

# Redescription of *Monolepta sexlineata* Chûjô, 1938 (Coleoptera: Chrysomelidae: Galerucinae)

Chi-Feng Lee<sup>1,\*</sup>

## Abstract

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The taxonomic status of *Monolepta sexlineata* Chûjô, 1938 is evaluated by examining type specimens of all synonyms and specimens collected from various localities. Lectotypes are designated for *Monolepta duvivieri* Jacoby, 1904 and *M. sexlineata* Chûjô, 1938. Diagnostic characters of both sexes are illustrated.

**Key words:** Leaf beetle, Taxonomy, Endophallic sclerite.

## INTRODUCTION

The genus *Monolepta* Chevrolat, 1837 is the most speciose galerucine genus, with about 600 described nominal species (Wagner 2007). Most species have been described from tropical Africa, Asia, and Australia, and few also from the southeastern Palaearctic region, and from the Neotropics (Wilcox 1973). This genus can be diagnosed by two characters: the closed front coxal cavity and the first tarsomere I of hind legs longer than others combined. Kimoto & Takizawa (1997) reported 28 species from Taiwan. One new species, *M. tsoui*, was described by Lee (2009). Two more new species, *M. ongi* Lee and Staines, 2010 and *M. meihuai* Lee, Tian, and Staines, 2010 were described in the following year.

A few species are widespread and not restricted to Taiwan. Their taxonomic status has not been studied except for one species, *M. signata* (Olivier, 1808). Wagner & Bieneck (2012) studied types of its synonyms and confirmed a widespread distribution that ranges

from southern China, Taiwan, and India to New Guinea, and, rarely, northern Australia.

The taxonomic history of *M. sexlineata* is complicated. Jacoby (1904) described *M. duvivieri* from India. However, it is a junior homonym of *Candezea duvivieri* Jacoby, 1897. Weise (1915) proposed a replacement name, *M. lineata* for *M. duvivieri* Jacoby, 1904, but it was still a junior homonym of a species described by Karsch (1882). Thus Wilcox (1973) proposed another replacement name, *M. madrasensis* for *M. lineata* Weise, 1915. Finally, Kimoto (1989) regarded *M. madrasensis* Wilcox, 1973 as a junior synonym of *M. sexlineata* Chûjô, 1938.

*Monolepta sexlineata* Chûjô, 1938 has been recorded from type localities in India and Taiwan and from mainland China by Gressitt & Kimoto (1963), Thailand, Cambodia, Laos, and Vietnam by Kimoto (1989), Sri Lanka by Mohamedsaid (1997), and Nepal by Kimoto & Takizawa (1983). To evaluate the taxonomic status of this species, types of both synonyms

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\* Corresponding author, email: chifeng@tari.gov.tw

<sup>1</sup> Associate Research Fellow, Applied Zoology Division, Taiwan Agricultural Research Institute, Taichung, Taiwan, ROC.

were studied in addition to specimens collected from various countries.

## MATERIALS AND METHODS

To prepare drawings of the adult reproductive systems, the abdomens of adults were separated and boiled in a 10% KOH solution, cleared in distilled water, and then covered by a cover glass on slide glass with glycerin for observation. Specimens were examined and drawings were made using a Leica M165 stereomicroscope. Microscopic slides were examined and illustrated using a Nikon ECLIPSE 50i microscope. Body parts were then stored in glycerin tubes with the dry mounted specimens.

Specimens available for study are deposited in the following collections: BMNH: The Natural History Museum, London, UK; EUMJ: Ehime University, Matsuyama, Japan; KMNH: Kitakyushu Museum of Natural History and Human History, Kitakyushu, Japan; SDEI: Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany; TARI: Taiwan Agricultural Research Institute, Taichung, Taiwan.

Exact label data are cited for all type specimens; a double slash (//) divides the data on different labels and a single slash (/) divides the data in different rows. Other comments and remarks are indicated as follow: (p) preceding data are printed, (h) preceding data are handwritten, (w) white label, (b) blue label, (g) green label, and (r) red label.

## RESULTS AND DISCUSSION

### *Monolepta sexlineata* Chûjô

*Monolepta duvivieri* Jacoby, 1904: 404 (India; nec Jacoby, 1897).

*Monolepta lineata* Weise, 1915: 177 (replacement name for *Monolepta duvivieri* Jacoby, 1904; nec Karsch, 1882); Maulik, 1936: 398 (redescription); Hartmann & Medvedev, 2003: 169 (Nepal).

*Monolepta madrasensis* Wilcox, 1973: 562 (replacement name for *Monolepta lineata* Weise, 1915); Kimoto & Takizawa, 1983: 89 (Nepal); Kimoto, 1989: 150 (as synonym of *Monolepta sexlineata* Chûjô, 1938); Sprecher-Uebersax, 2000: 145 (Nepal).

*Monolepta sexlineata* Chûjô, 1938: 150 (Taiwan); Chûjô, 1962: 127 (redescription); Gressitt and Kimoto, 1963: 632 (China: Hainan, Guangdong); Kimoto, 1989: 150 (Thailand, Cambodia, Laos, Vietnam); Yu *et al.*, 1996: 172 (China: Guaxi); Mohamedsaid, 1997: 6 (Sri Lanka); Medvedev, 1999: 183 (Nepal); Kimoto, 2003: 34 (Sri Lanka); Hartmann & Medvedev, 2003: 169 (Nepal).

**Type Specimens Examined.** *Monolepta duvivieri*: Lectotype ♀ (BMNH), here designated, labeled: “Nilgiri Hills [p, w] //Type [p, w; circle label with red border] // 912 [h, w; red letters] // *Monolepta/Duvivieri*/Jac. [h, b] // Jacoby Coll./1909 28a [p, w] // **OriGa**/Specimen ID: [p] /93 [h] /specimen data/documentated [p] / 27.VIII2008 [h, w]”. Paralectotype: 1 ♀ (BMNH): “Nilgiri Hills [p, w] //Type [p, r] // 912 [h, w; red letters] // *Monolepta/Duvivieri*/Jac. [h, b] //Andrewes/Bequest/B.M. 1922-221. [h, w]”.

*Monolepta sexlineata*: Lectotype ♂ (left elytron lost; TARI), here designated, labeled: “Tainan/Formosa/H. Sauter [p] IV.19 [h, w] // CO/Type [p, yellow letters, circle label with yellow border] // *Monolepta/sexlineata*/CHÛJÔ [h] /DET. M. CHUJO [p, w] //1379 [p, w]”. Paralectotypes: 1 ♀ (SDEI): “Tainan/Formosa/H. Sauter [p] IV.19 [h, w] //Syntypus [p, r] // *Monolepta/sexlineata*/CHÛJÔ [h] /DET. M. CHUJO [p, g] //DEI Müncheberg/Col – 05711 [p, g]”; 1 ♀ (TARI): “Anping/Formosa/H. Sauter V.1912 [p, w] //CO/Type [p, yellow letters, circle label with yellow border] // *Monolepta/sexlineata*/CHÛJÔ [h] /DET. M. CHUJO [p, w] //1364 [p, w]”; 1 ♂ (SDEI): “Anping/Formosa/H. Sauter V.1912 [p, w] // 7 IV. [p, w] // Syntypus [p, r] // *Monolepta/sexlineata*/CHÛJÔ [h]

/DET. M. CHUJO [p, g] //DEI Müncheberg/ Col – 05710 [p, g]”.

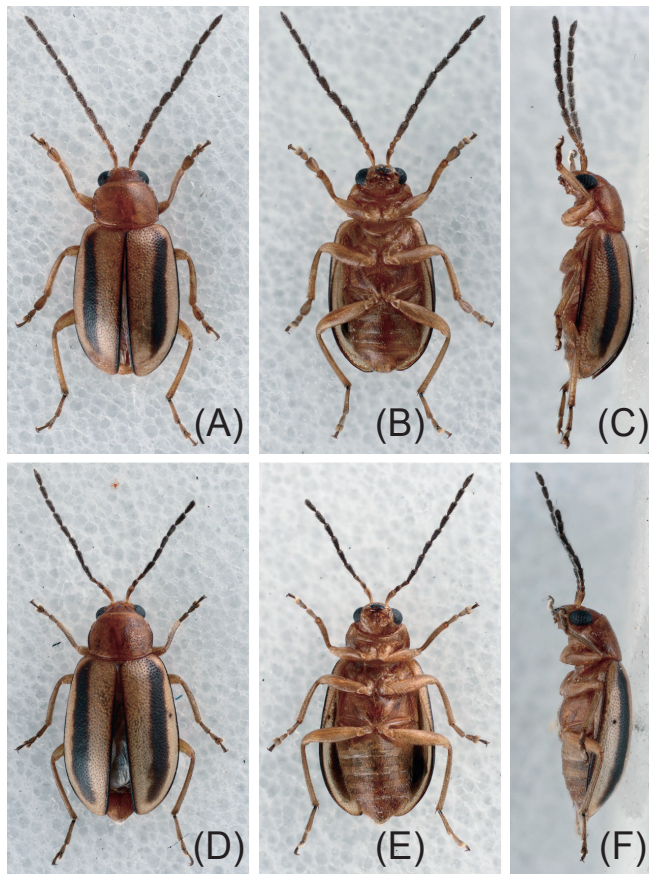
**Additional Specimens Examined.**

**INDIA:** Assam: 1♀, Kaziranga, 75 m, 7-9.V.1976, leg. Wittmer (KMNH); **LAOS:** 1♂, Muong Sing, NW of Luang Prabang, 650 m, 6-10.VI.1960, leg. L. W. Quate (KMNH); 1♂, Sedone Prov., Paksong, 18.V.1965, leg. P. D. Ashlock (KMNH); **SRI LANKA:** 1♂, Polonnaruwa, 10.III.1976, leg. Ziegler (KMNH); Kandy Dist.: 1♀, Kalgomuwa, 29.I.1974, leg. A. Otake (EUMJ); Matale Dist.: 2♀♀, Sigiriya, 19.IV.1975, leg. A. Otake (EUMJ); 2♂♂, same but with “10.V.1975” (EUMJ); **TAIWAN:** Pingtung: 1♂, Kenting, 15.V.2010, leg. C.-S. Chiu & Y.-C. Lan (TARI); 1♂, same locality, 14.IX.2011, leg. Y.-C. Lan & Y.-H.

Peng (TARI); 1♀, Lanren River, 16.VI.2010, leg. Y.-C. Lan & Y.-H. Peng (TARI); 1♀, Longluan Lake, 26.IV.2011, leg. S.-Y. Lee (TARI); 2♂♂, 1♀, same but with “30.VI.2011” (TARI); Tainan: 2♂♂, Chiku, 20.IV.2010, leg. T.-H. Lin (TARI); Taipei: 5♂♂, 1♀, Kuantu, 17-18.IV.2013, leg. S.-F. Yu (TARI); **THAILAND:** 1♀, Chiang Mai, 9.VI.1965, leg. K. Morimoto (KMNH); 1♂, Fang Spa, 21.XI.1968, leg. K. Hatta (EUMJ).

**Remarks.** *Monolepta sexlineata* is characterized by its color pattern: the yellowish brown elytron with one longitudinal black stripe beginning behind the humerus and abbreviated apically, and the black suture and lateral margin (Fig. 1).

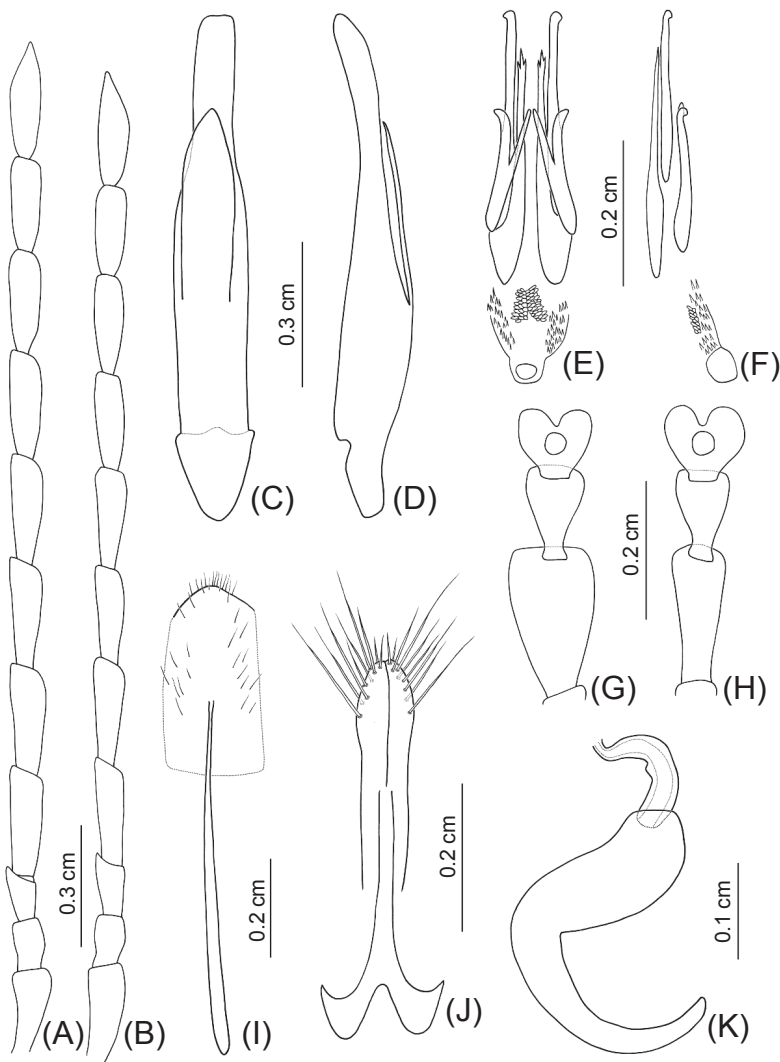
**Males.** Length 2.8–3.5 mm, width 1.3–1.6



**Fig. 1.** Color habitus of *Monolepta sexlineata*. (A) Male, dorsal view; (B) Ditto, ventral view; (C) Ditto, lateral view; (D) Female, dorsal view; (E) Ditto, ventral view; and (F) Ditto, lateral view.

mm. Color yellowish brown (Figs. 1A–1C); antenna black but three basal tarsomeres paler, elytron with one wide, longitudinal black stripe extending from behind humerus and abbreviated at apical 1/4; lateral margins darkened but apically and basally abbreviated, suture black. Head smooth and without punctures. Antenna (Fig. 2A) filiform, about 0.85 times as long as body, ratio of length of antennomeres II to XI about 1.0 : 1.1 : 2.2 : 2.2 : 2.2 : 2.2 : 2.1 : 1.8 : 2.3; ratio of length

to width from antennomere II to XI about 1.7 : 2.0 : 3.3 : 3.1 : 3.2 : 3.3 : 3.3 : 3.3 : 3.1 : 3.7. Pronotum rectangular; 1.38–1.44 times wider than long; lateral margins arcuate; disc evenly convex and with dense coarse punctures. Elytra elongate, 1.54–1.55 times longer than wide; parallel-sided; disc with dense and coarser punctures than pronotum. Front and middle tarsomeres I apically and asymmetrically swollen (Fig. 2G). Penis (Figs. 2C and 2D) extremely elongate, about 6.8 times longer



**Fig. 2.** Diagnostic characters of *Monolepta sexlineata*. (A) Antenna, male; (B) Antenna, female; (C) Penis, dorsal view; (D) Penis, lateral view; (E) Endophallic spiculae, ventral view; (F) Endophallic spiculae, lateral view; (G) Tarsi of front leg, male; (H) Tarsi of front leg, female; (I) Ventricle VIII, female; (J) Gonocoxae; and (K) Spermatheca.

than wide; parallel-sided, abruptly widened at basal 1/4, apex slightly concave; tectum elongate and with pointed apex; slightly curved at basal 1/4 in lateral view; internal sac with two pairs of median endophallic spiculae (Figs. 2E and 2F), one with apex recurved, the other with apex pointed and disc with several teeth; one pair of lateral endophallic spiculae deeply bifurcate, outer one with apex recurved; dense ventral endophallic spiculae surrounding base.

**Females.** Length 3.2–3.6 mm, width 1.6–1.7 mm. Similar to male (Figs. 1D–1F); antenna relatively shorter than male (Fig. 2B), about 0.71 times as long as body, ratio of length of antennomeres II to XI about 1.0 : 1.1 : 2.0 : 2.0 : 1.8 : 1.8 : 1.8 : 1.8 : 1.7 : 2.2; ratio of length to width from antennomere II to XI about 1.8 : 2.0 : 3.8 : 3.7 : 3.4 : 3.4 : 3.4 : 3.4 : 3.2 : 3.9. Front and middle tarsomeres I normal and not swollen (Fig. 2H). Gonocoxae (Fig. 2J) slender, tightly combined from apical 1/3 to near base, base well separated, tightly connect with each other from apical 1/3 to apex; each gonocoxa with nine setae from apical 1/6 to apex, apex rounded. Ventrite VIII (Fig. 2I) weakly sclerotized; apical margin widely rounded, with dense short setae at apex, and several long at sides, spiculum extremely elongate. Spermathecal receptaculum (Fig. 2K) swollen; pump extremely slender and curved; sclerotized spermathecal duct short and narrow.

**Biological Notes.** This species inhabits lowlands below 200 m elevation. Some individuals were collected using light traps. Some were observed feeding on flowers of *Youngia japonica* (Compositae) under laboratory conditions.

**Distribution.** Cambodia, China, India, Laos, Nepal, Sri Lanka, Taiwan, Thailand, Vietnam.

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# 六線長腳螢金花的分類回顧 (鞘翅目：金花蟲科：螢金花蟲亞科)

李奇峰<sup>1,\*</sup>

## 摘要

李奇峰。2016。六線長腳螢金花的分類回顧 (鞘翅目：金花蟲科：螢金花蟲亞科)。台灣農業研究 65(1):1-7。

本文針對六線長腳螢金花蟲 (*Monolepta sexlineata* Chûjô, 1938) 的分類地位做評估，檢查所有同物異名的模式標本及世界各地所採集的非模標本，針對 *Monolepta duvivieri* Jacoby, 1904 及 *M. sexlineata* Chûjô, 1938 指定其選模標本，並對不同性別的診斷特徵以線圖描繪。

關鍵詞：金花蟲、分類學、內囊骨片。

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\* 通訊作者：chifeng@tari.gov.tw

<sup>1</sup> 農委會農業試驗所應用動物組副研究員。台灣 台中市。