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Sidastrum paniculatum (L.) Fryxell, A Newly Naturalized Species in Taiwan

臺灣的新歸化種——多花沙稔

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Abstract: A newly naturalized genus and species, *Sidastrum paniculatum* (L.) Fryxell (Malvoideae Burnett, Malvaceae), native to the New World Tropics, was found in Qiaotou District, Kaohsiung City, southern Taiwan. The genus *Sidastrum* Baker f. is closely related to the genus *Sida* L., and its schizocarp has only one seed per mericarp. The genus *Sidastrum* can be differentiated from the genus *Sida* by its calyx without ribs and relatively fragile mericarps. A detailed morphological description and photographs of this newly naturalized species have been provided to facilitate identification.

Keywords: newly recorded genus and species, Malvaceae, Sidastrum, *Sidastrum paniculatum*, Taiwan, taxonomy

摘要：在臺灣南部高雄市橋頭區發現原產於新世界熱帶地區的新歸化屬與種*Sidastrum paniculatum* (L.) Fryxell (Malvoideae Burnett, Malvaceae)。沙稔屬 (*Sidastrum Baker* f.) 與金午時花屬 (*Sida* L.) 有密切相關，其離果中每個分果僅一粒種子。沙稔屬與 金午時花屬的區別在於其花萼無稜和分果相對脆弱。本文提供此新歸化種的詳細形態描述和照片，以方便識別。

關鍵字：新記錄屬與種，錦葵科，沙稔屬，多花沙稔，臺灣，分類學

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Introduction

The subfamily Malvoideae, comprising approximately 110 genera and 1,730 species, is the largest subfamily of Malvaceae. It is distributed predominantly in tropical regions, with a few representatives in temperate regions (Lima and Conceição 2016). Fryxell (1979) corrected the genus *Sidastrum* Baker f. and revised it from one to seven species (Fryxell, 1978). Among them, three species, *Sidastrum micranthum* (A. St.-Hil.) Fryxell, *Sidastrum multiflorum* (Jacq.) Fryxell, and *Sidastrum paniculatum* (L.) Fryxell, were distributed in Neotropical regions (Wagner et al., 1999, Lima and Conceição, 2016). Baker (1892) summarized genera of Malveae, Fryxell (1978, 1979) revised the genus *Sida* and *Sidastrum*, and Wang et al. (2017) described the characteristics of the genus *Sidastrum*. The genus *Sidastrum* and the species *S. micranthum* have been found in parts of Asia (Shimpale et al. 2009), including China (Wang et al. 2017).

In 2020, an unknown species was found in Qiaotou District, Kaohsiung City, which has a larger inflorescence, red reflexed corollas, conspicuous pedicel, red stamen tube with 16–20 yellow anthers, and five long white styles. These characteristics of the reproductive organs in this species differ from those of the genus *Sida*. After a review of the genus *Sidastrum* (Lima and Conceição 2016), we identified this plant as *S. paniculatum*, which is a newly recorded genus (*Sidastrum* Baker f.) in Taiwan. In the present study, we provide detailed descriptions and photographs of this species (Fig. 1, 2) to add more information to the flora of Taiwan.

Taxonomic Treatment

Sidastrum paniculatum (L.) Fryxell. Brittonia 30: 453. 1978. 多花沙稔 (Fig. 1, 2)

Sida paniculata Linnaeus Syst. Nat. ed. 10, 2: 1145. 1759.

Herbs or subshrub, 100–120 cm tall or more (Fig. 1B). Stem erect, more branched, pubescent, trichome stellate. Leaf simple, alternate, ovate to elliptical, blade varying much in size, smaller toward the apex of branches and branchlets; proximal 7–12 cm long, distal 3–5 cm long, chartaceous, discolorous, basis obtuse to subcordate, margin crenate or serrate, apex acute to short-acuminate, pubescent on both faces, trichomes stellate; 5- or 7- to 9- palminerved

(Fig. 1E), adaxial surface sparsely and minutely stellate-puberulous (Fig. 1D); abaxial surface stellate-tomentose, indumentum much denser on younger stems, main veins adaxial surface concave and abaxial surface convex; petioles ca. 1/3 length of blade near the lowest leaf, 2–5 mm long near the upper leaf, pubescent; stipules linear, 3–6 mm long (Fig. 2B). Inflorescences paniculate, axillary, and terminal (Fig. 2A); flowers small, very numerous (Fig. 1C), solitary and axillary, usually with an accessory flowering branchlet arising later from the same axil,

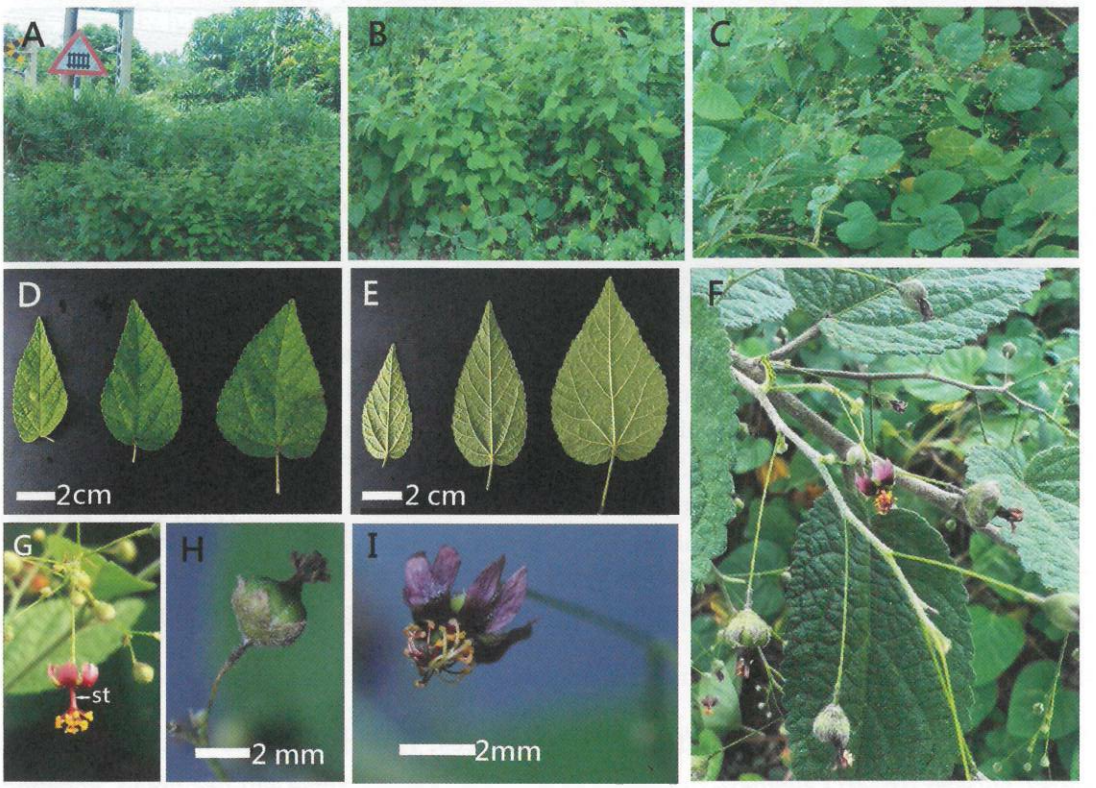

Fig. 1. *Sidastrum paniculatum* (L.) Fryxell. A. a population found in Qiaotou District, Kaohsiung City. B. subshrub, about 100–120 cm in height. C. inflorescences paniculate, flowers numerous. D. leaf adaxial surface. E. leaf abaxial surface, petiole near the lowest leaf longer than near the upper leaf. F. solitary flower with long pedicel. G. corolla reflexed, staminal tube (st) 2–3 mm long. H. schizocarp with calyx lobes; I. flower enlarged, petal deeply lobed at apex, fork-like.

圖1. 多花沙稔 (*Sidastrum paniculatum* (L.) Fryxell)。A. 一個族群出現在高雄市橋頭區。B.亞灌木，高約100–120cm。C.花序圓錐狀，花多數。D.葉正面。E. 葉背面，近地面的葉柄比遠離地面的葉柄長。F.單花，小花梗長。G.花冠反捲，雄蕊筒(st)長 2–3 mm。H.具花萼裂片的離果。I.花放大，花瓣在先端深裂，叉狀。

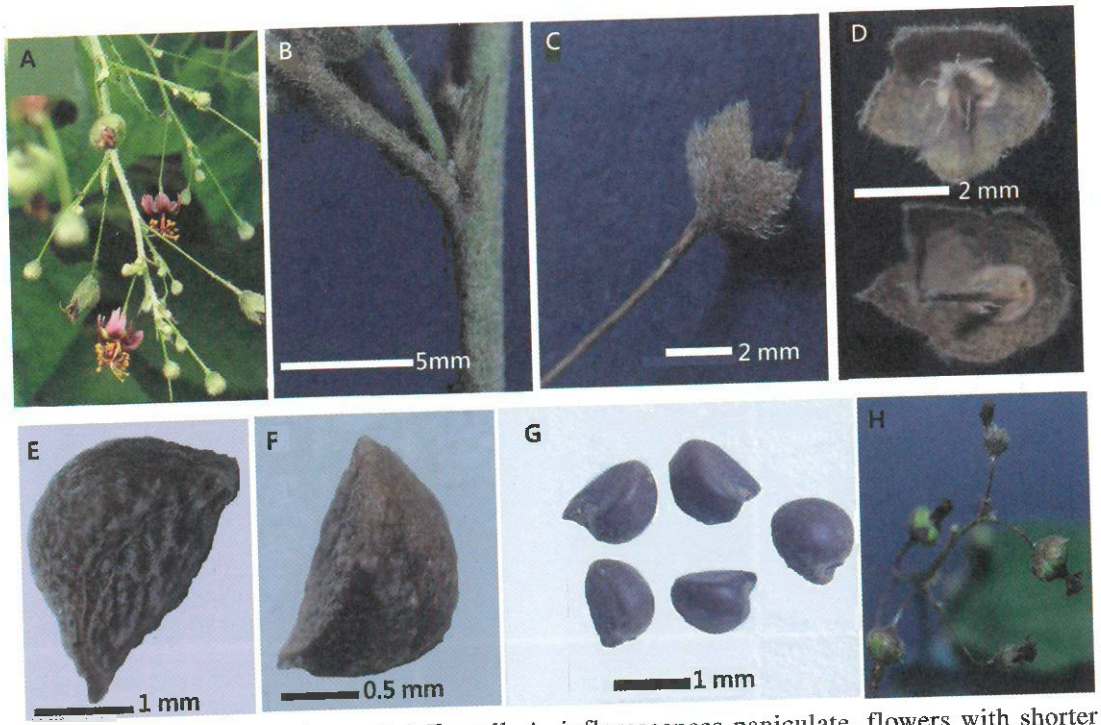

Fig. 2. *Sidastrum paniculatum* (L.) Fryxell. A. inflorescences paniculate, flowers with shorter pedicel. B. stipules linear, 3–6 mm long. C. calyx tube cupuliform, unribbed. D. calyx lobes deltoid, acute, pubescent, stellate trichomes white. E. mericarp brown, lateral face reticulate, fragile. F. mericarp trigonous, lateral walls firm, indehiscent. G. seeds trigonous or rounded, brown. H. calyx lobes enclosing half the fruit.

圖2. 多花沙稔 (*Sidastrum paniculatum* (L.) Fryxell)。A. 花序圓錐狀，小花梗長。B. 托葉線形，長 3–6 mm。C.萼筒杯狀，無稜。D.萼裂片三角形，銳尖，短柔毛，星狀毛白色。E.分果棕色，側面網狀，易碎。F.分果三棱，側壁堅固，不裂。G.種子三稜或圓形，棕色。H.萼裂片覆蓋1/2果實。

ultimately forming open paniculiform inflorescences, flowering branchlets racemose and slender; calyx campanulate, 2–3 mm long, lobes cupuliform, unribbed (Fig. 2C), externally with stellate trichomes (Fig. 2D), internally simple trichomes on the apex, calyx lobes acute at the apex, ca. 1–1.5 mm long, enclosing half the fruit (Fig. 2H); corolla spatulate or obovate, 3 mm long, 1.5–2 mm wide, reflexed (Fig. 1G), deep purple or vinaceous, glabrous, petals deeply lobed at the apex, fork-like; stamens ca. 16–20, 4–7 mm long, staminal tube purple (Fig. 1G), 2–3 mm long, hairy, subequal to corolla, free portion of the stamens 1–2 mm long, concentrated at the apex of the tube; anther yellow; carpels 5, uniovulate, ovary ca. 1 × 1 mm,

globose, simple trichomes at the apex, styles 5 (Fig. 1I), exserted, 4–5 mm long, pallid, connate basally; stigmas capitate; pedicels capillary, 1–3.5 cm long (Fig. 1F), often subtended by 3 stipuliform bracts, articulated above the middle, few swollen, with few, minute stellate hairs or glabrous. Schizocarp not inflated; oblate to conic, not indurate, often stellate-hairy; mericarps 5, trigonous, 2.5–4.5 mm long, yellow-brown, pubescent, stellate trichomes white, lateral face lightly reticulate (Fig. 2E), fragile, lateral walls firm (Fig. 2F), indehiscent; peduncles long, pubescent; seed 1 in each mericarp, trigonous or nearly rounded (Fig. 2G), ca. 1.2–1.5 mm long, brown, sparsely hairy or glabrous.

Distribution: Native to the New World Tropics, tropical and subtropical America, and introduced into African and Asian regions, for example Cameroon, Canary Islands, Central African Republic, Hawaii, Sudan, and China.

Habitat: Naturalized and common in fields and disturbed sites. Only one population was found in sandy and sandy loam soils near the railway tracks in Qiaotou District, Kaohsiung City (Fig. 1A). This species has many small flowers, with numerous yellow anthers, indicating beekeeping potential.

Taiwan specimen examined: Kaohsiung: Qiaotou sugar factory, *Hsiao and Yang* 001, *September 24, 2022* (PPI).

In summary, we do not know how the species was introduced to this local site, but it had been able to reproduce mature fruits and amount of seedlings in the wild. This population, located along the railway tracks, occupied an area of approximately 10 m^2, and has been mowed every once in a while. Mowing activities and other disturbances may influence its growth and abundance. Owing to the many small flowers with numerous stamens (16–20) bearing yellow anthers, the plant has the potential to serve as bee flora. It is important to observe and monitor the habitat of this newly identified species, along with its ecological implications.

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Dicranopteris latiloba (Gleicheniaceae), A Newly Recorded Fern from Taiwan

臺灣新紀錄蕨類——闊羽芒萁(裡白科)

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Abstract: In this paper, we report a newly recorded fern, *Dicranopteris latiloba* (Rosenst.) Y.H.Yan & Z.Y.Wei (Gleicheniaceae), in Taiwan. This species is most similar to *D. taiwanensis* Ching & P. S. Chiu but can be morphologically distinguished by its presence of bracts embracing buds and its absence of well-developed accessory branches at the base of ultimate pinnae. Here we provide background data of taxonomy, distribution, habitat, photographs, conservation state, notes and a key to the *Dicranopteris* species in Taiwan for identification.

Keywords: *Dicranopteris*, newly recorded, pteridophytes, Taiwan

摘要：本文報導臺灣新紀錄蕨類—闊羽芒萁 (*Dicranopteris latiloba* (Rosenst.) Y.H.Yan & Z.Y.Wei)。本種近似於臺灣芒萁 (*D. taiwanensis* Ching & P.S.Chiu)，可藉由休眠芽具苞片及末回羽片不具發育良好的副枝與之區別。本文提供分類、地理分布、生育地、照片、保育等級、註記及臺灣的芒萁屬物種檢索表以供鑑定。

關鍵字：芒萁屬、新紀錄、蕨類、臺灣。

Introduction

The fern genus *Dicranopteris* Bernh. (Gleicheniaceae) is comprised of about 20 species with pantropical distribution (PPG I, 2016; Wei *et al.*, 2021). Members of this genus are generally characterized by pseudo-dichotomous, scrambling branches with dormant buds in

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the axils of forks and pectinated segments. Furthermore, they often form dense clumps and are one of the dominant species in natural habitats after disturbance due to resistance to critical environments. Variable morphology, such as in pinnae size, veins forking patterns, stipules and number of sporangia per sorus, and widespread distribution (Marpaung and Susandarini, 2021; Wei *et al.*, 2021) may result in taxonomic challenging in this genus, especially in *D. linearis* (Burm.f.) Underw., of which 13 infraspecific taxa have been identified (Holttum, 1959). Consequently, further phylogenetic and systematic research are indispensable to clarify their taxonomic status.

In the Flora of Taiwan (Devol, 1975; Devol and Shieh, 1994), four varieties under *Dicranopteris linearis* are recognized: var. *linearis*, var. *montana* Holtt., var. *subpectinata* (Christ) Holtt. and var. *tetraphylla* (Rosenst.) Nakai. On the contrary, Kuo (1985 and 1999) synonymized var. *montana* under *D. taiwanensis* Ching & P.S.Chiu and elevated the other three varieties to species rank. Afterward, Kuo's (1985 and 1999) treatment was followed by other floristic works for Taiwanese ferns (Knapp, 2011, 2014; Hsu *et al.*, 2019; TPG, 2019, 2022). In a recent study (Wei *et al.*, 2021), the phylogenetic result agree with Kuo's treatment (1985 and 1999) which 4 species including *D. linearis, D. subpectinata* (Christ) C.M.Kuo, *D. taiwanensis* Ching & P.S.Chiu and *D. tetraphylla* (Rosenst.) C.M.Kuo is recorded in Taiwan (Knapp, 2011, 2014; Hsu *et al.*, 2019; TPG, 2019, 2022).

During recent field and herbarium surveys, a morphologically disparate taxon was observed that does not resemble to any of these previously recorded *Dicranopteris* in Taiwan (TPG, 2019, 2022). After examining fresh and herbarium materials and consulting floristic literature of adjacent georegions, we confirmed and herein report a newly recorded taxon, *Dicranopteris latiloba* (Rosenst.) Y.H.Yan & Z.Y.Wei, in this paper. Moreover, our preliminary molecular data from Taiwanese materials also confirmed its species identity (TPG, unpublished). Here we provide background data of its nomenclature, distribution and habitats. We also provide an updated key to the *Dicranopteris* species in Taiwan. In addition, their conservation status in Taiwan based on the International Union for Conservation of Nature and Natural Resources (IUCN) Red List Categories and Criteria (IUCN, 2017) is evaluated.

Materials and methods

Morphological data of *Dicranopteris latiloba* were mainly gathered from field surveys in Taiwan during 2010–2020 and from the specimens preserved in HAST, TAI, TAIE and TAIF. The identities of these materials were clarified by consulting related taxonomic literature and images of related type materials and general collections from the databases of MICH, U and US. We used GeoCAT (Bachman *et al.*, 2011) to help assessing the Extent of Occurrence (EOO) of the discussed species in Taiwan.

Taxonomic treatment

Dicranopteris latiloba (Holtt.) Y.H.Yan & Z.Y.Wei, Front. Plant Sci. 12: 748562: 9. 2021. 闊羽芒萁 (Fig. 1)

≡*Dicranopteris linearis* (Burm. f.) Underw. var. *latiloba* Holttum, Reinwardtia 4: 277. 1957.

Type: PHILIPPINES. Luzon, Benguet, May 1911, *E.D. Merrill 975* (holotype: US- 00134663 image!; isotypes: MICH-1190343 image!, U-1011315 image!).

Distribution: This species was previously known from India, Malaysia, the Philippines and doubtfully from Indonesia (Sulawesi) (Holttum, 1959; Wei *et al.*, 2021), and it is newly recorded from Taiwan. In Taiwan, this species is confined to eastern part of the main island (Hualien and Taitung Counties, Fig. 2), rather abundant throughout the Coastal Mountain Range and also scattered on eastern slopes of the Central Mountain Range.

Habitat: *Dicranopteris latiloba* usually forms large clumps in margins of humid and frequently foggy broad leaved forests at the elevations of 300–1100 m. Sometimes it grows sympatrically with *D. linearis*.

IUCN Red List Category and Criteria: LC. This species has quite large EOO (ca. > 1500 km^2) and no population decline or potential threat has been observed so far.

Moreover, it often forms dense clumps and becomes dominant species in most habitats. Therefore, it was evaluated as least-concern here.

Additional specimens examined: TAIWAN. Hualien County: Fengbin Township, Mt. Chialulan, 700 m, 27 January 2021, *Hsu 13240* (TAIF); Fuli Township, Antungyeh, September

1929, *Yamamoto 143* (TAI); Mt. Antong Crossing Trail, 600–900 m, 11 November 2012, *Lu 24886* (TAIF); Guangfu Township, Kuangfu Logging Trail, 850 m, 2 March 2019, *Lu 31836* (TAIF); Shoufeng Township, Mt. Yuehmei, 300–400 m, 30 September 2019, *Lu 22927* (TAIF); Paipao Stream, 200–250 m, 28 February 2019, *Lu 31800* (TAIF); Wanrong Township, Mt. Lintien, 15 February 1962, *Chao & Feung 62* (HAST); Wanjung Logging Trail, 04 August 2006, *Chen Wade1159* (TAIF); Xincheng Township, XinCheng, 840 m, 01 July 2019, *Knapp 4680* (P); Xiulin Township, Dali Datong Trail, 05 September 2008, *Chang 20080905-002* (TAIF); *Chang 20080905-003* (TAIF); First cableway of Lanshan railway, 750 m, 01 April 1995, *Moore 18066* (TAIE, TAIF, VT); Muhkwashan, 25 July 1961, *Kao 4205* (TAI); Shakatang Logging Trail, 850–950 m, 01 July 2019, *Hsu 11821* (TAIF); Tali, 800 m, 15 March 2021, *ZXC002366* (TAIF); Tali Village, 12 July 2017, *Chen & Lin Wade4866* (TAIF); Yuli Township, Mt. Chihke, 600–850 m, 01 March 2019, *Lu 31824* (TAIF). Taitung County: Changbin Township, Mt. Matailin, 800–1100 m, 10 June 2015, *Hsu 7803* (TAIF); ZhangYuan, 780 m, 03 April 2016, *Knapp 4090* (P); Chenggong Township, Mt. Chilin, 07 February 2014, *Hung 818* (TAIF); Chenggong Township, Mt. Chilin, 1200m–1300m, 17 November 2021, *ZXC002736* (TAIF); Mt. Malaolou East Peak, 800 m, 31 December 2018, *Hsu 11200* (TAIF); Donghe Township, Mt. Tulan, 1100 m, 05 January 2021, *Hsu 13234* (TAIF). PHILIPPINES. Aurora Province: Baler, 08 July 2010, *Lu 20614* (TAIF). Davao del Sur Province: Mt. Apo, 1720–1920 m, 04 May 2012, *Kuo et al.* (TAIF). Mountain Province: Mt. Polis, 31 May 2009, *Liu 9611* (TAIF). Negros Oriental Province: Sibulan Municipality, Balinsasayao Twin Lakes Natural Park, 11 April 2014, *Chen Wade3985* (TAIF). Quezon Province: Lucban Municipality, Mt. Banahaw de Lucban, ca. 700 m, 06 April 2003, *Barcelona 2153* (TAIF).

Note: *Dicranopteris latiloba* is readily differentiated from *D. linearis* by having glabrous (vs. reddish brown hairy) rachises and costae, generally larger ultimate pinnae (ca. 20–30 × 6–12 cm vs. ca. 15–25 × 4–8 cm) and much broader segments (6–7 mm vs. 2–4 mm). Among the congeners in Taiwan (TPG, 2019, 2022), it is most similar to *D. taiwanensis* but can be distinguished by its presence of bracts embracing buds and its absence of well-developed accessory branches at the base of ultimate pinnae.

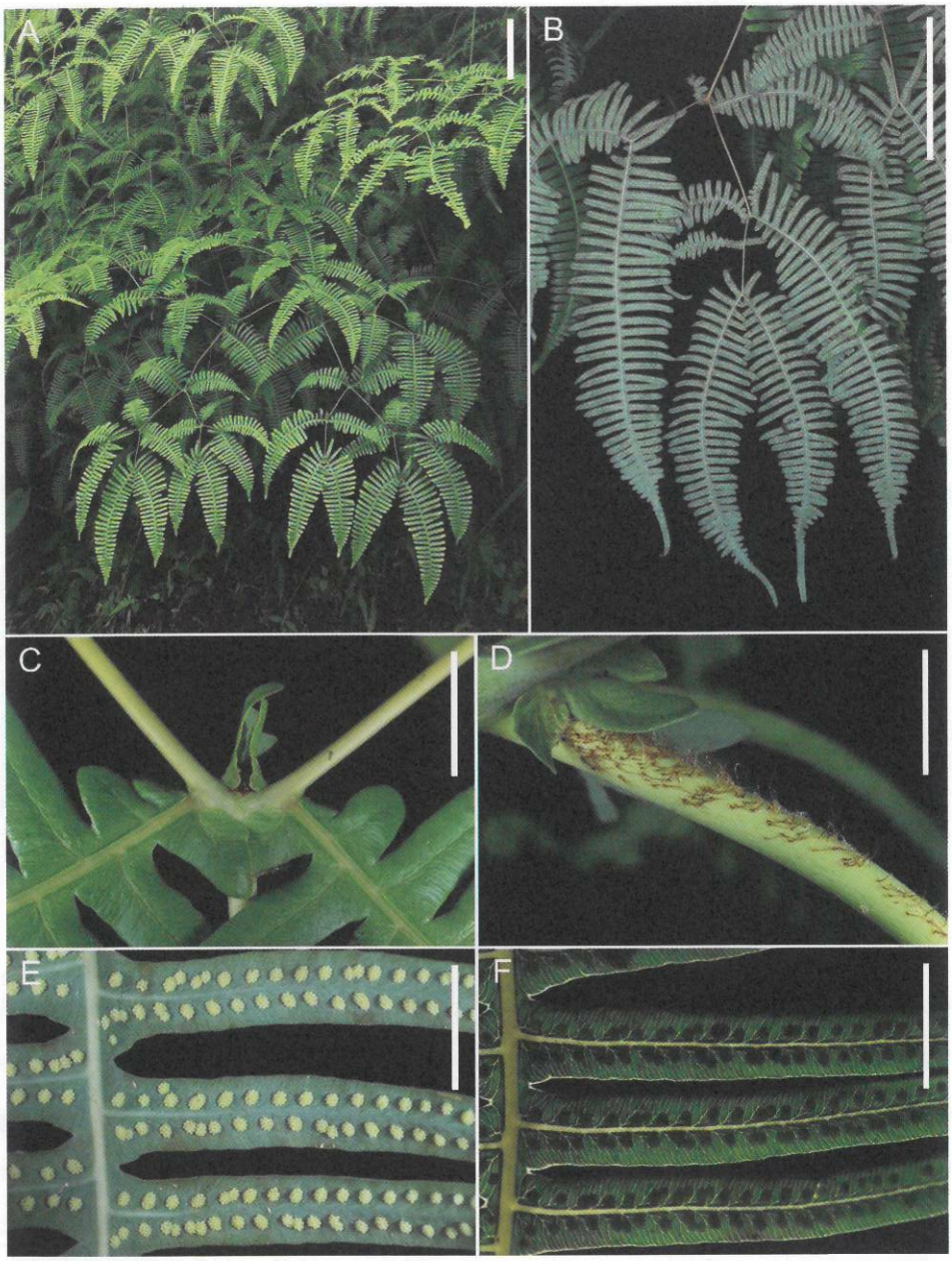

Fig. 1. Morphology of *Dicranopteris latiloba* (Holtt.) Y.H.Yan & Z.Y.Wei, from *Hsu 11821*. A. Habits; B. Ultimate branches; C. Dormant bud with bracts; D. Caducous hairs on very young rachis; E. Sori on abaxial of ultimate segments; F. Ultimate segments with transmitted light, showing venation. Scale bars: A–B = 10 cm; C–F = 1 cm.

圖 1. 闊羽芒萁 (*Dicranopteris latiloba* (Holtt.) Y.H.Yan & Z.Y.Wei), 取自*Hsu 11821*。A. 植株； B. 末回分支；C. 具苞片的休眠芽；D. 早落的毛於嫩枝葉軸上；E. 孢子囊群於末裂片遠軸面；F. 末裂片透光照，展示其脈形。比例尺：A–B = 10 公分; C–F = 1 公分。

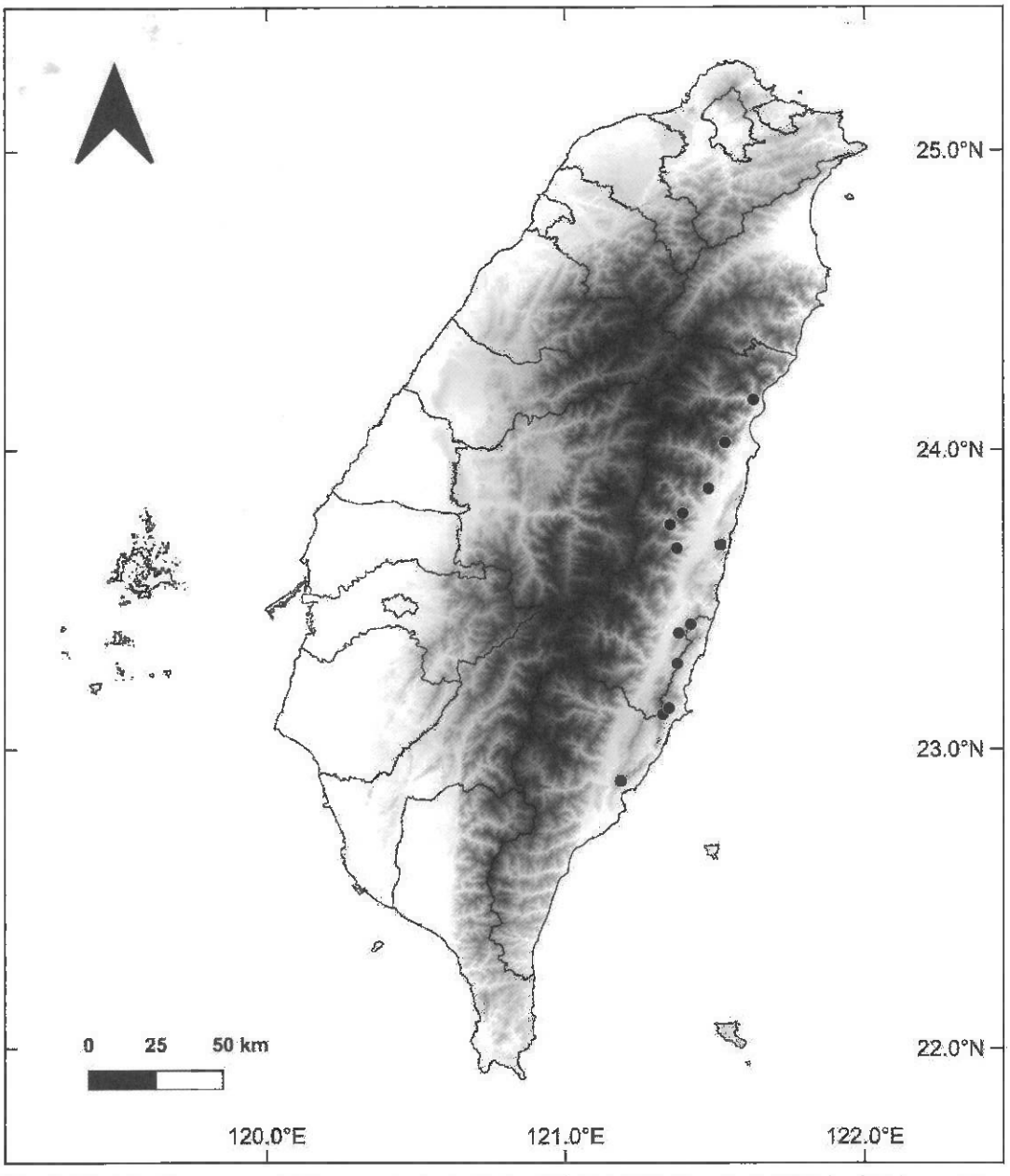

Fig. 2. Distribution map of *Dicranopteris latiloba* (Holtt.) Y.H.Yan & Z.Y.Wei of Taiwan. The location represented by black dots.

圖2. 闊羽芒萁 (*Dicranopteris latiloba* (Holtt.) Y.H.Yan & Z.Y.Wei) 於臺灣的分布圖。黑點表示分布位置。

Key to *Dicranopteris* species in Taiwan

1	Rachises covered with reddish-brown stellate hairs abaxially	2
1a	Rachises glabrous abaxially	3
2	Rachises densely covered with reddish-brown stellate hairs abaxially; ultimate accessory branches absent; branches equal	***Dicranopteris linearis* (Burm.f.) Underw.**
2a	Rachises sparsely covered with reddish- brown stellate hairs abaxially; ultimate accessory branches greatly reduced; branches unequal	***Dicranopteris subpectinata* (Christ) C.M.Kuo**
3	Ultimate accessory branches absent	***Dicranopteris latiloba* (Holtt.) Y.H.Yan & Z.Y.Wei**
3a	Ultimate accessory branches present	4
4	Axillary buds without bracts or fugacious; ultimate branches 4–8 cm wide	***Dicranopteris taiwanensis* Ching & P.S.Chiu**
4a	Axillary buds with bracts; ultimate branches 3–4 cm wide	***Dicranopteris tetraphylla* (Rosenst.) C.M.Kuo**

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臺灣產折角蛾類群名錄與其中文名建議 (鱗翅目：折角蛾科)

A Checklist of Lecithocerid Moths of Taiwan with Comments on Their Suggested Chinese Vernacular Names (Lepidoptera: Lecithoceridae)

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摘要：本研究依據現今折角蛾科分類，以及臺灣生物相已有系統性回顧的前提下，以學名語源、形態學、包含既有華語中文名沿革的文獻整理與其他綜合性評估，針對臺灣產折角蛾科物種，提供中文名芻議選項與優先建議。按文獻整理，臺灣產折角蛾包含2亞科、18屬與85種，本研究在屬級方面提出11個新建議中文名、3個首次建議中文名，種級方面提出38個新建議中文名、39個首次建議中文名。同時提供臺灣折角蛾科物種學名釋義，亦作為首篇以蛾類中文名建議為論述主軸的參考依據，期能藉此先導，廣泛推動華語社群對蛾類與其他昆蟲類群中文名之重視與趨近一致的共識，以此促進生物多樣性的研究與推展教育。

關鍵詞：臺灣、折角蛾科、瘤折角蛾亞科、語源學

Abstract: Based on the current taxonomy of the lepidopteran family Lecithoceridae and the systematic review of the fauna of Taiwan, the present study provides suggestions for the Chinese vernacular names of species in this family of Taiwan according to the etymology of the scientific names, morphology, literature on the history of Chinese vernacular names, and other comprehensive assessments. This study proposes 11 re-evaluated newly suggested Chinese vernacular names and 3 first proposed Chinese vernacular

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names at the genus level, and 38 re-evaluated newly suggested Chinese vernacular names and 39 first proposed Chinese vernacular names at the species level. This study represents the first reference for the suggested Chinese vernacular names of moths. It is hoped that this will serve as a pioneer effort to promote the importance of Chinese vernacular names for moths and other insect groups in the mandarin community and to achieve a consensus for promoting research and education on biodiversity.

Keywords: Taiwan, Lecithoceridae, Torodorinae, etymology

前言

鱗翅目旋蛾總科 (Gelechioidea) 的科級分類歷史十分複雜，不斷更迭，近十年有多篇研究藉由系統發生學方法重新檢視過往科級分類架構，並重新定義各科 (Heikkila et al., 2014; Sohn et al., 2016; Wang & Li, 2020)。綜合前述研究，現今折角蛾科包含Ceuthomadarinae、Lecithocerinae (折角蛾亞科)、Torodorinae (瘤折角蛾亞科)、Crocanthinae與Martyringa group，而臺灣有過往文獻記載的物種目前歸屬於折角蛾亞科與瘤折角蛾亞科。經整理過往文獻，臺灣產折角蛾科已知2亞科、18屬與85種，物種多樣性佔整體鱗翅目1.65%、佔小鱗翅群 (micro moths) 約4.6% (TaiCOL, 2022)，為一群白晝常停棲於森林灌木葉面，而夜間多數會趨向人工光源的類群。近十年隨著臺灣蛾類公民科學的進展，蛾類基礎資料顯著增加 (林旭宏，2021)，據目前統計，折角蛾科以活體為主的野外觀察紀錄，僅佔所有科級的0.37%，對應的科級1996筆紀錄也僅有53筆至少鑑定至屬級，顯示在公民科學與生物相普查上，仍有進一步提升關注的空間。

臺灣生物多樣性豐沛，蛾類物種眾多，若僅以學名稱之，多有不便。從而，本文首度嘗試解構學名，著重形態特徵，遵循分類系統化原則，避免政治、宗教、種族、性別不當聯想，系統性地爬梳過往文獻並芻議中文名 (Chinese vernacular name)，期能協助野外辨識 (望蛾生名)、文字描述 (望名生義) 及口語溝通 (聽音辨物) 之用。

材料方法

考量臺灣產Lecithocerinae的科級中文名逐漸廣用折角蛾科，而非中國為主所使用的祝蛾科，對於既有其下結尾以祝蛾稱之的分類群，芻議結尾改建議稱之為折角蛾。針對

臺灣產折角蛾科屬級與種級建議中文名，首先我們查閱原始發表文獻，提供每個亞科的模式屬、每個屬級的模式種與其產地，以及每個物種的模式產地資訊；其次理解形態差異，再依學名本義、外觀差異、內部構造、模式產地、意象表現 (亦盡量避免政治、宗教、種族、性別不當聯想) 等層次，提出多重選項，並經作者群共識選定單一名稱，期能協助野外辨識 (望蛾生名)、文字描述 (望名生義) 及口語溝通 (聽音辨物) 之用。針對過往未有任何文獻提及中文名的分類群，本研究給定「首次建議中文名 (first proposed Chinese vernacular name) 」，針對過往曾有文獻給定中文名，然依據上述考量而需芻議新名者，給定之新名定義為「新建議中文名 (newly suggested Chinese vernacular name) 」。

結果

本研究收錄臺灣產折角蛾包含2亞科、18屬與85種。在中文名的芻議中，屬級提出11個新建議中文名、3個首次建議中文名，種級提出38個新建議中文名以及39個首次建議中文名。篇末彙整臺灣折角蛾科分類群學名與中文名名錄供快速查找之用。

Lecithoceridae Le Marchand, 1947

折角蛾科 (沿用中文名)

模式屬：*Lecithocera* Herrich-Schäffer, 1853: 45, 207。

Sattler (1973: 163) 將 Lecithocerinae Le Marchand (1947: 153) 由亞科級升至科級。

本科中文名歷來不一，有「祝蛾科、隱蛾科、韁蛾科、曲角蛾科、折角蛾科」等名稱。依年序：劉友樵、白九維 (1982: 13) 稱Lecithoceridae異名之一Timyridae Clarke, 1955為「祝蛾科」。顏聖紘 (1997: 124) 參考中華昆蟲學會1994年編印之「昆蟲綱科以上學名中名對照表」，對誤譯之科名略作修改並加入新增科名之建議，提出「現行鱗翅目昆蟲科級 (不含亞科) 之分類系統」，稱Bucculatrigidae[sic]「折角蛾科」、Lecithoceridae「曲角蛾科」。武春生 (1997) 稱Lecithoceridae「祝蛾科」。王效岳等人 (2000: 132) 稱「隱蛾科」，強調「下唇鬚曲彎」。朴奎澤、王效岳 (2000: 11) 改稱「韁蛾科」。顏聖紘等人 (2022: 316) 改稱Lecithoceridae「折角蛾科」。另改稱Bucculatricidae「稜巢蛾科」。

其中「折角蛾科」逐漸廣泛使用，同時反映「下唇鬚曲彎」之特徵，建議沿用。

Lecithocerinae Le Marchand, 1947

折角蛾亞科 (沿用中文名)

模式屬：*Lecithocera* Herrich-Schäffer, 1853: 45, 207。

Lecithocera Herrich-Schäffer, 1853

折角蛾屬 (沿用中文名)

模式種：*Carcina luticornella* Zeller, 1839。模式標本產地：♂♂, Ungarn (匈牙利) und Laibach (Ljubljana，今斯洛維尼亞首都)。

屬名由希臘語前綴lecitho (源自希臘文λέκιθος)「陰性詞：蛋黃、卵黃。陽性詞：麥片粥、豆粥」(此處作陰性詞解，表顏色)、加希臘語cera (源自希臘文κέρας)「(動物)角」所組成。另拉丁語cera (源自希臘文κηρός)「蠟、蜂蠟」，蜂蠟顏色近土黃色，頗有一語雙關之趣。

Zeller (1839: 197) 描述*luticornella*：「... die Vorderflügel schwarzbraun, die Fühler lehmgelb ...」(前翅深棕色，觸角土黃色)。Herrich-Schäffer (1853: 45) 以德文描述本屬特徵：「... mit dottergelben Palpen und Fühlern, letztere lang und dick ...」(唇鬚與觸角蛋黃色，後者長而厚)；又以拉丁文和德文 (1853: 207) 依*luticornella*描述本屬特徵：拉丁文「Nigrofusca, antennis incrassatis vitellinis, palpis, fronte & orbita luteis.」([翅]黑棕色，蛋黃色觸角厚實，唇鬚、前額及眼圈橘黃色)，德文「Schwarzbraun, die verdickten Fühler dottergelb; Palpen, Stirne und obere Orbita rostgelb.」([翅]黑棕色，蛋黃色觸角厚實，唇鬚、前額及上半眼圈銹黃色)；因此屬名本意係指觸角顏色。

武春生 (1997: 108) 稱本屬「祝蛾屬」，其義不明。TaiCOL (2022) 稱「折角蛾屬」。本屬為模式屬，中文屬名宜從中文科名，建議沿用「折角蛾屬」。

Lecithocera altusana Park, 1999

棕緣折角蛾 (首次建議中文名)

正模標本產地：♂, Minchr, 1160 m, Taoyuan[sic] Co., 9-10 July 1996 (KT Park and JS Lee) (明池國家森林遊樂區)。

臺灣首次紀錄：Park, 1999: 252-253。

Park (1999: 253) 描述本種與其它近似種分辨方法在於：「the dark-brown line running

along the termen, and the male genitalia with valva almost parallelly margined.」(前翅外緣線深棕色，雄蛾交尾器抱器背緣近乎平行)，註明臺灣特有。正模標本圖示參見Park, 2014: e101, fig. 47。

Park解釋語源：「The species name was derived from the Latin «altus» (= high).」。是以種小名由拉丁語altus「高的、滋養的」加拉丁語陰性後綴ana「……的、與……有關的」(通常表達身分、所有權或來源等關係) 所組成，似非描述特徵而在採集地點的海拔高度。

芻議本種中文名按外觀特徵稱為「褐緣折角蛾、棕緣折角蛾」，或按學名本意稱為「高折角蛾」，優先建議「棕緣折角蛾」。

Lecithocera angustiella Park, 1999

狹瓣折角蛾 (新建議中文名)

正模標本產地：♂, Upper Paling 2260 m, Taoyuan Co., 11-12 July 1996 (KT Park and JS Lee) (桃園市復興區上巴陵)。

臺灣首次紀錄：Park, 1999: 251-252。

Park (1999: 252) 解釋語源：「The species name was derived from the Latin "angustus" (= narrow), corresponding to the shape of the narrow valva.」，並註明臺灣特有。

種小名由angusti「狹窄的、狹小的」加拉丁語後綴ella「小型的、小巧的」所組成，係指雄蛾交尾器的抱器形狀狹窄。

Park原始描述本種外觀與近似種*L. chartaca*分辨方法在於：本種前翅中室內側斑點較為明顯且稍大、與中室外側斑點相似，而*L. chartaca*中室內側斑點較中室外側斑點小。正模標本圖示參見Park, 2014: e101, fig. 48。

張明瑞 (2011: 11) 稱本種「窄祝蛾」，應從種小名詞意。研究標本為2隻雌蛾：「本種雌性外生殖器囊導管管壁上有2塊骨化強烈的骨片上下平行排列，可明顯與其它種區別開來。」

芻議本種中文名按斑點特徵稱為「同斑折角蛾」，或按種小名本意稱為「狹瓣折角蛾、窄瓣折角蛾、狹莖折角蛾、窄莖折角蛾」，優先建議「狹瓣折角蛾」。

註：Park註明臺灣特有，張名瑞 (2011: 11) 提及中國湖北五峰後河亦產。

Lecithocera atricastana Park, 1999

黑栗折角蛾 (首次建議中文名)

正模標本產地：♂, Heiganzan (= Hungshan) Taichung Co., 11 Aug. 1943 (A. Mutuura) (平岩山，位於今臺中市和平區平等里環山部落東北方)。

臺灣首次紀錄：Park, 1999: 254-255。

Park (1999: 254-255) 描述外觀特徵：「This species can be distinguished from its allies by the darker brown ground color of the forewing with well-developed, creamy-white median fascia.」，並解釋語源：「The species name was derived from the Latin "ater" (= black) and "castanea" (= brown), corresponding to the dark-brown forewing.」，註明臺灣特有。

故種小名由atri「黑色的、黯黑的 (有別於亮黑niger)」加拉丁語castanea「栗樹、栗色、棕色」、刪除atricastanea詞尾字母anea、加拉丁語陰性後綴ana「……的、與……有關的」(通常表達身分、所有權或來源等關係) 所組成。

芻議本種中文名依種小名詞意與翅色稱為「栗折角蛾、黑栗折角蛾、栗翅折角蛾、黑棕折角蛾」，或依中室明顯長方形黃白色斑塊稱為「白斑折角蛾」(副模標本圖示參見Park, 2014: e101, fig. 49)，優先建議「黑栗折角蛾」。

Lecithocera aulias Meyrick, 1910

斜緣折角蛾 (新建議中文名)

模式標本產地：♂♀, Khasis, in March and from July to October; 4 specimens (原住民族卡西族所居之地，主要位於印度東北部Meghalaya邦)。

臺灣首次紀錄：Park, 1999: 249。標本產地：1♂, 1♀, Fushan For. Stn. 650 m, Ilan Co., 4-11 Apr. 1990 (JB Heppner and H Wang); 1♂, same locality, 27 July 1995 (WT Jou) (福山)；2♂, 1♀, Minchr 1160 m, Taoyuan[sic] Co., 9-10 July 1996 (KT Park and JS Lee) (明池)；1♀, Wulai 550 m, Taipei Co., 29-30 June 1996 (KT Park and JS Lee) (烏來)。

種小名應由希臘語前綴aul「庭院、前院、大廳、中庭」加拉丁語名詞轉形容詞陰性後綴ias所組成。

武春生 (1997: 131-132) 描述：「半網平祝蛾……本種雌第8腹板尾半部有密集的透明小坑，形似網絡……可與其它各種相區別。」「半網」指網絡狀密集透明小坑，「平祝蛾」從「平祝蛾亞屬」*Lecithocera* (*Patouissa*) Walker, 1864。張明瑞 (2011: 12) 刪減亞

屬別，稱為「半網祝蛾」。

Meyrick (1910: 447) 描述前翅特別之處在於「... termen straight, rather strongly oblique; ...」(外緣直，相當斜)。Park (1999: 249) 描述重點在於前後翅翅脈共柄之處。

芻議本種中文名依形態特徵稱為「網腹折角蛾 (交尾器特徵)、斜緣折角蛾 (外觀特徵)」，優先建議「斜緣折角蛾」。

Lecithocera bimaculata Park, 1999

雙斑折角蛾 (首次建議中文名)

正模標本產地：♂, Hassenzan (= Pahsienshan), Taichung Co., 5 June 1942 (S Issiki) (八仙山)。

臺灣首次紀錄：Park, 1999: 244-245。

Park (1999: 244) 描述翅面具淡黃白色為其特徵之一，另解釋語源：「The species name was derived from the Latin «bi» (= two) and «maculata» (= spot), corresponding to 2 distinct discal spots.」。是以種小名由拉丁語bi「二部分、二次」加拉丁語maculata「斑點的、斑紋的、染色的」所組成，係指前翅中室明顯大小各一之二枚黑點。

芻議本種中文名依翅色稱為「淡黃折角蛾」，或依種小名詞意「雙斑折角蛾、雙點折角蛾」(副模標本圖示參見Park, 2014: e101, fig. 51)，優先建議「雙斑折角蛾」。

Lecithocera chartaca Wu & Liu, 1993

紙折角蛾 (新建議中文名)

正模標本產地：♂，中國江西省廬山，1975. VIII. 28，劉友樵採。

臺灣首次紀錄：Park, 1999: 251。標本產地：1♂, Kukuan 720 m, Taroko Nat. Park, Taichung Co., (KT Park and JS Lee) (谷關)；1♂, Shanpen For. Stn. 750 m, Liukuei, Kaohsiung Co., 5-6 July 1996 (KT Park and JS Lee) (扇平)；2♀♀, Fushan For. Stn. 650 m, 4-11 Apr. 1990 (JB Heppner) (福山)。

武春生、劉友樵 (1993a: 334) 取名「紙平祝蛾」，「平祝蛾」從「平祝蛾亞屬」*Lecithocera* (*Patouissa*) Walker, 1864；「紙」其意不明，推測文中描述觸角、下唇鬚、頭部、胸部及前翅草黃色等語，或意象泛黃紙張而言。張明瑞 (2011: 17) 刪減亞屬別，稱為「紙祝蛾」。是以種小名由拉丁語名詞charta「莎草、莎草紙、紙、詩、地圖」加拉丁語陰性後綴ca (加在名詞之後成為形容詞) 所組成。

武春生、劉友樵描述特徵：「本新種與*L.* (*P.*) *aspergata* Gozmány很相似，但後者前翅顏色更深，無臀角紋，陽莖與抱器瓣等長，基腹弧更窄一些。」張明瑞描述：「本種主要特徵為觸角黃色，基部1/3加粗，緊伏深褐色鱗片，端部有明顯的暗褐色環紋；抱器瓣狹長，2/5處驟窄，端部3/5狹長，末端尖。」

芻議本種中文名依種小名詞意稱為「紙折角蛾、詩折角蛾」，優先建議「紙折角蛾」，以尊重命名者本意。

Lecithocera dondavisi Park, 2013

戴維斯氏折角蛾 (首次建議中文名)

正模標本產地：♂, Taiwan, Hsinchu County, Kuangwu, 24-25 vi 1985 (J. Heppner & H. Wang) (觀霧國家森林遊樂區)。

臺灣首次紀錄：Park, Heppner, Bae, 2013: 54-56。

Park (Park, Heppner & Bae, 2013: 56) 解釋語源：「The species is named after Dr. Donald R. Davis, Curator of Lepidoptera, US National Museum Natural History, Smithsonian Institution, USA, an authority on the microlepidoptera of the world.」。是以種小名由人名 Don Davis (Donald簡稱Don) 詞尾加i，為古典拉丁文變格 (declension) 處理方式，可成為第二類變格之單數屬格。其餘形態辨識可由雄雌交尾器與近似種*L. praeses* Meyrick, 1919區分。正模標本圖集參見原文頁55。

建議本種中文名依種小名本意稱為「戴維斯氏折角蛾」。

Lecithocera erecta Meyrick, 1935

立紋折角蛾 (新建議中文名)

正模標本產地：♂, Tienmushan, Chekiang, China (天目山，位於中國浙江省西北部)。

臺灣首次紀錄：Park, 1999: 249。標本產地：3♂♂, 1♀, Chingshan 1100 m, Taichung Co., 27 III -1 Apr. 1990 (JB Heppner and H Wang) (青山)；1♀, Liukuei, Kaohsiung Co., 16-23 Mar. 1990 (JB Heppner and H Wang) (六龜)；2♂, Kuanyuan 2420 m, Mt. Hohuan Hotel, Hualien Co., 3 July 1996 (KT Park and JS Lee) (關原)。

拉丁語erecta「直立、挺直、豎立、建立、建造」。

武春生 (1997: 127) 稱「豎平祝蛾」、「平祝蛾」從「平祝蛾亞屬」*Lecithocera* (*Patouissa*) Walker, 1864；張明瑞 (2011: 23) 刪減亞屬別，稱為「豎祝蛾」，「豎」應從種小

名詞意而來。

武春生描述：「臀角紋垂直，寬；……單一的錐形陽莖針使本種與所有其它近緣種相區別。」Park (1999: 249)：「Superficially this species is similar to *parenthesis* Meyrick, but can be separated by male and female genital characters, especially in the trapezoidal antrum and the round signum in *parenthesis.*」張明瑞描述：「本種主要特徵是成蟲個體較小，臀角紋與中室端斑相連，垂直於後緣，陽莖中含有2列錐狀角狀器，可明顯於其它種區別開來。」其中「前翅臀角紋垂直於後緣」，應是種小名命名原由。

結合種小名詞意與前翅前翅臀角紋特徵，芻議本種中文名為「直紋折角蛾、垂紋折角蛾、立紋折角蛾、豎紋折角蛾」，或沿用「堅平折角蛾」，優先建議「立紋折角蛾」。

Lecithocera fascicula Park, 1999

單束折角蛾 (首次建議中文名)

正模標本產地：♂, Lienhwachih 690 m, Nantou Co., 4 July 1996 (KT Park and JS Lee) (南投縣魚池鄉蓮華池)。

臺灣首次紀錄：Park, 1999: 253。

Park (1999: 253) 解釋語源：「The species name is derived from Latin "fascis" (= bundle, packet).」，註明臺灣特有。另描述雄交尾器：coremata a bundle of hair-pencils medially。是以種小名由拉丁語fasci (單數與格dative case)「捆、束、包」加拉丁語陰性後綴cula「小的、小型的」所組成，應指發香器內側具單束發香毛鱗，相較它種二束為少。

Park另說明三項特徵：本種前翅較近似種*L. altusana*狹窄、雄交尾器陽基軛片向內側捲曲 (juxta incurved medially)、腹部骨片 (abdominal sclerite) 第7、8節呈獨特碟狀。

芻議本種中文名依翅形稱作「狹翅折角蛾」，或依種小名詞意稱作「單束折角蛾」，或依雄交尾器特徵稱作「卷莖折角蛾」，優先建議「單束折角蛾」。

Lecithocera fascinatrix Meyrick, 1935

嫵折角蛾 (新建議中文名)

正模標本產地：♂, Formosa, Tikusiko, [6,] August, [9,] September [1933] (Prof. S. Issiki) (陽明山竹子湖)

臺灣首次紀錄：Park, 1999: 248。

拉丁語名詞fascina (fascinum之中性複數)「迷人、魅力、嫵媚、陶醉、咒語、魔法、男性生殖器」加拉丁語後綴trix所組成，trix置於名詞之後形成陰性代理名詞 (agent noun)，如同英文er、or詞尾。

武春生 (1997: 140) 稱本種「迷祝蛾」，應從種小名詞意而來。

Meyrick (1935: 563-564) 僅描述外觀。武春生提及雄蛾交尾器「陽莖端膜前面具約一打細小的齒形陽莖針」，拉丁語fascīna「一捆樹枝」為fascis「一捆木材、捆、包」之縮小詞，或可指「一打細小的齒形陽莖針」，實屬巧合。

武春生描述特徵：「爪形突與顎形突複合體的側葉及不典型的陽莖端基環形態使本種與所有近緣種相區別。」Park (1999: 248)：「This species can be separated from its allies by the dark-brown streak on the basal 1/5 of costal margin and the broad brown fascia along the termen.」，註明臺灣特有。

芻議本種中文名依種小名詞意稱作「嫵折角蛾、雅折角蛾」，或依雄交尾器特徵稱作「束針折角蛾」，優先建議「嫵折角蛾」。

Lecithocera fuscosa Park, 1999

黑翅折角蛾 (首次建議中文名)

正模標本產地：♂, Minchr, 1160 m, Taoyuan[sic] Co., 9-10 July 1996 (KT Park and JS Lee) (明池國家森林遊樂區)。

臺灣首次紀錄：Park, 1999: 250。

Park (1999: 250) 解釋語源：「The species name was derived from the Latin "fuscus" (= black), corresponding to the blackish forewing.」，並註明臺灣特有，以及說明本種黑色前翅易與它種辨別。正模標本圖示參見Park, 2014: e102, fig. 62。

是以種小名由拉丁語fusco「黑色的、深色的、暗淡的、棕色的」刪除詞尾字母o、加拉丁語陰性後綴osa所組成，osa加在名詞 (某物) 之後成為形容詞，意味「充滿」某物。

芻議本種中文名依種小名詞意與翅色特徵稱作「墨折角蛾、黑翅折角蛾」，優先建議「黑翅折角蛾」。

Lecithocera glabrata (Wu & Liu, 1992)

滑壁折角蛾 (新建議中文名)

正模標本產地：♂，中國江西省九連山，1977. V. 20。

臺灣首次紀錄：Park, 2000a: 363。標本產地：1♂, Lienhuachih 690 m, Nantou Co., 4 July 1996 (KT Park and JS Lee) (蓮華池)。

拉丁語glabrata「光滑的、平滑的、無毛的、禿的」。

武春生 (1997: 209) 稱本種「光搖祝蛾」，時列「搖祝蛾屬」*Quassitagma* Gozmány, 1978，其中「光」應從種小名詞意而來。張明瑞 (2011: 27) 稱本種「光祝蛾」，係引證 Park (2000a: 363) 改列「祝蛾屬 (*Lecithocera*)」。

武春生描述雌蛾交尾器：「……囊突近方形，無齒……本種與齒搖祝蛾*Q. comparata*相似，但本種的雌囊突大約呈方形，無齒突。」花壁 (signum，囊突) 無齒突應是種小名命名與中文名取名原由。Park認同本種近似*L. comparata* (Gozmány, 1978)，可從雌蛾交尾器花壁形狀與之區別。

芻議本種中文名依種小名詞意稱作「光折角蛾、滑折角蛾」，或依花壁形狀特徵稱為「滑壁折角蛾 (兼有花壁諧音)、光壁折角蛾、禿壁折角蛾」，考量「光」另有其他含意，單以此字恐無法充分表達花壁無齒突特徵，優先建議「滑壁折角蛾」。

Lecithocera latiola Park, 1999

寬翅折角蛾 (首次建議中文名)

正模標本產地：♂, Kuanyuan 2420 m, Mt. Hohuan Hotel, Hualien Co., 3 July 1996 (KT Park and JS Lee) (花蓮縣秀林鄉關原)。

臺灣首次紀錄：Park, 1999: 247。

Park (1999: 247) 解釋語源：「The name was derived from the Latin "latus" (= broad), corresponding to the relatively broad forewings.」，註明臺灣特有。正模標本圖示參見Park, 2014: e103, fig. 69。是以種小名由拉丁語lati「寬的、闊的、寬敞的、延伸的」加拉丁語後綴ola「小型的、年輕的」所組成。

建議本種中文名為「寬翅折角蛾」。