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Dienerella (*Dienerella*) *beloni* (Reitter): A Newly Recorded Species of Latridiidae (Coleoptera) in Taiwan

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ABSTRACT

The genus *Dienerella* Reitter and species *Dienerella* (*Dienerella*) *beloni* (Reitter) were recorded in Taiwan for the first time. Scanning electron microscope photographs and the morphological characteristics of adults are presented. The distribution and occurrence of *D.* (*D.*) *beloni* are also discussed.

Key words: Latridiidae, *Dienerella*, *Dienerella* (*Dienerella*) *beloni*, indoor, new record

Introduction

Latridiidae consists of approximately 800 species and 30 genera distributed worldwide (Rücker, 2018). These tiny beetles can be recognized by the following characters: Body length of 1~3 mm, body color brown to black, oval-shaped, flattened to slightly convex, surface usually punctate or impunctate. Prothorax usually narrower than elytra, 3-3-3 tarsi formula, antennae with usually 10 or 11 segments. Some species with white waxy exudates on surface of their bodies (Chan and Lee, 2016; Majka *et al*., 2009). Most species in this family feed on fungi and can be found in damp environments, such as leaf litter, rotten wood, the bark of dead trees, and the nests of mammals, birds, ants, and termites (Bousquet, 1990; Chan and Lee, 2016; Majka *et al*., 2009). Two subfamilies of the Latridiidae family, Latridiidae Ericson and Corticariinae Curtis, each of them has been confirmed to have a monophyletic relationship; however, their generic relationship requires further study (Lord *et al.*, 2010).

Eight species of Latridiidae have been recorded in Taiwan (Chan and Lee, 2016), but until now, the genus *Dienerella* had not been identified. This is the first time that a *Dienerella* species has been discovered in Taiwan. The genus contains 2 subgenera, *Dienerella* Reitter and *Cartoderema* Reitter, and 40 species (Rücker, 2015; Rücker, 2018). In the Palearctic realm, 24 species have been found (Johnson, 2007), some of which have been discovered in stored products, such as grain. Although they do not cause any damage to the stored grains, their presence may indicate high humidity, and if present in large numbers, they may dirty the food with their feces and cause economic losses

(Bousquet, 1990; Hinton, 1941; Majka *et al.*, 2009).

One species, *Dienerella* (*Dienerella*) *beloni* was first reported in Taiwan living in an indoor environment. This article provides the morphological information of this species and its presence in Taiwan.

Materials and Methods

Specimens were collected and preserved in dry conditions for morphological observation. Colored photographs were taken using a Canon EOS 650D camera with a Canon MP-E 65 mm f2.8 lens and a Zeiss Axioskop 2 microscope. Specimens used for scanning electron microscope were dehydrated directly in absolute ethanol and subsequently put into a 45°C oven overnight. Finally, these specimens were mounted onto a stub and then ion-beam sputter-coated with platinum-palladium alloy. All photos were taken using a scanning electron microscope (Hitachi VP-SEM SU1510). The terminology used herein follows Park (2013) and Rücker (2018). The specimens were deposited in the National Museum of Natural Science (NMNS), Taichung, Taiwan.

Results

Genus *Dienerella* Reitter, 1911, new to Taiwan

Type species: *Latridius elegans* Aubé, 1850

Diagnosis:

Eyes small, with fewer than 20 facets; temples long; procoxae separated by a prosternal process; dorsal body glabrous or with short setae, elytra with eight or fewer rows of punctate striae (Majka *et al*., 2009; Park, 2013; Rücker, 2018).

Subgenus *Dienerella* Reitter, 1911

Cartoderema Reitter, 1908

Microgramme Walkley, 1948: 150; Johnson, 2007: 637.

Type species: *Latridius filiformis* Gyllenhal, 1827

Diagnosis:

Small, yellow-red to yellow-brown, often filigree-looking beetles of varied structure; mostly spread over warmer regions with approximately 40 species; eyes usually very small and often consisting of few facets; antennae inserted at large distance from eyes at front edge of forehead.

Remarks:

The genus *Dienerella* is divided into two subgenera. The subgenus *Cartoderema* has a pronotum with lateral margins deeply constricted under the middle, which is almost always surrounded by a milky white excretion. The elytra are mostly oval-shaped, and the fifth interval of the elytra is raised and keel shaped. The subgenus *Dienerella* has a slightly heart-shaped pronotum and a narrowly set off lateral margin, a bulbously set off lateral margin, or a broad flatly set off-lateral margin, without any excretions. The elytra are mostly elongated, dotted in rows, and with more or less raised intervals on the surface (Rücker, 2018).

Dienerella (*Dienerella*) *beloni* (Reitter, 1882) (Figs. 1-8)

Cartodere beloni Reitter, 1882: 164; Belon, 1889: 83; Hinton, 1941: 196.

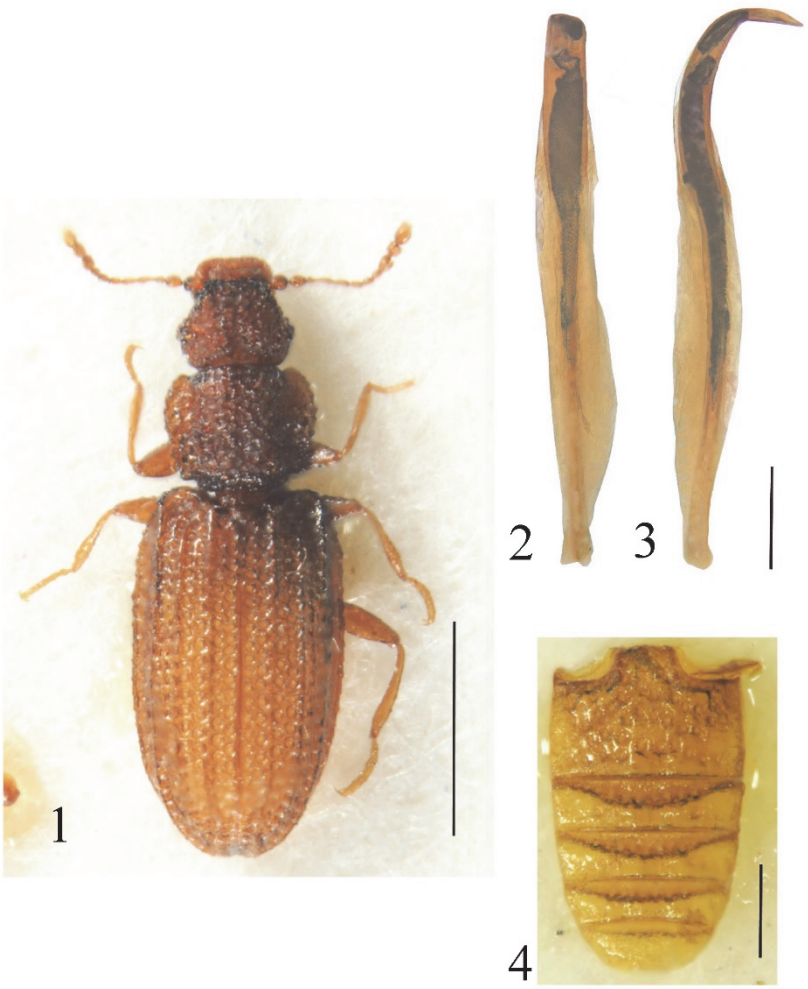
Cartodere elegans, Reitter (nec Aubé), 1881: 16; Belon, 1881: 203.

Dienerella beloni, Johnson, 2007: 637; Hagstrum & Subramanyam, 2009: 207, 637; Rücker, 2015: 5; Rücker, 2018: 382.

Description. Length: 1.31~1.53 mm. Width: 0.46~0.52 mm. General body color yellowish brown to reddish brown; posterior end of head and clypeus, dark brown; antennae reddish brown; legs brown to dark brown with dark brown trochanter.

Head (Fig. 5). Slightly longer than wide, width to length ratio 1:0.76, strongly punctate; base of head depressed; clypeus weakly punctate, narrower than head; temples long, about as wide as eye; antennae have 11 segments; fourth and fifth segments about twice as long as wide and much longer than third and sixth segments (Fig. 6); apical three segments clubbed, with sensilla at apex; eyes weakly developed, with six facets; head weakly punctate in ventral aspect, labrum fully covers mouthparts.

Pronotum (Fig. 7). Slightly wider than long, width to length ratio 1:0.85, widest at anterior third, lateral margins weakly marginated, punctate entirely; both sides with broad and flat depression, slightly dentate, weakly punctate; with a transverse groove at posterior end.



Figs. 1~4. *Dienerella* (*Dienerella*) *beloni*. 1. Habitus, dorsal view. 2. Aedeagus, ventral view. 3. Aedeagus, lateral view. 4. Abdomen, ventral view. Scale bars: 1 = 1 mm; 2~3 = 10 μm; 4 = 50 μm.

Elytra (Fig. 8). Elongate oval, width to length ratio 1:1.86, broader than thorax, narrowest at base, rounded at apex, sides weakly pubescent; with eight puncture striae, striae 3, 4, 5, and 6 incomplete, connected by interstriae 3; interstriae 3, 5, and 7 carinate; interstriae 7 strongly carinate, weakly pubescent; interstriae 3 and 5 merged near apex; interstriae 7 complete; scutellum broadly triangulate, with scale-like surface.

Abdomen (Figs. 4, 9). Sternite I long, about three times longer than sternite II, strongly punctate, sparsely covered with setae; sternites II~V with row of punctures along anterior side, sparsely covered with setae.

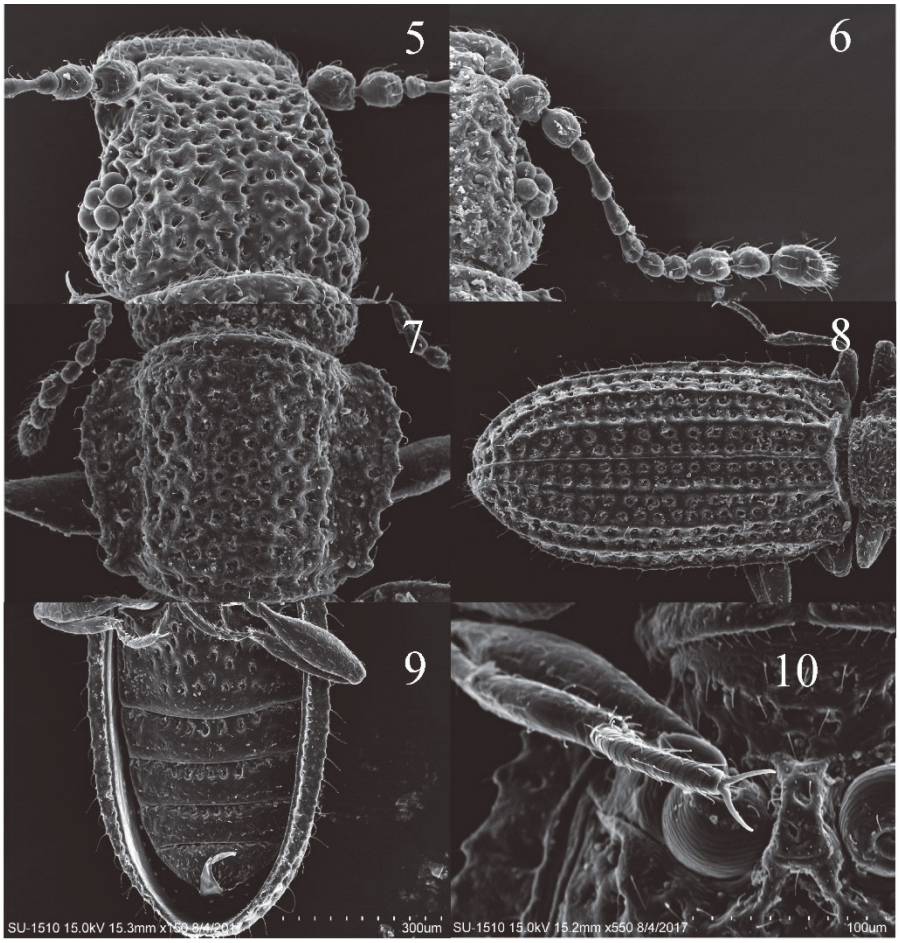
Leg (Fig. 10). Coxae round, procoxae separated by prosternal process; tarsi 3-3-3, tarsomere 3 longer than 1 and 2 combined; arolium indistinct.

Aedeagus (Figs. 3, 4). Slender, subparallel in dorsal aspect, hooked in lateral aspect.

Material examined: TAIWAN: TAIPEI: Nankang District (in house), 3♂10♀, 19.VI.2016, W. L. Cheng leg. Da'an District (in house), 1♀, 17.XI.2016, T. Y. Chou leg. TAICHUNG, Xitun District, 3♀, 16.VI.2013, on wood floor, C. L. Shih leg. North District, NMNS (indoor): 1♀, 23.II. 2014, in fluid-preserved collection room, M. L. Chan leg (NMNS).

Distribution: Europe, Afrotropical region, Neotropical region, Hong Kong, Japan, China, Taiwan (new record). Rücker (2018) mentioned that the distribution of this species in European countries was isolated; therefore, it might have been introduced from Asia, Africa, or the Neotropical region.

Remarks. The holotype of this species is



Figs. 5~10. *Dienerella* (*Dienerella*) *beloni*. 5. Head, dorsal view. 6. Antennae, dorsal view. 7. Pronotum, dorsal view. 8. Elytra, dorsal view. 9. Abdomen, ventral view. 10. Tarsi.

deposited in Hungarian Natural History Museum (HNHM, Budapest, Hungary). This species is similar to *Dienerella* (*Dienerella*) *pilifera* (Reitter), a species also recorded in the Oriental region; however, the species can be easily distinguished by the following characteristics: (1) the fourth and fifth segments of the antennae are much longer than the third and sixth segments in *D.* (*D.*) *beloni*, and (2) the lateral margins of the pronotum are not as parallel as those of *D.* (*D.*) *pilifera*.

Reitter (1881) first identified the specimens collected from Belgium as *Cartodere elegans* (Aubé) (=*D.* (*D.*) *elegans*). In his description, he noticed that these specimens differed from the original description of *C. elegans,* with a shorter pronotum, as well as long and slightly dense hairs on the elytra. However, he considered these characteristics as intraspecific variations. He also described the fourth and fifth segments of the antennae as much longer than the other segments in his description of *C. elegans*. Reitter (1882) mentioned that he collected the real *C. elegans* specimens from the wall of a stable in Bolzano, Italy in April and found that they were all glabrous. He then declared the Belgian specimens a new distinct species and named them *C. beloni* (=*D.* (*D.*) *beloni*). These specimens were supposedly imported with cigarettes from the West Indies (Reitter, 1882). Although Belon did not observe the specimens of *C. beloni*, in his supplement to the monograph of French Latridiidae (Belon, 1889), he summarized the characteristics and provided an integrated description of *C. beloni*.

Discussion

Zhou *et al.* (1999) mentioned that *D.* (*D.*) *beloni* was often found in high-moisture traditional Chinese medicines and grain products as well as breweries and warehouses; however, according to illustrations they provided, it might have been misidentified. Ren

(2014) recorded collecting the species mainly from rice, and Rücker (2018) mentioned that this species was found on moldy vegetable waste. These records demonstrate this species to be associated with stored products, and based on our specimens, it is mostly associated with indoor environments. In addition, it seems to be often found in commodities imported from overseas; we found one individual on an *Allium* flower from the Netherlands. However, the natural habitats and biology of this species require further study. This is the first time the genus *Dienerella* has been recorded in Taiwan, despite the numerous species in neighboring countries, such as Japan and China; therefore, more *Dienerella* species can be expected to be discovered in Taiwan.

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臺灣產一新紀錄種姬薪蟲 *Dienerella* (*Dienerella*) *beloni* (Reitter) (鞘翅目：姬薪蟲科)

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摘　要

役姬薪蟲屬 (*Dienerella*) 及貝隆役姬薪蟲 *Dienerella* (*Dienerella*) *beloni* (Reitter) 首次記錄於台灣，本文提供成蟲之形態及掃描式電子顯微鏡圖及特徵，其分布與發生也一併在此討論。

關鍵詞：姬薪蟲科、役姬薪蟲屬、貝隆役姬薪蟲、室內環境、新記錄種