC, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA;

MHNG, Muséum d'Histoire Naturelle, Geneva, Switzerland; MSNG, Museo Civico di Storia Naturale "Giacomo Doria", Genova, Italy; NHMW, Naturhistorisches Museum, Wien, Austria. SKYC, SKY collection at Kagoshima University, Japan; THNHM, Natural History Museum of the National Science Museum, Thailand.

DESCRIPTION

Aenictus leptotyphlatta Jaitrong and Eguchi, sp. nov. (Figs. 1-2)

Types. Holotype: worker from the Campus of Chiang Mai University, Chiang Mai province, northern Thailand, 10 VI 2001, W. Jaitrong leg., WJT01-CMU01 [THNHM].

Paratypes: 63 workers, same data as holotype; additional 10 workers collected from the same colony by K. Eguchi on the same day (Eg01-TH-158) [ACEG, BMNH, MCZC, MHNG, MSNG, NHMW, SKYC, THNHM].

Measurements. Holotype and nine paratype workers (n = 10): TL 2.35-2.45 mm; HL 0.50-0.53 mm; HW 0.43-0.48 mm; SL 0.33-0.35 mm; ML 0.73-0.78 mm; MTL 0.38-0.45 mm; PL 0.18-0.20 mm; CI 85-90; SI 74-76.

Worker Description (holotype and paratypes). Head in full-face view subrectangular, longer than broad, with slightly convex sides and almost straight or very weakly concave posterior margin. Occipital margin of head lacking collar. Antenna 10-segmented; antennal scape short, reaching or little extending beyond the half length of head; antennal segments II-X each longer than broad; II longer than each of III-VI; VII, VIII and IX combined shorter than the terminal segment (X). Frontal carina short and thin extending posteriad, not beyond the level of posterior margin of torulus; anterior curve of frontal carina reaching or extending beyond anterior clypeal margin. Clypeus short, its anterior margin lacking teeth; median portion of anterior clypeal margin slightly convex and protruded anteriad. Mandible subtriangular

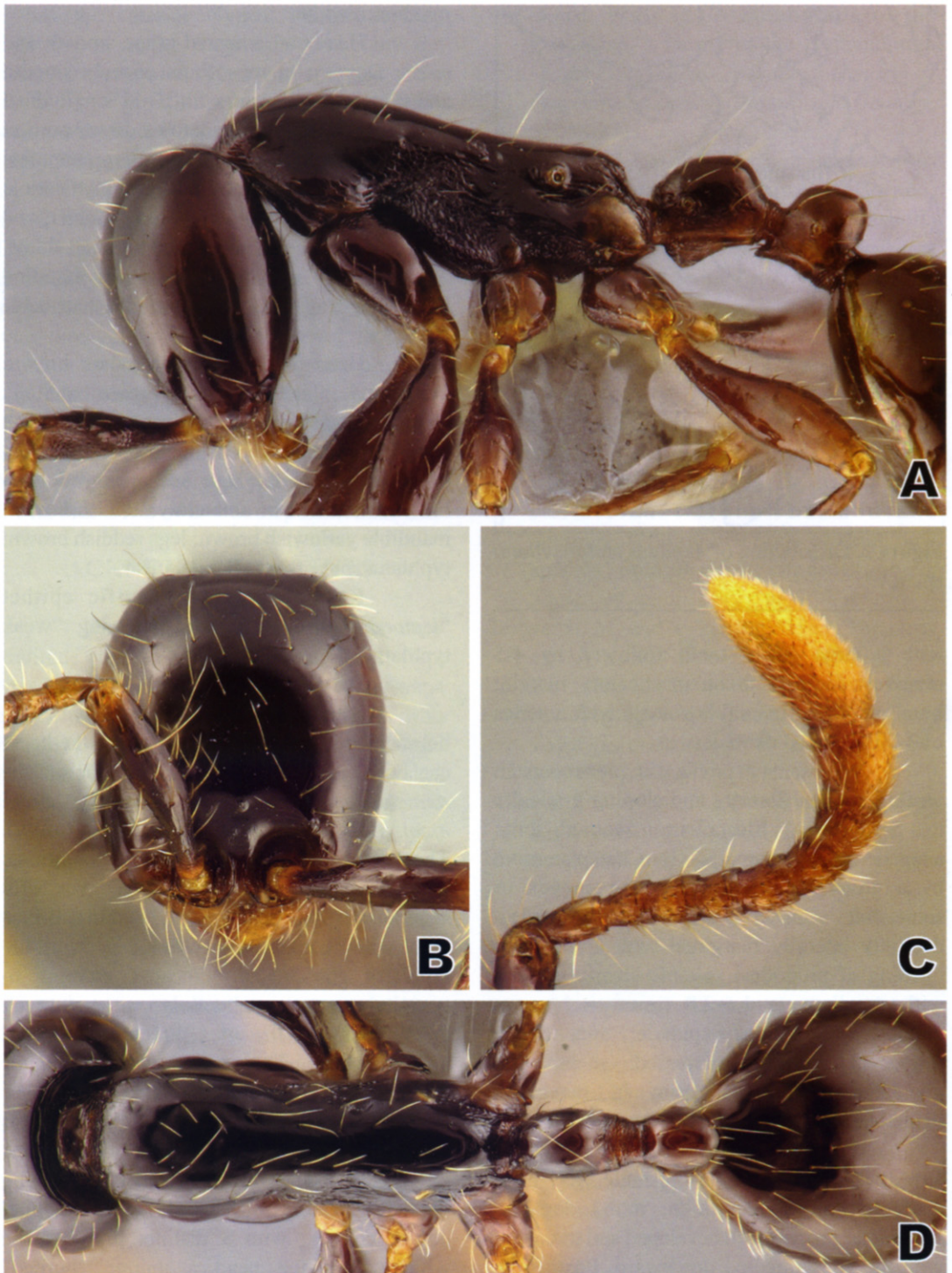


Figure 1. *Aenictus leptotyphlatta* sp. nov., worker. A, Body in profile; B, Head in full-face view; C, Antenna; D, Body in dorsal view.



Figure 2. Distribution of *Aenictus leptotyphlatta* sp. nov.

with a large apical tooth followed by 4-5 relatively large teeth on masticatory margin; basal margin of mandible sinuate with a series of 3-5 ill-defined denticles.

Mesosoma in profile with promesonotum weakly convex dorsally and sloping gradually to propodeum. Mesopleuron rather long; anepisternum demarcated from katapisternum by a groove. Propodeal junction convex or somewhat obtusely angulated; propodeal declivity laterally margined with a thin rim; opening of propodeal spiracle clearly circular with its diameter 1.5-2.0 times as long as diameter of petiolar spiracle; area below propodeal spiracle impressed; metapleural gland bulla 0.13-0.15 mm in maximum diameter, almost as long as postpetiolar node.

Petiole narrow, seen from above almost parallel-sided; in profile its node distinctly longer than high, round dorsally; subpetiolar process well developed and triangular with the apex directed downward. Postpetiole clearly shorter than petiole; its node almost as long as high.

Gaster elliptical, narrowed anteriorly and posteriorly, in dorsal view 0.43-0.45 mm in

maximum width.

Head and antennal scape smooth and shiny. Dorsum of mesosoma entirely smooth and shiny; mesopleuron with 10-12 longitudinal rugae and dense micropunctures; lower portion of metapleuron with dense micropunctures; propodeum almost smooth and shiny. Petiole and postpetiole smooth and shiny. Gaster, and femora and tibiae of all legs smooth and shiny.

Body with relatively sparse standing hairs; length of the longest pronotal hair 0.13-0.15 mm.

Head reddish brown or dark brown; mesosoma black or dark brown; petiole, postpetiole and gaster dark brown or reddish brown; Antennal scape reddish brown or dark brown except at the base and apex yellowish brown; funiculus of antenna yellowish brown; mandible yellowish brown; legs reddish brown; typhlatta spot present but not clear.

Etymology. The specific epithet "*leptotyphlatta*" is a Latin meaning "weak typhlatta".

Distribution. Northern Thailand.

Remarks. The species mentioned below, which have typhlatta spots on the head, can be divided into 2 groups. First one is the *Aenictus laeviceps* group (*A. alticolus*, *A. binghami*, *A. fergusonii*, *A. laeviceps*, and *A. luzoni*). They share the following character conditions: anterior clypeal margin roundly convex with several conspicuous denticles; head in full-face view with occipital corner rounded; in profile typhlatta spot usually located anterior to occipital corner; subpetiolar process well developed, with the apex directed downward and backward. The second is the *Aenictus gracilis* group (*A. cornutus*, *A. currax*, *A. diclops*, *A. gracilis*, and *A. huonicus*). All these species share the following character conditions: clypeal margin roundly convex, lacking denticles; head in full-face view with occipital corner convex, with a distinct protuberance which gives the head a unique "horned" appearance; in profile "typhlatta spot" always located at occipital corner; subpetiolar process weakly developed. *A. leptotyphlatta* exhibits conditions intermediate between the two groups.

It has the anterior clypeal margin lacking denticles as in the *A. gracilis* group but the occipital corner of the head similar to that of the *A. laeviceps* group. Furthermore the typhlatta spot is less developed, much paler in coloration than in the other typhlatta-bearing species. It is the smallest among the species with typhlatta spots, which are distributed in the Oriental, Indo-Australian, and Australasian regions, and is similar to *A. alticolus* in the shape of the subpetiolar process (large and angulate with the apex directed downward). However, the latter is much larger and has the clypeus provided with denticles on its anterior margin.

The type series was collected from a secondary forest in the Campus of Chiang Mai University, the campus being continuous to the natural forest of Doi Suthep National Park.

ACKNOWLEDGEMENTS

We would like to express our deep gratitude to Dr. Decha Wiwatwitaya (Ant Museum, Kasetsart University) and Dr. Saowapa Sonthichai (Chiang Mai University) who helped us in field surveys in Thailand, and Professor Seiki Yamane (Kagoshima University) for critical reading earlier drafts of the manuscript.

REFERENCES

- Bolton, B., G. Alpert, P.S. Ward and P. Naskrecki. 2006. *Bolton's Catalogue of Ant of the World, 1758-2005* [CD-ROM]. Harvard University, Cambridge.
- Gotwald, W.H. 1995. *Army Ants: the Biology of Social Predation*. Cornell University, New York.
- Shattuck, S.O. 2008. Review of the ant genus *Aenictus* (Hymenoptera: Formicidae) in Australia with note on *A. ceylonicus* (Mayr). *Zootaxa*. 1923: 1-19.
- Shuckard, W.E. 1840. Monograph of the Dorylidae, a family of the Hymenoptera Heterogyna. *Annals of Natural History; or Magazine of Zoology, Botany and Geology*. 5: 258-271.
- Smith, F. 1857. Catalogue of the hymenopterous insects collected at Sarawak, Borneo; Mount Ophir, Malacca; and at Singapore, by A.R. Wallace. *Journal of the Proceeding of the Linnean Society of London, Zoology*. 2: 42-88.
- Tang, J., S. Li, E. Huang, B. Zhang and Y. Chen. 1995. *Economic Insect Fauna of China Fasc. 47 Hymenoptera: Formicidae (1)*. Science press, Beijing.
- Terayama, M. and A. Kubota. 1993. The army ant genus *Aenictus* (Hymenoptera: Formicidae) from Thailand and Vietnam, with descriptions of three new species. *Bulletin of the Biogeographical Society of Japan*. 48(2): 68-72.
- Terayama, M. and S. Yamane. 1989. The army ant genus *Aenictus* (Hymenoptera: Formicidae) from Sumatra, with descriptions of three new species. *Japanese Journal of Entomology*. 57(3): 597-603.
- Wilson, E.O. 1964. The true army ants of the Indo-Australian area (Hymenoptera: Formicidae: Dorylinae). *Pacific Insects*. 6(3): 427-483.
- Xu, Z. 1994. A taxonomic study of the ant subfamily Dorylinae in China (Hymenoptera: Formicidae). *Journal of Southwest Forest College*. 14(2): 115-122. (In Chinese)
- Zhou, S. 2001. *Ants of Guangxi*. Guangxi Normal University, Guilin.
- Zhou, S. and Z. Chen. 1999. The ant genus *Aenictus* Shuckard from Guangxi (Hymenoptera: Formicidae). *Guangxi Science*. 6(1): 63-64. (In Chinese)