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Eleutheranthera ruderalis (Swartz) Sch.-Bip. (Asteraceae), a Newly Naturalized Plant in Taiwan－

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ABSTRACT: A new record of a naturalized plant of Asteraceae, *Eleutheranthera ruderalis* (Swartz) Sch.-Bip. was found in southern Taiwan. *Eleutheranthera* Poit. *ex* Bosc is also a new genus to the Flora of Taiwan. *E. ruderalis* can be easily distinguished from *Synedrella nodiflora* (L.) Gaertn. by its head only with disc florets, stamens free, pappus absent, achenes pubescent and angled. A taxonomic description, line drawing, photographs, and a map showing its distribution on this island are provided.

KEY WORDS: Asteraceae, *Eleutheranthera ruderalis*, Naturalized, Taiwan, Taxonomy.

INTRODUCTION

Asteraceae is one of the largest families of flowering plants, comprising about 1,535 genera and 23,000 species. Eighty-four genera and 241 species of Asteraceae, including 20 infraspecific taxa were found in Taiwan (Peng et al., 1998). Asteraceae is the largest dicotyledonous and one of the notorious contributors to the naturalized flora of the world (Pyšek et al., 2004; Wu and Wang, 2005). It has been the major contributor to the naturalized flora of Taiwan (Hsieh, 2002; Wu et al., 2004). In 1996, we collected an unknown species of Asteraceae in southern Taiwan. The appearance of this plant is similar to *Synedrella nodiflora* (L.) Gaertn. that we misidentified it as *Synedrella nodiflora* for many years.

Compared to the descriptions of Flora of Java (Backer and Bakhuizen, 1963) and Flora of Ceylon (Dassanayake, 1987), all the characters of this plant are similar to those of genus *Eleutheranthera* Poit. *ex* Bosc. *Eleutheranthera* is a monotypic genus of Asteraceae native to Tropical America and naturalized in Java, Ceylon, Papua New Guinea and Fiji (Dassanayake, 1987). We believe that this species is a new record and the scientific name is *Eleutheranthera ruderalis* (Swartz) Sch.-Bip. It also represents the first generic record of *Eleutheranthera* in Taiwan. In this paper we describe the taxonomy, morphology of the genus and species, and provide a line drawing, distribution map, and photographs of the plant in its natural habitat.

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TAXONOMIC TREATMENT

Eleutheranthera Poit. *ex* Bosc, Nouv. Dict. Hist. Nat. ed. 1. 7: 498. 1803.

Erect branching annual herbs. Leaves opposite, simple, petiole. Head small, terminal or axils of upper leaves, homogamous, few flowers, flower monoecious. Involucre campanulate; bracts 5-10, foliaceous, 1-2 seriate, of unequal length, florets embracing, keeled. Ray florets often absent, when present few, ligulate. Disc flowers tubular, narrowly campanulate, 5-lobed; anther free or very loosely cohering, base sagittate, apex truncate; style branches linear, acuminate, covered with minute hairs at the apex. Receptacle convex; paleaceous, concave. Achenes narrowly obovoid, somewhat compressed, 3-4 angular, abruptly narrowed to a small cylindrical protuberance at the apex. Pappus absent.

Eleutheranthera ruderalis (Swartz) Sch.-Bip., Bot. Zeit. 24: 165, 239. 1866; Backer & Bakh. Fl. Java 2: 407, 1965.

離藥金藥箭(新擬)　Figs. 1 & 2

Melampodium ruderale Swartz, Fl. Ind. Occ. 3: 1372. 1806.

Erect branching annual herbs, stems thickened on the nodes, glabrous or hairy, up to about 60-75 cm height. Leaves ovate or ovate-oblong, trinerved, blade 1.5-7 cm long, 1-3 cm wide, base round and shortly attenuate, apex obtuse or acute, thinly long-pilose on both surfaces; margin shallowly crenate or serrate; petiole 0.5-1.5 cm long. Heads solitary or 2-4 in each axils, peduncles 0.5-1 cm long, erect at first, cernuous in fruit; involucres

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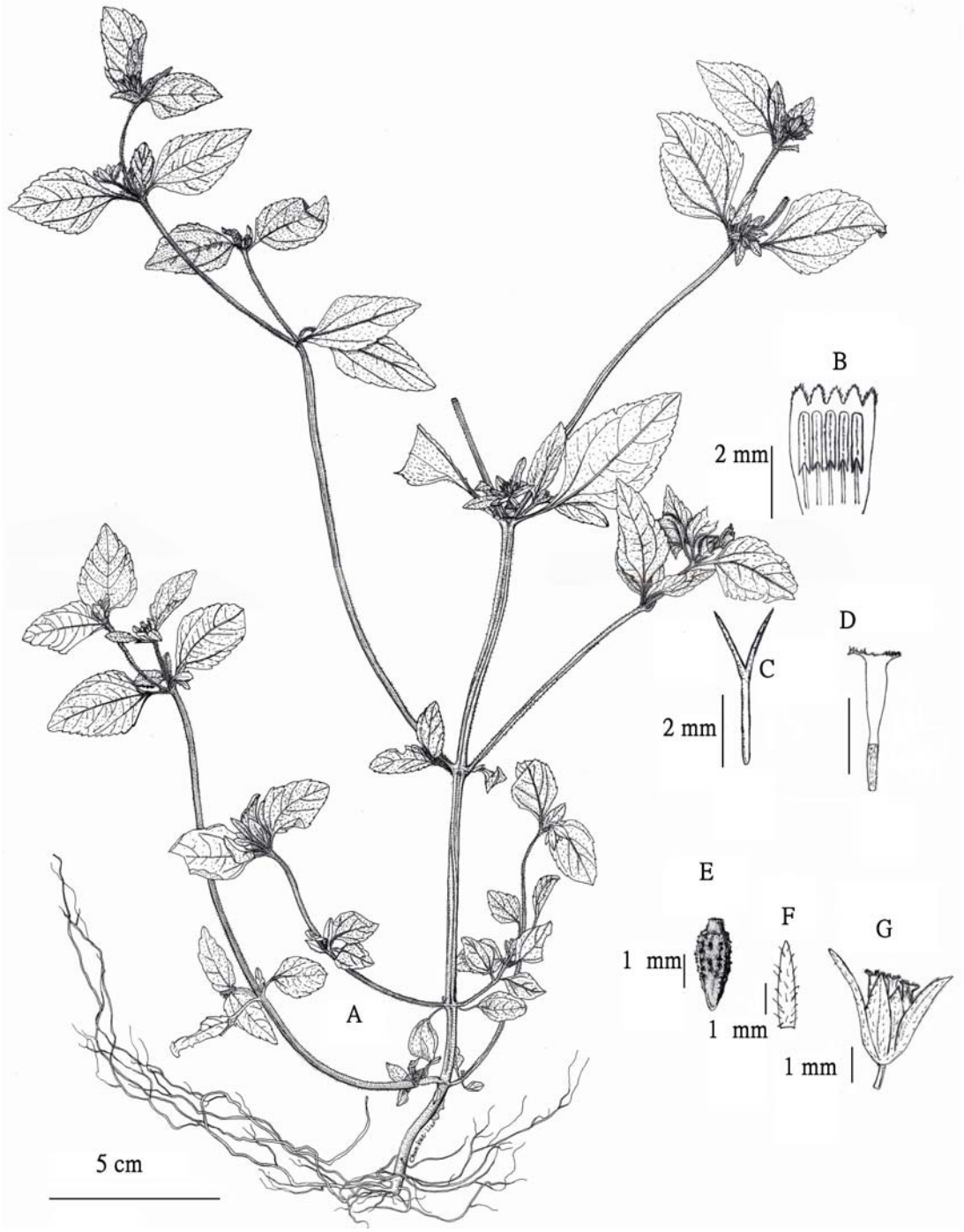


Fig. 1. *Eleutheranthera ruderalis* (Swartz) Sch.-Bip. A: Habit. B: Stamens. C: Style branches. D: Disc floret. E: Achene. F: Involucres of bracteole. G.: Head.

accrescent, bracts 5-8 in 1-2 series, elliptic-lanceolate, obtuse or acute, spreading and foliaceous, 4-6 mm long, 1-1.5 mm broad, green, keeled, long-pilose, bracteole membranous, oblong, apex long-pilose; ray florets often absent; disc florets yellow, 9-11, corollas tubular, 2-2.5 mm long, lobes 0.5 mm long, papillose; ovary 2 mm long; receptacle oblong-elliptic, acuminate, scarious, 3-4 mm long, ciliate at the margins; anthers black, base sagittate, apex truncate; style branches yellow, linear, apex covered with minute hairs. Achenes 2.5-3 mm long, verrucose on the 4-angles, minutely white puberulous near the apex, pappus wanting.

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Fig. 2. A: *Eleutheranthera ruderalis* growing along the roadside. B: The morphology of an inflorescence with 9-11 disc florets. C: Achene verrucose on the 4-angles. (Scale = 0.5 mm).

Habitat: *Eleutheranthera ruderalis* is fairly common along roadsides, on waste lands, and on cultivated ground, often associated with *Ageratum houstonianum* Mill., *Bidens pilosa* L. var. *radiata* Sch. Bip. (Asteraceae), *Cardamine flexuosa* With. (Cruciferae), *Cleome rutidosperma* DC. (Capparaceae), *Panicum maximum* Jacq. (Poaceae), and *Pouzolzia zeylanica* (L.) Benn. (Urticaceae). Flowering and fruiting are possible throughout the year.

Specimen examined: *S. Z. Yang, 28413* (PPI), 29 Feb. 1996, Wugoushuei, Pingtung county. *S. Z. Yang, 28856* (PPI), 16 Apr. 2000; sugar factory, Pingtung city. *G. P. Hsieh, 1967* (PPI), 15 Apr. 2005, Tungpin village, Pingtung county.

DISCUSSION

Dassanayake (1987) reported that *Eleutheranthera ruderalis* grows in much the same situations as, and closely resembers, *Synedrella nodiflora*. However, after the disc flowers being dissected, it can be distinguished from *S. nodiflora* by its head with disc florets only, stamens free, pappus absent, achenes pubescent and angled. *E. ruderalis* can establish itself and increase population number gradually without human intervention. As a result *E. ruderalis* has abundantly naturalized in exposed, flat areas (author's observation). This is in accordance with the definition of Pyšek et al. (2004) and Wu and Wang (2005) as a naturalized plant.

As we have mentioned previously, *Eleutheranthera* is a monotypic genus naturalized in Java, Ceylon, Papua New Guinea and Fiji, it is clear that Taiwan is a new naturalized region. Though there is no clue about when and how the species immigrated to Taiwan, we believe that *E. ruderalis* will be found not only in south but also other regions of Taiwan in the near future. (Fig. 3)

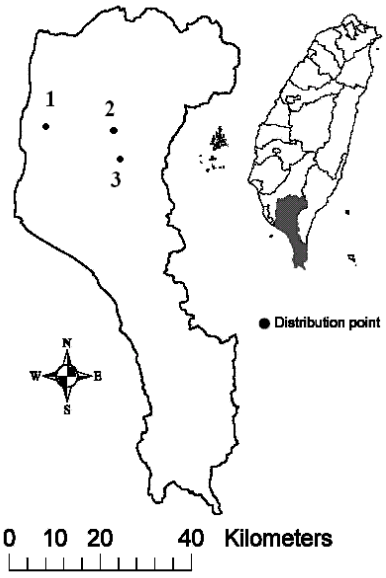


Fig. 3. Distribution of *Eleutheranthera ruderalis* in southern Taiwan. 1: Pintung city. 2: NeipuTungpin village. 3: Wugoushuei.

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臺灣新歸化菊科植物－離藥金腰箭

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摘　　要

本文報導臺灣南部新歸化菊科植物－離藥金腰箭 (*Eleutheranthera ruderalis* (Swartz) Sch.-Bip.)，離藥金腰箭屬 (*Eleutheranthera* Poit. *ex* Bosc) 同時也是臺灣的新紀錄屬。本種於 1996 年初次採集於南臺灣，雖與金腰箭 (*Synedrella nodiflora* (L.) Gaertn.) 很相似，但由本種頭狀花序僅具管狀花、雄蕊分離、無冠毛、瘦果有毛且具稜角可加以區別。本文提供該種植物的分類性狀描述、手繪圖和在臺灣的分布圖。

關鍵詞：菊科、離藥金腰箭、歸化、臺灣、分類學。

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