

[研究文章 Research Article]

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Notes on an Earth-boring Scarab Beetle Species (Coleoptera: Geotrupidae) Collected from Snake Corpse in Taiwan

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Abstract. An earth-boring scarab beetle species, *Phelotrupes (Sinogeotrupes) insulanus* (Howden, 1965), was collected from a snake corpse in Central Taiwan, which is identified as *Ovophis makazayazaya* (Takahashi, 1922). This is the first record of *Phelotrupes* species collected from the snake corpse in Taiwan.

Key words: Necrophilous beetles, *Phelotrupes*, snake corpse, Taiwan

Introduction

The family Geotrupidae, also known as earth-boring scarab beetles, is featured by their characteristic biology to excavate burrows in which to lay eggs. Typically, geotrupids are detritivores while some are coprophagous (e.g., Nuorteva, 1977; Gennard, 2007). The Genus *Phelotrupes* include about 50 described species, and distributed in the Palaearctic and Oriental Regions (Ochi et al. 2017a). There are four described species in Taiwan: *Phelotrupes (Sinogeotrupes) insulanus* (Howden, 1965), *P. (S.) taiwanus* (Miyake & Yamaya, 1995), *P. (Eogeotrupes) chenwenlongi* Ochi, Masumoto & Lan, 2017 and *P. (E.) formosanus* (Miwa, 1930) (Ochi et al., 2017b).

Among the species, Howden (1965) described a new species, *Geotrupes insulana*, based on the specimens collected from Hassenzan [=Baxianshan, Taichung, Taiwan], Formosa, which equivalent to the present species, *P. (S.) insulanus* (Masumoto, 2014; Masumoto et al. 2015; Ochi et al. 2017b). Although the feeding habits of this species in cow dung and human dung have been recorded (Masumoto et al. 2015), the ecological record of their feeding habits is still not enough. The present study is the first record of a geotrupid species attracted by snake corpse.

Material and methods

In September 2017, a *Phelotrupes* species was collected under the snake corpse of *Ovophis makazayazaya* (Takahashi, 1922) (fig. 3) by hand from the dry ditch near Dasyueshan Logging Road. All photographs were taken by OLYMPUS PEN lite E-PL6 Camera and an OLYMPUS M. ZUIKO DIGITAL ED 60mm F2.8 Macro lens with two Kawasaki DF-480 SPEEDLITE flashlights. The voucher specimen was deposited in the B.-H. Ho's private collection, Taipei, Taiwan (BHC).

Results

Phelotrupes (Sinogeotrupes) insulanus (Howden, 1965)

Chinese name: 島嶼掘地金龜、島嶼掘穴金龜、島嶼雪隱金龜

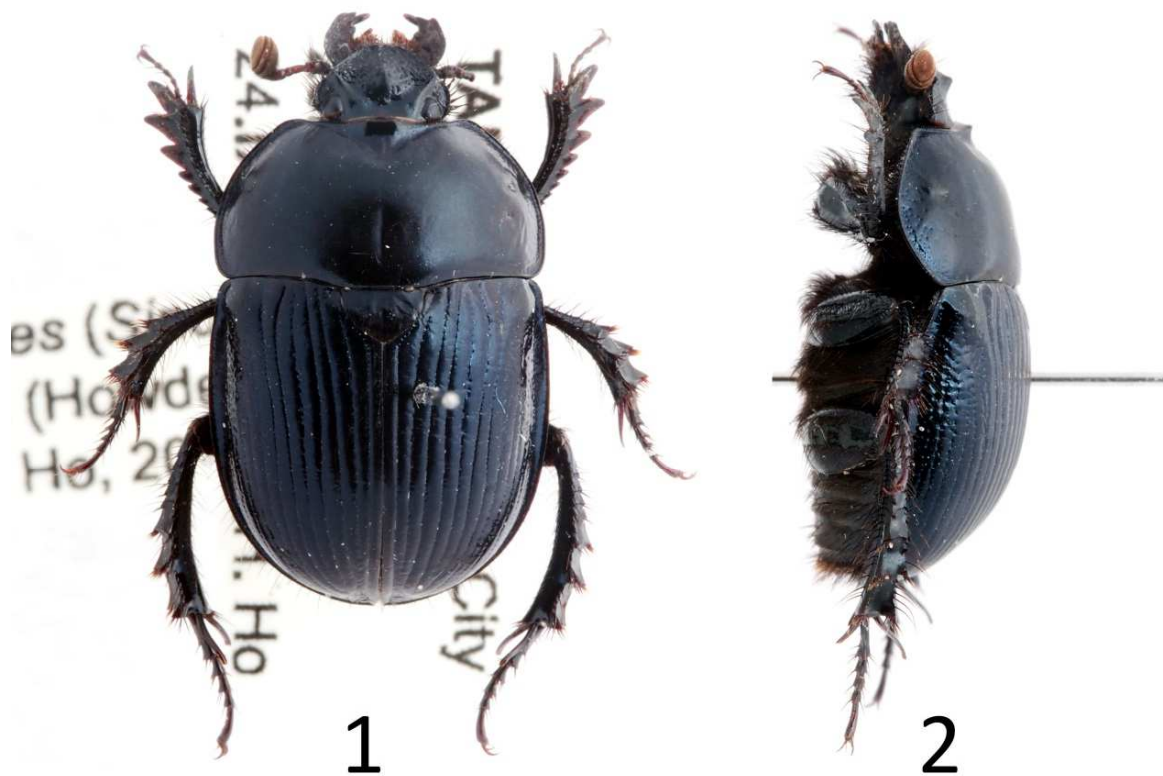
(Figs. 1–2)

Phelotrupes (Sinogeotrupes) insulanus (Howden, 1965)

Geotrupes insulana Howden, 1965

Material examined. 1♀, TAIWAN: Taichung Co./ Dasyueshan (大雪山), Heping/ alt. 2025m/ by snake corpse (*Ovophis makazayazaya*)/ 24. IX. 2017, Bin-Hong Ho & Yu-Hsiang Ho leg. (BHC).

Distribution. Taiwan and China (Fujian). (Howden, 1965; Masumoto, 2014; Masumoto et al. 2015; Ochi et al., 2017b)



Figures 1–3. Voucher specimen of *Phelotrupes (Sinogeotrupes) insulanus* (Howden, 1965) and natural snake corpse. 1–2. *P. (S.) insulanus*, female: 1. dorsal view; 2. lateral view. 3. A natural snake corpse, *Ovophis makazayazaya* (Takahashi, 1922).

Discussion

The importance of Geotrupidae on the forensic entomology has been documented. It is useful in indicating whether a body has been moved or not (Gennard, 2007). Our new discovery will be valuable in the future forensic entomological research in Taiwan. On the other hand, recent studies on the forest ecology have confirmed the significance of necrophilous beetles, which can be used as indicator species for monitoring the impacts of long-term climate changes on the species composition and community structure (Halffter & Favila, 1993; Hwang & Koh, 2013; Hwang et al., 2014). However, no earth-boring scarab beetle has been collected in these surveys. It is therefore the first record of this family on the corpse. The present paper not only improves the basic biological information on *Phelotrupes* (*Sinogeotrupes*) *insulanus* but also contributes on the future studies on the forensic entomology and forest ecology.

Acknowledgment

We are deeply grateful to Mr. Wei-Chieh Hsu (Institute of Wildlife Conservation, National Pingtung University of Science and Technology, Pingtung, Taiwan.) for identifying the species of snake corpse.

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臺灣首次自蛇類屍體中採集掘地金龜之短記 (鞘翅目：掘地金龜科)

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摘要: 島嶼掘地金龜 *Phelotrupes* (*Sinogeotrupes*) *insulanus* (Howden, 1965) 在瑪家山烙鐵頭 *Ovophis makazayazaya* (Takahashi, 1922) 的屍體中被發現，這是臺灣的掘地金龜屬自蛇屍中採集的首次野外觀察記錄。

關鍵詞: 親屍性甲蟲、掘地金龜屬、蛇屍、臺灣