TO THE KNOWLEDGE OF THE SUBFAMILY DYNASTINAE (COLEOPTERA: SCARABAEIDAE) FROM THAILAND

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Summary. Three species of the rhinoceros beetles subfamily Dynastinae, Clyster scaurus Prell, 1911; Dichodontus crassus Silvestre, 2001 and Trichogomphus lunicollis Burmeister, 1847, are recorded from Thailand for the first time. A list of 32 rhinoceros beetle species known from Thailand is provided also.

Key words: rhinoceros beetle, Dynastini, Oryctini, fauna, new records, Asia.
INTRODUCTION

Dynastinae Macleay, 1819 is one of the larger beetle subfamilies of the family Scarabaeidae. The members of the subfamily can be found around the world, especially in the tropical zone. Currently about 1,500 species in 225 genera are known (Rolf & Richard, 2016). Among them, over 200 species are found in Southeast Asia. Thirty-two species have been recorded from Thailand (Arrow, 1910; Arrow, 1914; Endrodi, 1969; Endrodi, 1978; Mizunuma, 1999; Dechambre, 1996; Ek-Amnuay, 2002; Rowland, 2006; Rowland, 2011; Jameson & Wada, 2009; Jameson & Drumont, 2013; Jakl & Zidek, 2015; Table 1).

In the course of our examination of the Dynastinae specimens deposited in the Natural History Museum of the National Science Museum, Thailand, we located three species new to Thailand. In the present paper we record these three species with their diagnostic characteristics.

MATERIALS AND METHODS

This study was mainly based on specimens deposited in the Natural History Museum of the National Science Museum, Thailand. The images were taken by a Nikon AF-S Micro NIKKOR 60 mm attached to a Nikon D7000 digital camera. Male genitalia were removed from abdomen then pin-mounted on triangular papers.

The following parts of the body were measured using digital caliper: **BL** – Body Length; **BW** – Body Width.

Abbreviations of the type depositories and others are as follows: **NHMW** – Museum of Natural History Vienna, Austria; **MfN** – Museum für Naturkunde, Germany; **MNHN** – Muséum National d'Histoire Naturelle, France; **OUMNH** – Oxford University Museum of Natural History, UK; **THNHM** – Thailand Natural History Museum.

NEW RECORDS

**Subfamily Dynastinae MacLeay, 1819**

**Tribe Oryctini Mulsant, 1842**

*Claster scaurus* Prell, 1911

Figs 1–5

*Claster scaurus* Prell, 1911: 208. Type locality: Cochinchine [VIETNAM], Saigon [Ho Chi Minh] (MfN).

**MATERIAL.** Thailand: Trat Province, Ko Kud district, Ban Khlong Chao, 19.IV 2009, 1♂ (THNHM-I-10052, THNHM), T. Jeenthong leg.; Trat Province, Muang district, Laemglad, Lan Sai beach, 29.V 2016, 1♀ (THNHM-I-10010, THNHM), T. Jeenthong leg.
Figs 1–5. Clyster scaurus: 1 – male, lateral view; 2 – male, dorsal view; 3 – male genitalia, dorsal view; 4 – male genitalia, ventral view; 5 – male genitalia, lateral view.

DIAGNOSIS. Adult male (Figs 1–2). BL 26 mm, BW 12 mm. Body entirely dark brown; anterior face of pronotum punctate, while posterior face smooth and shiny; elytra finely punctate. This species is most closely related to Clyster itys (Olivier, 1789), a Sundaland species (Figs 6–10), but can be separated from the latter by the following characteristics: 1) anterior face of pronotum flat and steep anteriorly, its posterior margin laterally with two small acute denticles, and ridge connecting the denticles simuate (with two large truncate denticles, and ridge connecting the denticles with a distinct denticle in the latter), 2) area around lateral denticles shallowly depressed (distinctly deeply depressed in the latter, see figs 6–7). Male genitalia (Figs 3–5). In dorsal view, paramere relatively long, broader anteriorly and gradually narrowed medially then suddenly broaden apically; apex of paramere
with strongly convex lateral margin but almost straight inner margin (Fig. 3). In lateral view, paramere strongly curved down, its apex relatively sharp (Fig. 15) (see male genitalia of the closely related species C. itys, Figs 8–10, for comparison).

**DISTRIBUTION.** Vietnam (Prell, 1911; Endrodi, 1974) and Thailand (new record).

**REMARKS.** To date, *C. scaurus* has been known only from the type locality (Ho Chi Minh, Vietnam). We record this species in Thailand for the first time.

**Figs 6–10.** *Clyster itys*: 6 – male, lateral view; 7 – male, dorsal view; 8 – male genitalia, dorsal view; 9 – male genitalia, ventral view; 10 – male genitalia, lateral view.

*Dichodontus crassus* Silvestre 2001

Figs 11–15
**Dichodontus crassus** Silvestre 2001: 225. Type locality: Malaisie, Cameron Highlands (MNHN; images of holotype and paratype available on Muséum National d’Histoire Naturelle Website (2019) were examined).

**MATERIAL EXAMINED.** **Thailand:** Surat Thani Province, Ban Na Sarn District, Plai Nam Subdistrict, 15-28.IX 1987, 1♂ (THNHM-I-10053, THNHM), 4♀ (THNHM-I-10054 to THNHM-I-10057, THNHM), J. Nabhitabhata leg.; Nakhon Si Thammarat Province, Khao Nan National Park, San Yen, 18.IV 2007, 7♀ (THNHM-I-10058 – THNHM-I-10064, THNHM), W. Jaitrong leg.

Figs. 11 – 15. **Dichodontus crassus:** 11 – male, lateral view; 12 – male, dorsal view; 13 – male genitalia, dorsal view; 14 – male genitalia, ventral view; 15 – male genitalia, lateral view.
DIAGNOSIS. Adult male (Figs 11–12). BL 33 mm, BW 19 mm. Body entirely black. Elytra smooth and shiny. This species is closely related to Dichodontus grandis Ritsema, 1882 (Sumatran species), but can be separated from the latter by the following characteristics of the male genitalia (Figs 13–15): 1) parameres symmetry, in dorsal view, paramere weakly concave laterally (strongly concave in D. grandis); 2) lateral margin with a small tooth at middle length (relatively large tooth in D. grandis); 3) in lateral view, paramere subtriangular and bluntly angulate apically. In dorsal view this species is relatively broader than in D. grandis (BL/BW 1.71–1.86 in D. crassus vs 1.84–2.00 in D. grandis).

DISTRIBUTION. Thailand (new record) and W Malaysia (Silvestre, 2001).

REMARKS. The male specimen deposited in THNHM is relatively small compared with the holotype (BL 47 mm), but the specimen agreed well with the images of a paratype (available on https://science.mnhn.fr/institution/mnhn/collection/ec/item/ec4451). Male genitalia of the Thai specimen also agreed well with the images and original description of this species (see Fig. 6 in Silvestre, 2001). Body index (BL/BW) is 1.74 (BL/BW 1.71–1.86 in the type series).

*Trichogomphus lunicollis* Burmeister, 1847

Figs 16–20

*Trichogomphus lunicollis* Burmeister, 1847: 221. Type locality: BORDERINDIEN (OUMNH).

*Trichogomphus lunicollis*: Endrodi, 1974: 348; Mizunuma, 1999: 30.

*Trichogomphus alcides* Snellen van Vollenhoven, 1864: 151. Type locality: BORNEO. [Junior synonym of *Trichogomphus lunicollis*: Arrow, 1928: 74].

*Trichogomphus giganteus* Sternberg, 1907: 352. Type locality: BORNEO (Nord Borneo), Kina-Balu (MfN). [Junior synonym of *Trichogomphus lunicollis*: Endrodi, 1974: 348].

MATERIAL. Thailand: 1♂ (THNHM-I-02645, THNHM), Yala Province, Than To District, Hala-Bala Forest, 1.VI 2014, T. Jeenthong leg.

DIAGNOSIS. Adult male (Figs 16–17). BL 44 mm, BW 23 mm. *Trichogomphus lunicollis* has a black and shining body. Elytra smooth and shiny; pronotum with dense punctures along its margin. This species can be easily separated from the other members of the genus by the following characteristics: 1) pronotum subtriangular (round or subrectangular in the other species); 2) thoracic horn broad, thick and strongly bifurcate (but thoracic horn very small in the Thai specimen); 3) cephalic horn thick and curved up with a small tooth at middle (without tooth in the other species). Male genitalia (Figs 18–20). Symmetric; in dorsal view, paramere relatively long and narrow, with sinuate lateral margin and weakly concave inner margin; posterior margin of paramere roundly convex. In lateral view, paramere narrower apically; apex hook-like and down curved.

DISTRIBUTION. Thailand (new record), W Malaysia (Mizunuma, 1999), Sumatra (Endrodi, 1974; Mizunuma, 1999), Borneo (Endrodi, 1974; Mizunuma, 1999).
REMARKS. *Trichogomphus lunicollis* is a Malayan species, but was inaccurately mentioned as an Indian species by Arrow (1910). The present male specimen was collected from southern Thailand (located in Sundaland).

Figs 16 – 20. *Trichogomphus lunicollis*: 16 – male, lateral view; 17 – male, dorsal view; 18 – male genitalia, dorsal view; 19 – male genitalia, ventral view; 20 – male genitalia, lateral view.

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Table 1. Checklist of subfamily Dynastinae (Scarabaeidae) of Thailand.

| Species                        | Distribution in Thailand | Note                                                                 |
|-------------------------------|--------------------------|----------------------------------------------------------------------|
| Alissonotum cribratellum      | Thailand                 | Endrodi, 1969                                                        |
| (Fairmaire, 1893)             |                          |                                                                     |
| Allomyrina pfeifferi          | Surat Thani              | Hwang, 2011                                                          |
| (Redtenbacher, 1867)          |                          |                                                                     |
| Blaephephorus pinguis         | Chiang Rai, Chiang Mai,  | Ek-Amnuay, 2002                                                      |
| (Fairmaire, 1898)             | Nakhon Ratchasima,       |                                                                     |
|                              | Kanchanaburi, Narathiwat |                                                                     |
| Chalcosoma atlas              | Chiang Mai, Nakhon       | Ek-Amnuay, 2002                                                      |
| (Linnaeus, 1758)              | Ratchasima, Kanchanaburi,|                                                                     |
|                              | Ranong, Satun, Yala,     |                                                                     |
|                              | Pattani, Narathiwat      |                                                                     |
| Chalcosoma chiron             | Chanthaburi, Trat, Surat| Ek-Amnuay, 2002 (referred to as C. caucasus (synonym))              |
| (Olivier, 1789)               | Thani, Nakhon Si         |                                                                     |
|                              | Thammarat, Trang         |                                                                     |
| Clyster itys                  | Chonburi, Songkla        | RBINS, 2019                                                          |
| (Olivier, 1789)               |                          |                                                                     |
| Clyster retusus Arrow, 1908   | Ranong                   | Ek-Amnuay, 2002                                                      |
| Clyster scaurus Prell, 1911   | Trat                     |                                                                     |
| Dichodontus coronatus         | Ranong, Surat Thani,     | Arrow, 1910                                                          |
| Burmeister, 1847              | Narathiwat, Nakhon Si    |                                                                     |
|                              | Thammarat                |                                                                     |
| Dichodontus crassus           | Surat Thani, Nakhon Si   | New record                                                          |
| Silvestre, 2001               | Thammarat                |                                                                     |
| Eophileurus confinis          | Chanthaburi, Bangkok     | Arrow, 1914 (referred to as E. siamensis (synonym)); Jakl & Zidek,  |
| Prell, 1913                   |                          | 2015                                                                |
| Eophileurus malyi Endrodi, 1978| Pattani                 | Endrodi, 1978; Jakl & Zidek, 2015                                   |
| Eophileurus spinosus          | Chiang Mai               | Lamant-Voirin, 1995; Jakl & Zidek, 2015                             |
| Lamant-Voirin, 1995           |                          |                                                                     |
| Eophileurus thailandensis     | Chiang Mai, Nakhon       | Endrodi, 1978; Jakl & Zidek, 2015                                   |
| Endrodi, 1978                 | Ratchasima               |                                                                     |
| Eupatorus birmanicus Arrow, 1908| Mae Hong Son, Tak,       | Ek-Amnuay, 2002                                                      |
|                              | Kanchanaburi, Ranong     |                                                                     |
| Eupatorus gracillicornis Arrow, 1908| Chiang Rai, Chiang Mai,  | Ek-Amnuay, 2002                                                      |
|                              | Petchabun, Loei, Nakhon  |                                                                     |
|                              | Ratchasima, Kanchanaburi,|                                                                     |
|                              | Ratchaburi               |                                                                     |
| Eupatorus siamensis           | Chaiyaphum, Phetchabun,  | Ek-Amnuay, 2002                                                      |
| (Laporte-Castelnau, 1867)     | Loei, Nakhon Ratchasima  |                                                                     |
|                              |                          |                                                                     |
Table 1. Continue.

| Species | Distribution in Thailand | Note |
|---------|--------------------------|------|
| *Microryctes monodon* (Fairmaire, 1893) | Nakorn Ratchasima | Arrow, 1910 |
| *Heteronychus lioderes* Redtenbacher, 1867 | Thailand | Endrodi, 1969; Mizunuma, 1999 |
| *Oryctes gnu* Mohnicke, 1874 | Tak, Kanchanaburi, Pattani, Narathiwat | Ek-Amnuay, 2002 |
| *Oryctes rhinoceros* (Linnaeus, 1758) | Thailand | Ek-Amnuay, 2002 |
| *Pachyoryctes solidus* Arrow, 1908 | Phrae, Lampang | Ek-Amnuay, 2002 |
| *Peltonotus morio* Burmeister, 1847 | Chiang Mai | Jameson & Drumont, 2013 |
| *Peltonotus nasutus* Arrow, 1910 | Thailand | Jameson & Drumont, 2013 |
| *Peltonotus tigerus* Jameson & Wada, 2009 | Phetchabun | Jameson & Wada, 2009; Jameson & Drumont, 2013 |
| *Trichogomphus galeatus* Dechambre, 1996 | Kanchanaburi | Dechambre, 1996 |
| *Trichogomphus lunicollis* Burmeister, 1847 | Yala | New record |
| *Trichogomphus martabani* (Guerin-Meneville, 1834) | Chiang Mai, Phetchabun, Kanchanaburi, Ratchaburi, Nakorn Ratchasima, Chanthaburi | Ek-Amnuay, 2002 |
| *Trichogomphus mongol* Arrow, 1908 | Chiang Mai | Ek-Amnuay, 2002 |
| *Trypoxylus dichotomus politus* Prell, 1934 | Chiang Rai | Ek-Amnuay, 2002; Hwang, 2011 |
| *Xylotreps mishiechi beckeroide* Rowland, 2006 | Thailand | Rowland, 2006 |
| *Xylotreps siamensis* Minck, 1920 | Thailand | Rowland, 2011; Hwang, 2011 |

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