

Plukenetia corniculata Sm. (Euphorbiaceae): first report from Bangka Island, Sumatra

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Abstract. *Plukenetia corniculata* Sm. (Euphorbiaceae) is reported for the first time from Bangka Island, Indonesia, based on a collection from Tanjung Labun. This find extends the species' known geographic range and highlights the need for further botanical exploration in the Bangka Belitung Islands.

Key words. Acalyphoideae, Malesia, Malpighiales, Plukenetieae

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Introduction

The tribe Plukenetieae Hutch., in the subfamily Acalyphoideae (Euphorbiaceae), consists of 13 genera with a broad distribution across tropical and warm-temperate regions worldwide (Gillespie 1994). Members of the tribe exhibit remarkable diversity in habits, ranging from climbing vines and lianas to erect herbs, shrubs, and, less commonly, small trees. Flowers are generally small and apetalous but display notable variation in style and androecium morphology, reflecting significant floral diversity. Another diagnostic feature is the occurrence of stinging hairs in several taxa; a trait rarely found in the family (Gillespie 1994).

In Sumatra, the tribe Plukenetieae is represented by three genera: *Cnesmone* Blume, *Megistostigma* Hook.f., and *Plukenetia* L. (Airy Shaw 1981; Gillespie 2007). Of these, *Plukenetia* is the most widely distributed, comprising approximately 25 species occurring throughout the tropics, from Mexico and Africa to South Asia, Southeast Asia, and across Malesia (Cardinal-McTeague and Gillespie 2016; Cardinal-McTeague and Gillespie 2020; POWO 2025). Within Euphorbiaceae, the genus is readily distinguished by its four-carpellate ovary and its predominant growth habit as vines or lianas (Gillespie 1993, 2007). Several species of *Plukenetia* are also of economic and nutritional importance, with their oil-rich seeds consumed locally or cultivated commercially, notably *P. huayllabambana* Bussmann, C.Téllez & A.Glenn and *P. volubilis* L. (Blancke 2016; Seukep et al. 2020).

Only two species of *Plukenetia* have been recorded in Indonesia: *P. corniculata* Sm. and *P. volubilis* L. (Gillespie 2007; Tianara et al. 2024). *Plukenetia volubilis*, introduced from South America, is now widely cultivated for its edible leaves and oil-rich seeds; it is popularly known as “kacang inka” (Tianara et al. 2024). In contrast, *P. corniculata* is native to Tropical Asia (Gillespie 2007; POWO 2025) and was historically documented from South Sumatra, North Sumatra, and West Sumatra during the Dutch East Indies period (Gillespie 2007). Our recent botanical exploration in South Bangka Regency revealed a population of *P. corniculata*, marking the first confirmed record of this species from the Bangka Belitung Islands, as its occurrence had not been noted in earlier botanical accounts.

The aim of this study is to document the first confirmed record of *P. corniculata* from Bangka Island, to clarify its distribution in Sumatra, and to discuss the implications of this finding for the diversity and conservation of the genus *Plukenetia* in western Indonesia.



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Methods

A field study was conducted in South Bangka Regency in August 2025. Plant materials were collected following the standard protocols of the Royal Botanic Garden Edinburgh (2017), preserved according to the methods of Davies et al. (2024), and deposited at the Herbarium Bandungense (FIPIA), School of Life Sciences and Technology, Institut Teknologi Bandung. Specimens were identified using relevant taxonomic references (Backer and Bakhuizen van den Brink 1963; Gillespie 2007; Cardinal-McTeague and Gillespie 2020; Tianara et al. 2024), and the descriptive terminology follows Beentje (2016).

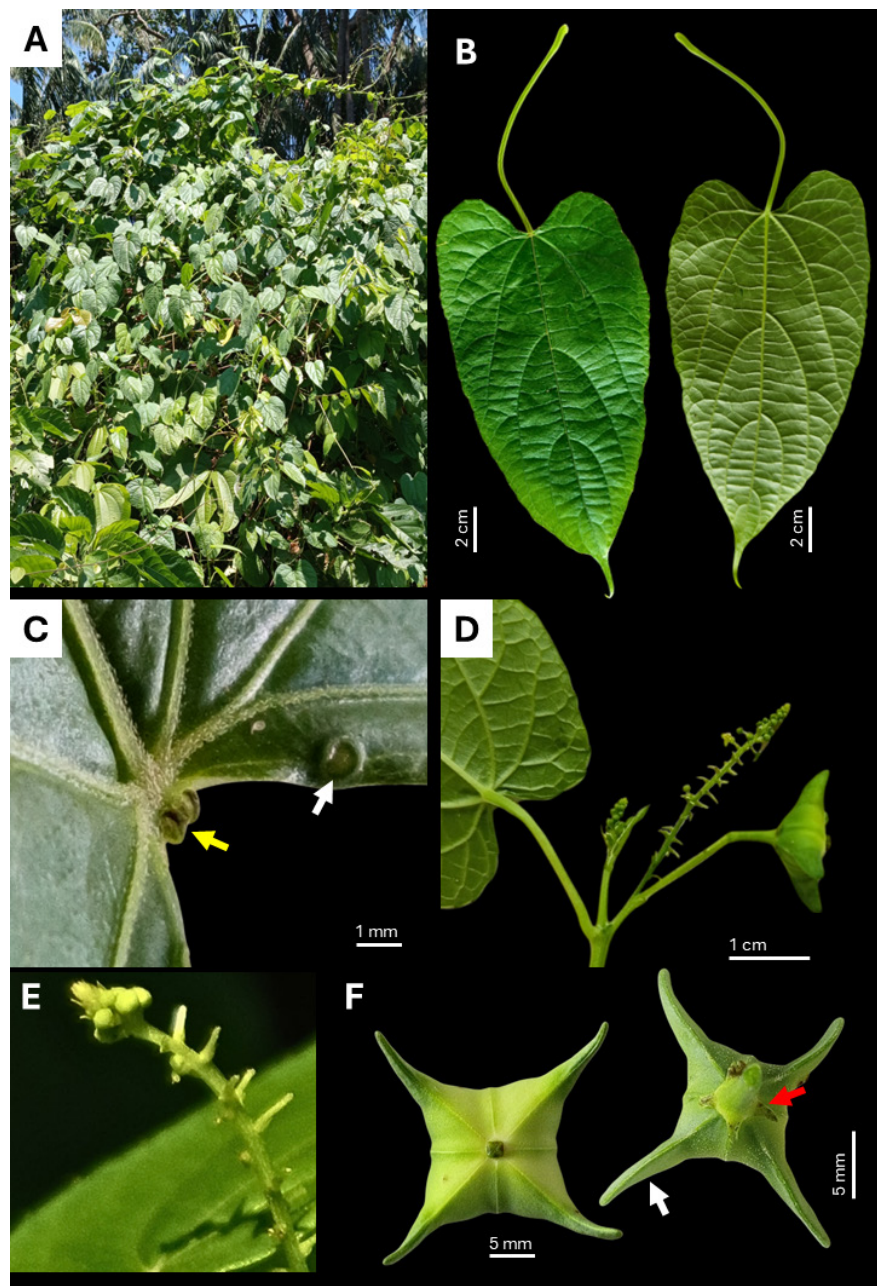
Results

Plukenetia corniculata Sm.

Figure 1

New record. INDONESIA – SUMATRA • Bangka Belitung Islands, Bangka Island, South Bangka Regency, Toboali, Serdang village, littoral zone of Tanjung Labun Beach; 02°57'36.43"S, 106°19'47.26"E; 3 m a.s.l.; 9.VIII.2025; ASDI 1003; FIPIA-DEP140 & FIPIA-DEP144.

Figure 1. *Plukenetia corniculata* Sm. **A.** Habit. **B.** Leaf showing the adaxial (left) and abaxial (right) surfaces. **C.** Leaf base, showing stipellae (yellow arrow) and a gland (white arrow). **D.** Inflorescences. **E.** Staminate flowers. **F.** Capsule showing the wing (white arrow) and calyx (red arrow).



Description. Monoecious climber; stems twining, pubescent, green. Stipules linear, minute, 1.5–2.0 mm long, caducous, green. Leaves simple, alternate; petioles 1.6–10.5 cm long, pubescent, green; lamina cordate, $3.7\text{--}18.3 \times 1.8\text{--}8.6$ cm, base cordate, margin serrulate, apex acuminate-caudate, thin-chartaceous, sparsely pubescent or glabrescent with major veins sparsely to moderately pubescent adaxially, adaxial surface green, abaxial surface pubescent, pale green; venation weakly palmate, secondary veins 4–6 on each side, tertiary veins scalariform to reticulate; glands 2, present on the leaf margin near the base, elliptic, ca. 1 mm long; stipellae 2, ca. 0.5 mm long, brownish green. Inflorescences up to 6 cm long, a compact thyrses, racemose in aspect, terminal but appearing leaf-opposed, or sometimes axillary; bisexual, with a solitary pistillate flower at the basal node and numerous staminate flowers above; peduncle ca. 5 mm long; flowers unisexual. Staminate flowers: pedicel ca. 3 mm long, glabrescent; bud globose, green; sepals 4, ovate, ca. 1 mm long, apex acute; androecium globose, ca. 0.5 mm long, stamens up to 10, yellow; filaments ca. 0.1 mm long; disc absent. Pistillate flowers: pedicel ca. 5 mm long; sepals 4–5, lanceolate, ca. 2×0.5 mm; ovary ca. 2.5 mm in diameter (including wings), 4–5-winged, wings ca. 3×2 mm; styles connate into a small, depressed-globose column, up to 2 mm long, glabrous. Capsules 4–5-lobed capsules, ca. 15×15 mm, yellowish green, winged; wings strap-shaped, ca. 11×6 mm, dark green. Seeds lenticular, ca. 11×8 mm, white, turning brown with darker orange or brown irregular markings.

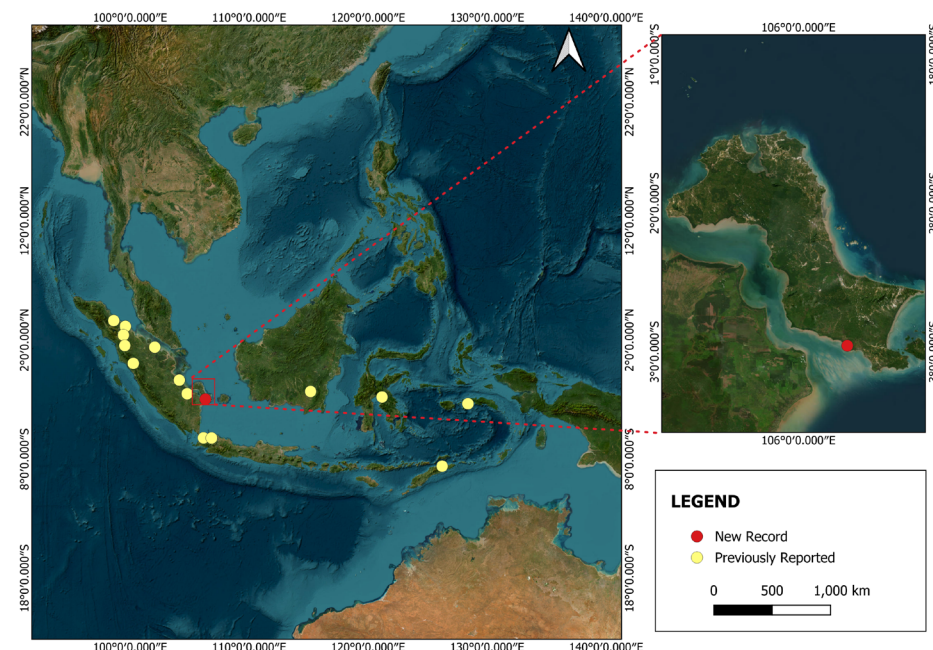
Distribution. *Plukenetia corniculata* is widespread but uncommon throughout Southeast Asia and Malesia, with a distribution extending to northeastern India (Assam), southeastern India, Myanmar, Thailand, the Philippines, Malaysia, and Indonesia (Sumatra, Java, Kalimantan, and Sulawesi) (Gillespie 2007). In Sumatra, it has previously been recorded from West Sumatra (Kampung Sabalading, Sungai Lesing, Lumban Ria, Si Mandi Angih), North Sumatra (Middle Habinsaran), and South Sumatra (Komerling Ulu) (Gillespie 2007). The present study documents an additional occurrence in southern Bangka, representing the first confirmed record of the species for the Bangka Belitung Islands (Figure 2).

Ecology. In the study area, *P. corniculata* was found growing in an open site of the littoral zone at Tanjung Labun, at an elevation of approximately 2.5 m a.s.l., sharing its habitat with another species of the Plukenetieae, *Cnesmone javanica* Blume (*jelatang*).

Discussion

This find indicates that *Plukenetia corniculata* has a broader distribution in Sumatra than previously reported by Gillespie (2007), and it adds important new information on the diversity and biogeography of the genus *Plukenetia* in western Indonesia. In contrast to *P. volubilis*, which is widely cultivated and anthropogenic in its distribution, *P. corniculata* appears to be naturally occurring and locally uncommon. The discovery is most likely attributable to the limited scope of botanical exploration and

Figure 2. Current distribution of *Plukenetia corniculata* in Indonesia.



specimen collection on islands surrounding Sumatra, particularly smaller and understudied islands such as Bangka. A comparable case is *Melothria pendula* L. (Cucurbitaceae), which was recently reported as a new alien species for Bangka Island (Husaini et al. 2024). Together, these findings highlight the floristic significance of the Bangka Belitung Islands and demonstrate that they may harbour overlooked native and alien plant diversity. Therefore, continued and systematic botanical exploration on islands adjacent to the Sumatran mainland is essential not only to complement and complete the Flora of Sumatra, but also to provide baseline data for assessing species diversity, distribution patterns, and conservation priorities of poorly documented taxa, including *Plukenetia*.

Field observations documented only a single population of *P. corniculata* at Tanjung Labun, indicating that the species may be locally rare on Bangka Island. However, its occurrence in this locality suggests the possibility of a broader, yet undocumented, distribution in the region. The species' reproductive biology may support this potential. As noted by Cardinal-McTeague et al. (2019), *P. corniculata* produces medium-sized seeds enclosed in dry capsules that explosively dehisce, dispersing seeds a few metres from the parent plant. In addition, the oil-rich seeds of *Plukenetia* are attractive to scatter-hoarding rodents, which often cache them away from the parent plant, thereby enhancing secondary dispersal and colonisation opportunities (Cardinal-McTeague et al. 2019). Consequently, while only one population is currently known from Tanjung Labun, this dispersal mechanism may facilitate the establishment of additional populations, raising the likelihood that the species is more widespread on Bangka Island or nearby islands than presently documented.

According to the IUCN Red List Categories and Criteria (IUCN 2025), the conservation status of *P. corniculata* in Bangka is best assessed as Data Deficient, owing to the limited information available on its distribution, population size, and potential threats. The species is presently known from only one locality and one population, precluding a robust evaluation of population trends or extinction risk. This situation highlights the urgent need for targeted field surveys and ecological studies to clarify its true distribution, habitat requirements, and threats, thereby enabling a more accurate conservation assessment and informed management decisions.

Key to the genus *Plukenetia* in Indonesia

Modified from Tianara et al. (2024)

- a Plants bearing stipellae at the leaf base, with styles united into a depressed, globose column, and fruit lobes terminating in a central, strap-shaped wing *P. corniculata* Sm.
- b Plants without stipellae, with styles fused into an elongated, cylindrical column, and fruit lobes terminating in short, horn-like projections and lacking wings *P. volubilis* L.

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Additional information

Conflict of interest

The authors declare that no competing interests exist.

Ethical statement

No ethical statement is reported.

Author contributions

Conceptualization: ASDI. Data curation: ASDI, AFG, BJ. Investigation: ASDI, AFG, BJ, RR, JL, AN, MRP, DS. Methodology: ASDI. Supervision: DR, MRP. Visualization: ASDI, AFG. Software: AFG. Validation: ASDI. Writing – original draft: ASDI. Writing – review and editing: ASDI, AN, MRP, DR.

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Data availability

All data that support the findings of this study are available in the main text.

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