

A New Record of the Octochaetine Earthworm *Dichogaster saliens* (Beddard, 1892) from the Centro-western Taiwan

台灣新紀錄種蚯蚓 *Dichogaster saliens* (Beddard, 1892)

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Abstract

This paper describes the octochaetine earthworm *Dichogaster saliens* (Beddard, 1892) as a new record from the centro-western Taiwan. It is a small earthworm with two gizzards, belonging to the family Octochaetidae, and widely distributed in the tropical and subtropical zones.

摘要

本文描述一台灣新紀錄種蚯蚓 *Dichogaster saliens* (Beddard, 1892)。其為小型蚯蚓，屬於八毛蚓科 (Octochaetidae) 重胃蚓屬 (*Dichogaster*)，廣泛分布於全球熱帶與副熱帶地區。

**Key words:** *Dichogaster saliens*, earthworm, Taiwan

**關鍵詞:** *Dichogaster saliens*、蚯蚓、台灣

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## Introduction

*Microdrilus saliens* is a small earthworm with two gizzards. It was described by Beddard (1892) as a new species based on specimens picked out from earth arrived at Kew Gardens, London, England from Singapore, Java and Penang of Malaysia. Eisen (1900) described another new species *Dichogaster crawi* found among roots of plants transported from Honolulu, Hawaii to San Francisco, California. These two species differ slightly in the structure of prostomium and first segment, shape of penial setae and the connection between posterior and anterior calciferous diverticles (Eisen 1900). Later Stephenson (1931a) found *Microdrilus saliens* Beddard, 1892 and *Dichogaster crawi* Eisen, 1900 are synonymous and placed them under *Dichogaster saliens* (Beddard), after examining specimens from Burma and India with characters intermediate between the two species.

*Dichogaster saliens* is widely distributed in the tropical and subtropical zones. It has been reported from Burma (Stephenson 1931b; Gates 1972), India, Ceylon, Malay Peninsula, Java, Christmas Island, Australia (Michaelsen 1935; Gates 1972; Blakemore 2002), California, El Salvador, Panama, and Africa (Gates 1972). Its discontinuous and transoceanic distribution suggests it to have been widely transported by man. Gates (1958) considered that the Asiatic *Dichogaster* species are presumably all peregrine and distributed by man.

We collected *D. saliens* from bark of rotten dead trees in the yard beside Changyuku Temple in Shengkang, Changhua County of the centro-western Taiwan, where ten specimens of *Dichogaster bolau* (Michaelsen, 1891) were also collected.

The following description is based on these specimens deposited at the Endemic Species Research Institute, Jiji, Nantou, Taiwan. They were fixed in a 10% formalin-water solution and preserved in a 70% ethyl alcohol-water solution.

## *Dichogaster saliens* (Beddard, 1892)

*Microdrilus saliens* Beddard, 1892: 683.

*Dichogaster crawi* Eisen, 1900: 228. -Stephenson, 1920: 258.

*Dichogaster saliens* -Michaelsen, 1900: 343; 1935: 102. -Stephenson, 1931a: 65; 1931b: 199. -Gates, 1935: 93; 1938: 220; 1942: 134; 1958: 620; 1961: 57; 1972: 281.

**Materials examined.** -Eight mature (clitellate, one dissected) and two immature (aclitellate) specimens collected from Shengkang, Changhua County, Taiwan on 19 June 2003 by M. H. Shen, R. C. Jang and H. P. Shen (coll. no. 2003-22-Shen).

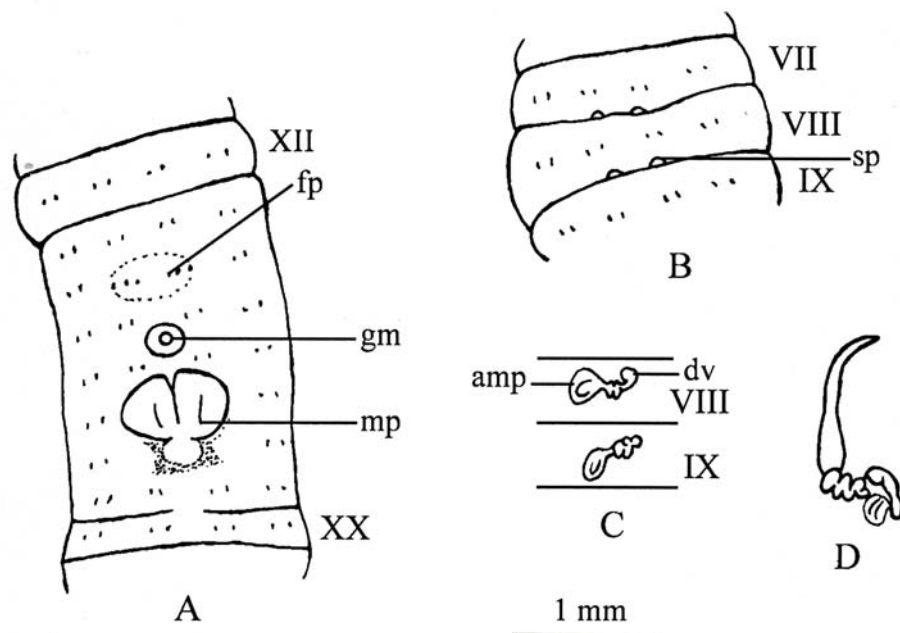
**Description.** -Length (mature) 25-40 mm, weight 0.05-0.15g, diameter 1.7-2.7 mm. Segment number 103-125. Prostomium epilobous. First dorsal pore in 4/5 or 5/6. Setae lumbricin (eight setae per segment), small and closely paired on ventrum, aa:ab:bc:cd=3:1:3:1, ab modified as penial setae in XVII and usually lacking in XVIII. Clitellum XIII-XIX (Fig. 1A), annular but thinner in aa, 1.7-3.2 mm in length, 1.4-2.3 mm in width. Spermathecal pores two pairs in 7/8 and 8/9, medio-ventral, in line with seta a (Fig. 1B). Female pores paired in XIV, each medial to seta a. Genital marking medio-ventral, round, across 15/16. Male pores at posterior ends of grooves within closely paired, transversely diamond-shaped porophores in XVII (Fig. 1A). Specimens brown in color on

anterior dorsum and yellow around clitellum.

Septa thick from 1/2; 5/6-7/8 missing. Crop large in VI. Two muscular gizzards in VII and VIII, yellowish, barrel-shaped, displaced posteriorly to IX and X. Intestine enlarged in XVII. Esophageal hearts in X-XII. Calciferous glands three pairs in XV-XVII, digiform; the first two pairs white in color, the last pair yellowish without external lamellae. Nephridia meroic, saccular, four rows

on each side. Spermathecae small, two pairs in VIII and IX (Fig. 1C). Ampulla oval about 0.25 mm long, with a twist stalk bearing small, spherical, shiny diverticulum. Ovaries flowery in XIII.

Holandry: testes paired in X and XI, small, round. Seminal vesicles lacking or very small in XI, XII or XII. Prostate glands single pair in XVII, long, tubular to tapered, twist duct with penial setae at the end (Fig. 1D).



**Fig. 1.** *Dichogaster saliens* (Beddard): A, ventral view of clitellum and male pore region (fp, female pore; mp, male pore; gm, genital marking); B, ventral view of spermathecal pore region (sp, spermathecal pore); C, dorsal view of left spermathecae (amp, ampulla; dv, diverticulum); D, dorsal view of left prostate gland.

**Remarks.** -Ohfuchi (1957) described *Dichogaster hatomaana* as a new species from Hatoma-jima near Iriomote. It is also a small earthworm with body length of 40-60 mm and diameter of 1.5 mm. Easton (1981) considered that the description

of *D. hatomaana* provided by Ohfuchi (1957) is indistinguishable from that of *D. saliens*. Although most characters between these two species look similar, the narrow genital zone commenced from segment XV and ended in segment XVII described

and illustrated by Ohfuchi (1957) distinctively differ from that of *D. saliens*. Therefore, *D. hatomaana* is retained as a valid species in this study.

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