



The ant genus *Aenictus* from Laos, with description of a new species (Hymenoptera: Formicidae: Aenictinae)

Weeyawat Jaitrong^{a,b,*}, Seiki Yamane^b, Niyom Chanthalangsy^c

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

^b Laboratory of Biodiversity Sciences, Graduate School of Science and Engineering, Kagoshima University, Kagoshima, 8900065 Japan

^c Forest Research Center, National Agriculture and Forestry Research Institute, Saythany District, Vientiane Capital, Lao Democratic People's Republic

ARTICLE INFO

Article history:

Received 28 October 2010

Revised 24 December 2010

Accepted 27 December 2010

Available online 4 January 2011

Keywords:

Formicidae

Aenictus

Taxonomy

New record

New species

Laos

ABSTRACT

Ants of the genus *Aenictus* are recorded from Laos for the first time. Here, we report six species including a new species and a new status: *Aenictus binghami* Forel, A. cf. *dentatus* Forel, *A. doydeei* Jaitrong et Yamane, sp. nov., A. cf. *fuchuanensis* Zhou, *A. hodgsoni* Forel, stat. nov., and *A. nishimurai* Terayama et Kubota. *A. doydeei* sp. nov. is very probably a nocturnal species.

© Korean Society of Applied Entomology, Taiwan Entomological Society and Malaysian Plant Protection Society, 2010. Published by Elsevier B.V. All rights reserved.

Introduction

Aenictus Shuckard, 1840 is the only genus contained within the subfamily Aenictinae of the family Formicidae. All of the members of this genus are distributed throughout the Old World tropics and subtropics, from Africa through the Middle East (including Arabian Peninsula, Armenia, Turkey, Rhodes Is., Iran and Afghanistan), India, South China, the southernmost part of Japan, various countries in Southeast Asia, to New Guinea and Australia (Arnol'di, 1968; Bolton, 1994; Gotwald, 1995; Aktaç et al., 2004; Radchenko and Alipanah, 2004). Currently 38 named species based on the worker caste have been identified in Southeast Asia (Wilson, 1964; Terayama and Yamane, 1989; Terayama and Kubota, 1993; Tang et al., 1995; Zhou and Chen, 1999; Yamane and Hashimoto, 1999; Zhou, 2001; Terayama, 2009; Jaitrong and Nabhitabhata, 2005; Bolton et al., 2006; Jaitrong and Eguchi, 2010; Jaitrong and Nur-Zati, 2010; Jaitrong and Yamane, 2010; Jaitrong et al., 2010). However, no species of this genus has thus far been recorded in Laos.

In the present paper, six species of *Aenictus* collected from Laos in June 2010 are recorded. Among them, a species related closely to *Aenictus javanus* and *Aenictus nishimurai*, is described as new to science based on the worker caste.

Materials and methods

The material was collected from two sites within Vientiane Province in June 2010. The first site was in Sivilay Village (18°15'N, 102°27'E, ca. 200 m alt.), Nasaythong District, located approximately 20 km northwest of Vientiane City. We collected ants from plantations of several tree species and from the area surrounding the headquarters. The second site was in Phang Dang Village, Pak Ngum District, approximately 30 km northeast of Vientiane City. We collected ants in disturbed areas around the Village along the Num Ngum River (18°12'N, 103°01'E, ca. 200 m alt.), and from primary and secondary forests on a nearby hill at elevations between 250 and 500 m. The lower elevations (around 250 m alt.; 18°13'N, 103°01'E) were covered with mixed deciduous forests, and the upper elevations (up to 500 m; 18°14'N, 103°01'E) with dry evergreen forests.

Most observations of the specimens were made with a Nikon SMZ1000 stereoscope. Multi-focused montage images were generated using a Helicon Focus 4.75 Pro from a series of source images obtained with a Nikon EOS Kiss×4 digital camera attached to a Nikon ECLIPSE E600 microscope. Ten workers of each species were measured with a micrometer; all measurements are expressed in millimeters to the second decimal place.

Abbreviations used for the measurements and indices are as follows: TL, body length roughly measured from the anterior margin of the head to the tip of the gaster in stretched specimens; HL, maximum head length in full-face view, measured from the anterior clypeal margin to the midpoint of a line drawn across the posterior

* Corresponding author. Natural History Museum, National Science Museum, Technopolis, Khlong 5, Khlong Luang, Pathum Thani, 12120, Thailand. Fax: +66 25779991.

E-mail address: polyrhachis@yahoo.com (W. Jaitrong).

margin of the head; HW, maximum head width in full-face view; SL, scape length, excluding the basal 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; PL, petiole length; CI (cephalic index), $HW \times 100 / HL$; SI (scape index), $SL \times 100 / HW$.

Abbreviations of the type depositories are as follows: AMK, Ant Museum, Faculty of Forestry, Kasetsart University, Thailand; BMNH, Natural History Museum, London, U.K.; KKIC, Kasetsart Kampaengsaen Insect Collection, Thailand; MCZC, Museum of Comparative Zoology, Cambridge, MA, U.S.A.; SKYC, SKY collection at Kagoshima University, Kagoshima, Japan; THNHM, Thailand Natural History Museum, Thailand.

Systematics

Aenictus binghami Forel (Figs. 1–2).

Aenictus binghami (sic) Forel, 1900: 76, type locality: Burma (MHNG, examined); Wilson, 1964: 450, Figs. 69–71; Bolton, 1995: 59; Jaitrong and Nabhitabhata, 2005: 11.

Aenictus (*Typhlatta*) *binghami* var. *gatesi* Wheeler, 1927: 42 (synonymized by Wilson, 1964: 450).

Measurements. Worker ($n = 10$): TL 4.75–4.85 mm; HL 0.85–1.05 mm; HW 0.83–0.88 mm; SL 0.85–0.95 mm; ML 1.48–1.60 mm; PL 0.33–0.35 mm; CI 83–100; SI 100–106.

Diagnosis. Head entirely smooth and shiny; antenna 10-segmented; anterior clypeal margin convex, bearing 6–7 denticles; mandible subtriangular with 7–8 denticles excluding a large apical tooth. Mesosoma entirely microreticulate and opaque; promesonotum convex dorsally; propodeal junction obtusely angulate; declivity of propodeum weakly concave, encircled with a thin rim. Petiole distinctly longer than high, in profile its dorsal outline elevated posteriorly; subpetiolar process well developed and triangular, its apex directed downward and backward. Entire body dark reddish-brown. Typhlatta spot present, located anterior to occipital corner.

Material examined. Mixed deciduous forest, Phang Dang Village, 248 m alt., Pak Ngum Dist., Vientiane, Laos, 12 VI 2010, WJT10-LAO15 (W. Jaitrong leg., THNHM), LA10-SKY-104 (Sk. Yamane leg., SKYC); Mixed deciduous forest, same loc., 13 VI 2010, WJT10-LAO18 (W. Jaitrong leg., THNHM), LA10-SKY-114 (Sk. Yamane leg., SKYC).

Distribution. Vietnam, Laos, Thailand and Myanmar.

Remarks. This species is similar to *A. hodgsoni* in having a “typhlatta spot” located anterior to the occipital corner, but is slightly larger than



Figs. 1–6. 1 & 2, *Aenictus binghami* worker: head in full-face view; 2, habitus in profile. 3 & 4, *Aenictus hodgsoni* worker. 3, head in full-face view; 4, habitus in profile. 5 & 6, *Aenictus* ef. *dentatus* worker. 5, head in full-face view; 6, habitus in profile.

the latter. The mesonotum is microreticulate in *A. binghami*, while it is entirely smooth and shiny in *A. hodgsoni*.

Aenictus cf. *dentatus* Forel (Figs. 5–6).

Measurements. Worker (n = 10): TL 4.25–4.70 mm; HL 0.88–0.98 mm; HW 0.80–0.88 mm; SL 0.90–1.03 mm; ML 1.22–1.50 mm; PL 0.33–0.35 mm; CI 87–91; SI 113–124.

Diagnosis. Head and mesosoma entirely densely micropunctate with strong longitudinal rugae on pronotum and mesopleuron; occipital margin bearing a distinct collar; antenna 10-segmented; scape long extending beyond posterior margin of head; anterior clypeal margin convex, lacking denticles; mandible triangular with 12–13 denticles excluding apical tooth. Promesonotum convex dorsally; propodeal junction acutely angulate; declivity of propodeum weakly concave. Petiole almost as long as postpetiole, its dorsal outline elevated posteriorly; subpetiolar process weakly developed, its ventral outline feebly convex. First gastral tergite very weakly shagreened with smooth interspaces. Entire body black to dark brown. Typhlatta spot absent.

Material examined. Phang Dang Village, Pak Ngum Dist., Vientiane, Laos, 12 VI 2010, WJT10-LAO16 (W. Jaitrong leg., THNHM); same loc., 14 VI 2010, WJT10-LAO20 (W. Jaitrong leg., THNHM), LA10-SKY-126 (Sk. Yamane leg., SKYC); Plantation, 221 m alt., Sivilay Village, Naxaythong Dist., Vientiane, Laos, 10 VI 2010, WJT10-LAO12 (W. Jaitrong leg., THNHM), LA10-SKY-065 (Sk. Yamane leg., SKYC).

Distribution. Laos.

Remarks. The specimens examined are very similar to specimens of *A. dentatus* from Sundaland, both sharing the following characteristics: head and mesosoma entirely densely micropunctate with strong longitudinal rugae on pronotum and mesopleuron, occipital margin bearing a distinct collar, scape long extending beyond the posterior margin of the head. We are carefully comparing the present material with the syntypes of *A. dentatus* to determine its status.

Two colonies were collected in open areas along the Num Ngum River, and an additional colony was collected along a road in a bamboo

plantation. Workers carried termites (WJT10-LAO12), and *Pachycondyla leeuwenhoekei* workers and pupae (WJT10-LAO16).

Aenictus doydeei Jaitrong et Yamane, sp. nov. (Figs. 7–9).

Types. Holotype: worker from a plantation, 211 m alt., Sivilay Village, Naxaythong Dist., Vientiane, Laos, 10 VI 2010, WJT10-LAO13 (W. Jaitrong leg., THNHM). Paratypes: 61 workers from same colony as holotype (WJT10-LAO13 and LA10-SKY-58) (AMK, BMHN, KKIC, MCZC, SKYC, THNHM).

Measurements. Holotype and nine paratype workers (n = 10): TL 2.90–3.40 mm; HL 0.53–0.70 mm; HW 0.48–0.65 mm; SL 0.28–0.40 mm; ML 0.75–1.00 mm; PL 0.23–0.28 mm; CI 91–95; SI 55–62.

Worker description (holotype and paratypes). Head in full-face view almost as long as broad, with its sides convex; occipital margin almost straight or feebly concave, lacking a collar. Antenna 10-segmented; scape relatively short, reaching only half length of head; antennal segment II longer and narrower than each of III–VI. Frontal carina short, not extending beyond the level of the posterior margin of the torulus; parafrontal ridge absent. Clypeus short, with its anterior margin bearing 9–10 denticles. Mandible narrow, its masticatory margin with 3 acute teeth including a large apical tooth; basal margin of mandible lacking denticles. Mesosoma seen from above broader anteriorly than posteriorly; promesonotum laterally margined by ridges, in profile weakly convex dorsally and sloping gradually to metanotal groove; in profile propodeum slightly lower than promesonotum and almost flat dorsally; suture between mesopleuron and metapleuron almost absent; propodeal junction angulate, right-angled; declivity of propodeum shallowly concave, encircled by a very thin rim. Petiole almost as long as high, its dorsal outline slightly elevated posteriorly; subpetiolar process well developed, subrectangular, its ventral border almost straight and longer than the posterior border; postpetiole seen in profile subrectangular and slightly larger than petiole.

Head entirely smooth and shiny. Dorsal surface of pronotum smooth and shiny, sides of pronotum reticulate with smooth bottoms; mesothorax, metapleuron, and propodeum microreticulate. Petiole



Figs. 7–9. *Aenictus doydeei* sp. nov. worker, 7, head in full-face view; 8, habitus in profile; 9, dorsal view.

entirely microreticulate. Postpetiole microreticulate except for a small area on dorsal surface smooth and shiny.

Head and mesosoma with relatively sparse standing hairs mixed with sparse short hairs over the surface; length of the longest pronotal hairs 0.18–0.20 mm. Head, mesosoma, petiole, and postpetiole reddish-brown; gaster yellowish-brown; propodeum darker than elsewhere. Typhlatta spot absent.

Etymology. The specific name is dedicated to Dr Puvadol Doydee of Kasetsart University, who kindly helped us during our field surveys in Laos.

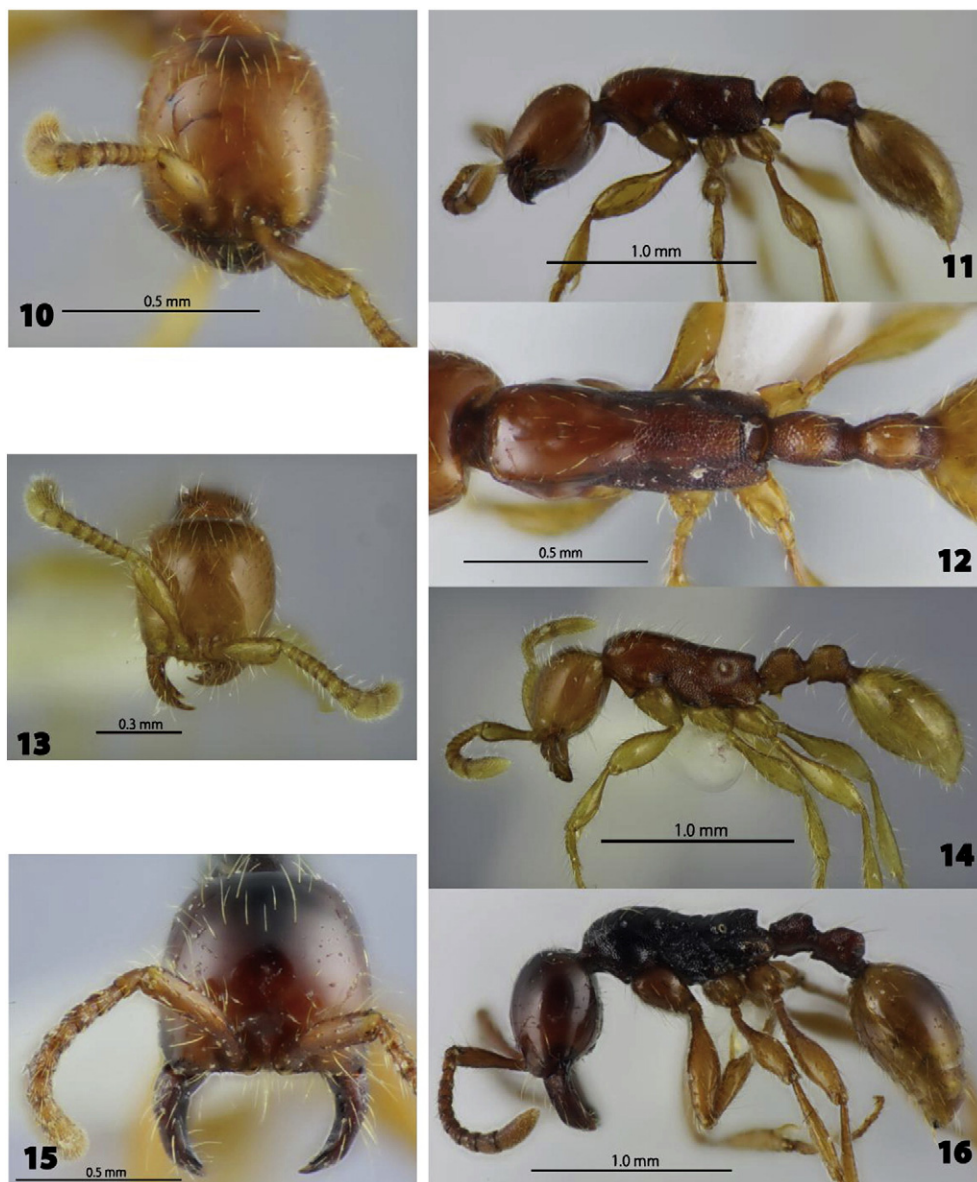
Non-type material examined. Disturbed area, Phu Rur Dist., Loei Prov., NE. Thailand, 10 IV 2008, PKK08-TH102 (P. Kosolpanyapiwat leg.; SKYC, THNHM); Agricultural area, Phu Kheao Dist., Chaiyaphum Prov., 30 I 1999, WJT99-AG22 (W. Jaitrong leg.; SKYC, THNHM); Sakaerat ERS, Nakhom Ratchasima Prov, NE. Thailand, 10 VII 1999, TH99-SKY-19 (Sk. Yamane leg.; SKYC, THNHM).

Distribution. Laos and Thailand.

Remarks. This species is closely related to *Aenictus javanus* Emery, 1896 (Figs. 13–14) and *A. nishimurai* Terayama et Kubota (1993) (Figs.

10–12), all of which share the following characteristics: 10-segmented antenna, short antennal scape extending only half the length of the head; anterior clypeal margin roundly convex, bearing several denticles; mandible narrow, its masticatory margin with 3 teeth including the large apical tooth; frontal carina short, not extending beyond the level of the posterior margin of the torulus; parafrontal ridge absent; mesosoma in profile with dorsal margin almost flat; promesonotum laterally margined with ridges; propodeal junction angled, encircled by a thin rim; subpetiolar process developed, subrectangular. *A. doydeei*, however, can be readily distinguished from *A. javanus* as follows: occipital margin of head in profile rounded (Fig. 7), while angled in *A. javanus* (Fig. 14); petiole almost as long as high, but clearly longer than high in *A. javanus* (Fig. 14). *A. doydeei* is most similar to *A. nishimurai* (Figs. 10–12), but is clearly larger than *A. nishimurai* and has the sides of the pronotum that are reticulated with smooth bottoms (smooth in *A. nishimurai*).

The type series from Laos and three colonies from Thailand were collected from disturbed areas in the night. Thus this species is very probably nocturnal. In a colony (TH08-SKY-16) observed in Thailand we saw workers preying on *Pheidole plagiaria*.



Figs. 10–16. 10–12, *Aenictus nishimurai* worker. 10, head in full-face view; 11, habitus in profile; 12, dorsal view. 13 & 14, *Aenictus javanus* worker. 13, head in full-face view; 14, habitus in profile. 15 & 16, *Aenictus cf. fuchuanensis* worker. 15, head in full-face view; 16, habitus in profile.

Aenictus cf. *fuhanensis* Zhou (Figs. 15–16).

Measurements. Worker (n = 10): TL 2.75–3.25 mm; HL 0.58–0.68 mm; HW 0.60–0.75 mm; SL 0.43–0.53 mm; ML 0.93–1.08 mm; PL 0.23–0.25 mm; CI 104–108; SI 70–76.

Diagnosis. Head entirely smooth and shiny, slightly shorter than broad and widened anteriorly; antenna 10-segmented; anterior clypeal margin feebly concave, lacking denticles; mandible narrow, with large apical tooth followed by 3 denticles. Mesosoma entirely microreticulate; promesonotum convex dorsally; propodeal junction acutely angulate; declivity of propodeum weakly concave, encircled by a thin rim. Petiole and postpetiole entirely micropunctate. Petiolar node convex dorsally, elevated posteriorly; subpetiolar process low and indistinct. Head reddish brown with vertex darker, mesosoma more blackish, petiole and postpetiole dark reddish brown, and gaster slightly yellowish. Typhlatta spot absent.

Material examined. Plantation, 221 m alt., Sivilay Village, Naxaythong Dist., Vientiane, Laos, 10 VI 2010, WJT10-LAO13 (W. Jaitrong leg., THNHM), LA10-SKY-058 (Sk. Yamane leg., SKYC).

Distribution. Laos.

Remarks. The present specimens agree well in size and structure with the original description of *A. fuhanensis* Zhou, 2001. However, thus far we have had no chance to examine its type specimens, and thus at the moment our material is designated *A. cf. fuhanensis*.

Aenictus hodgsoni Forel, stat. nov. (Figs. 3–4).

Aenictus fergusonii var. *hodgsoni* Forel, 1901: 474.

Aenictus fergusonii: Wilson, 1964: 462 (part); Bolton, 1995: 59 (part).

Types. *Aenictus fergusonii* var. *hodgsoni*: Six syntype workers (2 pins, three on each pin) from Moulmain, Burma (MHNG, examined). One worker among them (bottom on a pin) is designated as the lectotype, the others as paralectotypes.

Measurements. Worker lectotype and paralectotypes (n = 6): TL 3.50–3.70 mm; HL 0.75–0.78 mm; HW 0.63–0.68 mm; SL 0.60–0.65 mm; ML 1.05–1.13 mm; PL 0.23–0.25 mm CI 83–87; SI 96–100.

Redescription of the lectotype and paralectotypes. Head in full-face view slightly longer than broad, with sides slightly convex; occipital margin almost straight, bearing a narrow carina. Antenna 10-segmented; scape relatively short, not reaching the posterolateral corner of the head; antennal segments II–X each longer than broad; II almost as long as each of III–VI. Frontal carina short, not extending beyond the level of the posterior margin of the torulus; parafrontal ridge absent. Clypeus short, with its anterior margin bearing several denticles. Mandible subtriangular, its masticatory margin with a large apical tooth followed by a medium-sized subapical tooth and 5–6 denticles; basal margin of mandible lacking denticles. Promesonotum in profile convex dorsally; propodeum lower than promesonotum, and in profile its dorsal outline almost straight, propodeal junction angulate, right-angled; declivity of propodeum seen from back tapering above; area behind propodeal spiracle and above metapleural gland bulla impressed. Petiole almost as long as high, in profile its dorsal outline strongly convex; subpetiolar process well developed and triangular, its apex directed downward and backward; postpetiole almost as long as petiole, with round node.

Head entirely smooth and shiny. Antennal scape microreticulate, subopaque, but slightly shiny. Pronotum entirely smooth and shiny, its anteriormost portion punctate; mesothorax, metapleuron, and sides of propodeum with dense punctures and several longitudinal rugae; dorsal surface of propodeum almost completely smooth and shiny. Petiole entirely smooth and shiny except for anteriormost portion punctate. Postpetiole entirely smooth and shiny.

Head and mesosoma with relatively sparse standing hairs mixed with sparse short hairs over the surface; length of the longest pronotal hairs 0.30–0.33 mm. Entire body dark reddish-brown. Typhlatta spot present, located anterior to the occipital corner.

Non-type material examined. Open area, Sivilay Village, Naxaythong Dist., Vientiane, Laos, 9 VI 2010, WJT10-LAO11 (W. Jaitrong leg., THNHM), LA10-SKY-007 (Sk. Yamane leg., SKYC).

Distribution. Laos and Myanmar.

Remarks. This species has been confused and synonymized with the most closely related *A. fergusonii*, but can be distinguished from the latter as follows: propodeum partly smooth and shiny (entirely punctate in *A. fergusonii*); propodeum almost straight dorsally in profile (slightly convex in *A. fergusonii*); declivity of propodeum without transverse carina provided with by a distinct transverse carina in *A. fergusonii*). *A. fergusonii* var. *braviceps* Forel from Java is also quite similar to the present species, and its status will be discussed in a separate paper on the species groups of *Aenictus*.

Aenictus nishimurai Terayama et Kubota (Figs. 10–12).

Aenictus nishimurai Terayama and Kubota, 1993: 70. A paratype worker from Chiangmai, N. Thailand in SKY Collection examined.

Measurements. Worker (n = 10): TL 2.05–2.60 mm; HL 0.43–0.53 mm; HW 0.33–0.50 mm; SL 0.20–0.30 mm; ML 0.53–0.80 mm; PL 0.15–0.23 mm; CI 76–100; SI 53–62.

Diagnosis. Head entirely smooth and shiny, longer than broad; antenna 10-segmented; scape short reaching only half length of head; anterior clypeal margin convex, bearing 7–9 denticles; mandible narrow, with 3 denticles including apical tooth. Mesosoma in profile straight dorsally; propodeal junction angulate, right-angled; declivity of propodeum weakly concave, encircled with a thin rim; pronotum smooth and shiny. Petiole convex dorsally; subpetiolar process large and triangular, anterior border straight, posterior border feebly concave. Head, mesosoma and petiole reddish brown; antenna, legs, and gaster yellowish brown. Typhlatta spot absent.

Non-type material examined. Phang Dang Village, Pak Ngum Dist., Vientiane Prov., Laos, 14 VI 2010, W. Jaitrong leg., WJT10-LAO19, Sk. Yamane leg., LA10-SKY-56 (AMK, SKYC, THNHM).

Distribution. Laos and Thailand.

Remarks. *A. nishimurai* is very similar to *A. doydeei* and *A. javanus* (see under *A. doydeei*).

Key to species

1. Anterior clypeal margin with denticles. 2
Anterior clypeal margin lacking denticles. 5
2. Typhlatta spot absent; body yellow to yellowish brown; mandible narrow, its masticatory margin with 3 teeth including apical tooth. 3
Typhlatta spot present; body black, dark brown to reddish brown; mandible subtriangular, its masticatory margin with more than 3 teeth including apical tooth. 4
3. Sides of propodeum reticulate with smooth bottoms.
..... *A. doydeei* Jaitrong et Yamane, sp. nov.
Sides of propodeum almost smooth and shiny.
..... *A. nishimurai* Terayama et Kubota
4. Promesonotum entirely microreticulate and opaque.
..... *A. binghami* Forel
Promesonotum entirely smooth and shiny.
..... *A. hodgsoni* Forel, stat. nov.
5. Anterior clypeal margin feebly concave or almost straight; mandible narrow or linear; with mandibles in closure leaving a gap between mandibles and anterior clypeal margin; antennal scape short, extending half length of head; promesonotum entirely smooth and shiny. *A. cf. fuhanensis* Zhou
Anterior clypeal margin distinctly convex; mandible triangular; with mandibles in closure lacking a gap between mandibles and anterior clypeal margin; antennal scape, extending beyond posterior margin of head; promesonotum entirely densely micropunctate. *A. cf. dentatus* Forel

Acknowledgments

We would like to express our heartfelt gratitude to Dr. Puvadol Doydee (Kasetsart University), who kindly helped us during the field surveys in Laos. We are also grateful to Dr. Bernhard Merz (Muséum d'Histoire Naturelle Geneva, Switzerland) for the loan of the type materials of *Aenictus binghami*, *A. aitkeni normon dentatus*, *A. fergusonii*, and *A. fergusonii* var. *hodgsonii*, and to Dr. Mamoru Terayama for his offer of a paratype of *A. nishimurai*. Dr. Somphachanh Vongphasoo-vanh (Director, Forest Research Center, Laos) kindly allowed us to collect ants in the forests under his management.

References

- Aktaş, N., Radchenko, A.G., Kiran, K., 2004. On the taxonomy of the West Palaearctic Aenictinae ants (Hymenoptera: Formicidae). *Annales Zoologici* 54, 361–364.
- Arnol'di, K.V., 1968. Vazhnye dopolneniya k mirmekofaune SSSR i opisaniye novykh form. *Zoologicheskyy Zhurnal* 47, 1800–1822.
- Bolton, B., 1994. Identification Guide to the Ant Genera of the World. Harvard University Press, Cambridge, Massachusetts. 222 pp.
- Bolton, B., 1995. A New General Catalogue of the Ants of the World. Harvard University Press, Cambridge, Massachusetts. 504 pp.
- Bolton, B., Alpert, G., Ward, P.S., Naskrecki, P., 2006. Bolton's Catalogue of Ants of the World, 1758–2005 [CD-ROM]. Harvard University, Cambridge.
- Forel, A., 1901. Les formicides de l'Empire des Indes et de Ceylan. Part 8. Sous famille Dorylinae. *J. Bombay Nat. Hist. Soc.* 13, 462–477.
- Gotwald, W.H., 1995. Army Ants: The Biology of Social Predation. Cornell University, New York. 302 pp.
- Jaitrong, W., Nabhitabhata, J., 2005. A list of known ant species of Thailand (Hymenoptera: Formicidae). *Thailand Nat. Hist. Mus. J.* 1, 9–54.
- Jaitrong, W., Nur-Zati, A.M., 2010. A new species of the ant genus *Aenictus* (Hymenoptera: Formicidae: Aenictinae) from the Malay Peninsula. *Sociobiology* 56, 449–454.
- Jaitrong, W., Eguchi, K., 2010. A new army ant of the genus *Aenictus* (Hymenoptera: Formicidae) from Thailand. *Thailand Nat. Hist. Mus. J.* 4, 15–20.
- Jaitrong, W., Yamane, Sk., 2010. The army ant *Aenictus silvestrii* and its related species in Southeast Asia, with a description of a new species (Hymenoptera: Formicidae: Aenictinae). *Entomol. Sci.* 13, 328–333.
- Jaitrong, W., Yamane, Sk., Wiwatwitaya, D., 2010. The army ant *Aenictus wroughtonii* (Hymenoptera: Formicidae: Aenictinae) and related species in the Oriental Region, with description of two new species. *Jpn. J. Syst. Entomol.* 16, 33–46.
- Radchenko, A.G., Alipanah, H., 2004. The first record of the subfamily Aenictinae (Hymenoptera, Formicidae) from Iran. *Vestnik Zoologii* 38, 75–78.
- Shuckard, W.E., 1840. Monograph of the Dorylidae, a family of the Hymenoptera Heterogyna. *Ann. Nat. Hist.* 5, 258–271.
- Tang, J., Li, S., Huang, E., Zhang, B., Chen, Y., 1995. Economic Insect Fauna of China Fasc. 47 Hymenoptera: Formicidae (1). Science press, Beijing.
- Terayama, M., 2009. A synopsis of the Family Formicidae of Taiwan (Insecta, Hymenoptera). *Liberal Arts, Bull. Kanto Gakuen Univ.* 17, 81–266.
- Terayama, M., Kubota, A., 1993. The army ant genus *Aenictus* (Hymenoptera: Formicidae) from Thailand and Viet Nam, with descriptions of three new species. *Bull. Bio. Soc. Jpn.* 48, 68–72.
- Terayama, M., Yamane, Sk., 1989. The army ant genus *Aenictus* (Hymenoptera, Formicidae) from Sumatra, with descriptions of three new species. *Jpn. J. Entomol.* 57, 597–603.
- Wheeler, W.M., 1927. Burmese ants collected by Professor G.E. Gates. *Psyche* 34, 42–46.
- Wilson, E.O., 1964. The true army ants of the Indo-Australian area (Hymenoptera: Formicidae: Dorylinae). *Pacific Insects* 6, 427–483.
- Yamane, Sk., Hashimoto, Y., 1999. A remarkable new species of the army ant genus *Aenictus* (Hymenoptera, Formicidae) with a polymorphic worker caste. *Tropics* 8, 427–432.
- Zhou, S., 2001. Ants of Guangxi. Guangxi Normal University, Guilin. 255 pp.
- Zhou, S., Chen, Z., 1999. The ant genus *Aenictus* Shuckard from Guangxi (Hymenoptera: Formicidae). *Guangxi Sci.* 6, 63–64.