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A new species of the genus *Freycinetia* Gaud. (Pandanaceae; Freycinetoideae) from the island of Siberut, Sumatra, Indonesia

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ABSTRACT: A new species of *Freycinetia Gaud.* (*Pandanaceae; Freycinetoideae*) from Siberut Island, off the western coast of Sumatra, is described as *Freycinetia siberutensis* A.P. Keim, Witono, O. Efendy, R.H.B. Setiarto, H.I.P. Utaminingrum, and L.A. Bakti. This species is characterized by its racemose infructescence, narrow lanceolate leaves with serrulate margins, and slender axillary spikes bearing densely arranged berries. The discovery of *F. siberutensis* adds to the floristic uniqueness of the Mentawai Islands and provides new insights into the diversification of *Freycinetia* in western Malesia.

KEY WORDS: *Freycinetia angustifolia*, *Freycinetia siberutensis*, Freycinetoideae, Pandanaceae, *Racemosiflorae*, Siberut, Sumatra.

INTRODUCTION

The genus *Freycinetia* Gaudich., a member of the family Pandanaceae and subfamily Freycinetioideae, is widely distributed across tropical Asia, Malesia, and the Pacific Islands (Solms, 1878; Merrill, 1908). Comprising more than 200 described species, the genus is particularly diverse in Southeast Asia and the Pacific, where it occupies a variety of ecological niches, often in lowland and montane tropical forests (Warburg, 1900; Martelli, 1910). Despite its diversity, taxonomic knowledge of *Freycinetia* remains incomplete, especially in remote or underexplored areas such as the Mentawai Islands off the western coast of Sumatra. During recent botanical surveys on Siberut Island, the largest and northernmost of the Mentawai Islands, a distinctive species of *Freycinetia* was collected that does not match any known taxa. Here, we describe and illustrate this new species, provide diagnostic comparisons with closely related congeners, and discuss its habitat, conservation status, and biogeographical significance (Keim *et al*., 2013).

Siberut Island is one of 103 islands that form the Mentawai Archipelago, just 145 km west of mainland Sumatra. Administratively, the Mentawai Archipelago is part of the Mentawai Regency, located in the Indonesian Province of West Sumatra.

To date, no publication has addressed the pandan flora of the island. Nevertheless, this current study reveals the presence of a new species of *Freycinetia* from the island, previously unknown to science. It is proposed here as *Freycinetia siberutensis* A.P. Keim, Witono, O. Efendy, R.H.B. Setiarto, H.I.P. Utaminingrum, and L.A. Bakti, with a full description provided.

Furthermore, the presence of a racemose infructescence also places this new species as a new member of the section *Racemosiflorae*; thus, increasing the members of the section (Stone, 1968; Keim, 2009; Widjaja *et al*., 2009; Pasaribu, 2010).

The genus *Freycinetia* Gaudich. (Pandanaceae, subfam. Freycinetioideae) comprises over 200 described species of climbing or scrambling monocotyledonous plants distributed from Southeast Asia and Malesia to Melanesia and the Pacific Islands (Keim, 2012). As the second-largest genus in Pandanaceae, *Freycinetia* exhibits remarkable morphological diversity, particularly in leaf arrangement, inflorescence structure, and bract colouration traits, which are taxonomically significant within the group. However, species delimitation remains challenging due to incomplete herbarium representation, high intraspecific variability, and undercollection in remote regions (Keim and Tan, 2020).

Within Malesia, Indonesia harbours a high diversity of *Freycinetia* species, many of which are narrow endemics confined to particular islands or mountain ranges. Despite this, the flora of several Indonesian outer-arc islands remains poorly documented. One such area is the Mentawai Archipelago, a chain of islands situated west of Sumatra (Keim *et al*., 2011). Among these islands, Siberut, the largest and most topographically complex, is of particular interest due to its biogeographic isolation, high endemism, and protected forest cover, designated as Siberut National Park. The floristic composition of

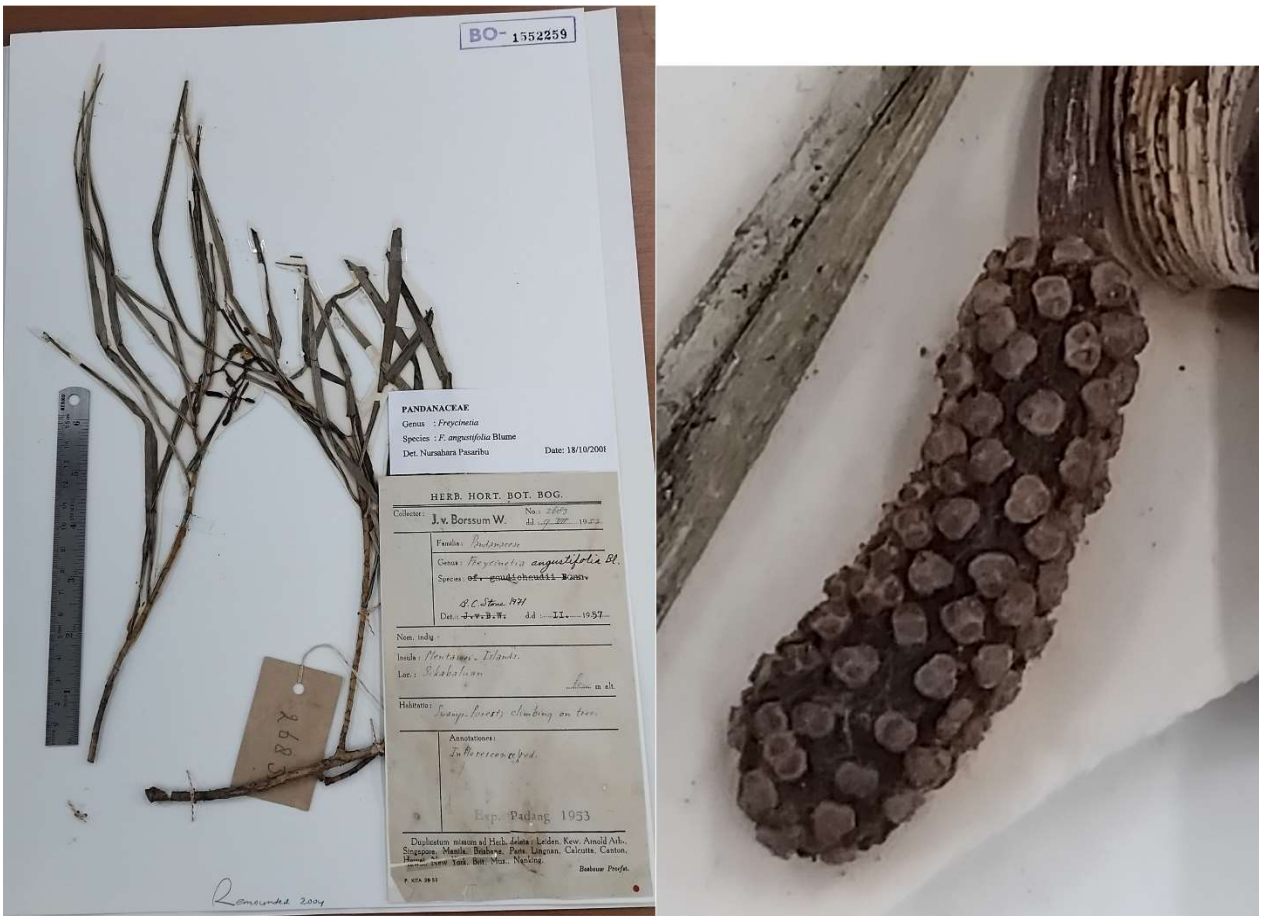

Fig. 1. ***Freycinetia siberutensis*** A.P. Keim, Witono, O. Efendy & R.H.B. Setiarto, based on the holotype (*J. van Borssum W. 2683*, BO!). The specimen shows racemose infructescences and a markedly smaller cephalium compared to ***F. angustifolia*** (photo: A.P. Keim). Right: Close-up of the cephalium displaying 2–3 persistent stigmatic remnants per berry (photo: A.P. Keim).

Siberut has affinities with both western Sundaland and Wallacean elements, but includes numerous taxa of uncertain taxonomic status (Keim *et al*., 2021).

During a botanical expedition to central Siberut in 2023, as part of an ongoing assessment of Pandanaceae diversity in the Mentawai Islands, a distinctive *Freycinetia* population was discovered in the lower montane forest at approximately 650–800 m elevation. Detailed morphological comparison with existing herbarium material and protologues of regional species revealed that this taxon does not conform to any previously described species. It is characterised by a unique combination of leaf dimensions, slender spicate inflorescences with bright orange involucral bracts, and narrowly ovoid syncarps. Here, we describe this plant as a species new to science, provide a detailed morphological account, high-resolution illustrations, and a comparative diagnosis with allied species from Sumatra and surrounding regions. Notes on its ecology, conservation status, and its implications for biogeographic patterns in the Mentawai Islands are also presented.

Key to the species of *Freycinetia* Sect. *Racemosiflorae*

1. Infructescence conspicuously raceme …….. 2
1. Inflorescence subracemose ……. 4
2. Pedicel glabrous ……... 3
2. Pedicel scabrous ……. ***Freycinetia runcingensis***
3. Number of cephalia per infructescence 3 (ternate); cephalium larger (1.8 – 2.4 × 0.6 – 0.8 cm); number of stigmatic remains 3 to 4, mostly 3 ……. ***Freycinetia angustifolia***
3. Number of cephalia per infructescence 4 (quaternate); cephalia smaller (0.5 – 0.8 × 0.15 – 0.2 cm); number of stigmatic remains 2 to 3, mostly 2 …….. ***Freycinetia siberutensis***
4. Auricle tapered ……. ***Freycinetia jagorii***
4. Auricle lobed …….. ***Freycinetia subracemosa***

TAXONOMIC TREATMENT

Freycinetia siberutensis A.P. Keim, Witono, O. Efendy & R.H.B. Setiarto, ***sp. nov.*** **Fig. 1**

Gracilis scandens; infructescentia terminalis, quaterna, racemosa; stigmata 2–3, plerumque 2.

Type: Indonesia. Sumatra, West Sumatra, Mentawai Archipelago, Siberut Island, Sikabaluan, 9 July 1953, *J. van Borssum W. 2683* (holotypus BO!; isotypus L).

Table 1. Comparison of ***Freycinetia angustifolia*** and ***F. siberutensis***.

Morphological characters	***Freycinetia angustifolia***	***F. siberutensis***
Leaf dimension	20 – 30 × 0.8 cm	18 – 25 × 0.5 – 0.6 cm
Number of cephalia per infructescence	3 (ternate)	4 (quaternate)
Cephalium dimension	1.8 – 2.4 × 0.6 – 0.8 cm	0.5 – 0.8 × 0.15 – 0.2 cm
Number of stigmas	3 – 4, mostly 3	2 – 3, mostly 2

Slender climbing pandan. *Stem* 0.4 cm diameter, glabrous; internodes 0.5–0.8 cm. *Leaf* lanceolate-elongate, 18–25 × 0.5–0.6 cm; auricle not observed; margin integer; acute to acuminate apex. *Staminate inflorescence* was not observed, presumably terminal. *Pistillate inflorescence* was not observed, presumably terminal. *Staminate flower* was not observed. *Pistillate flower* was not observed. *Infructescence* terminal, racemose, quaternate, 3.8 cm long; peduncle 1.9 cm long, glabrous; peduncular bracts caducous; pedicel 0.5–0.6 cm long, glabrous. *Cephalium* elongate ellipsoidal, 0.5–0.8 × 0.15–0.2 cm. *Berry* 0.5–0.7 mm, red; stigma 2–3, mostly 2.

Distribution: Only known from the type locality.

Habitat and ecology: Swamp forest at low altitude.

Etymology: After Siberut, an island just offshore of the west coast of Sumatra, where the type was collected.

Conservation status: Vulnerable (VU) due to limited area of distribution and the fact that the species has not been recollected.

Notes: In appearance, *F. siberutensis* looks exceedingly similar to *F. angustifolia* Blume, especially regarding the same possession of racemose infructescences. With obviously smaller dimensions in leaves and cephalium, *F. siberutensis* may be a diminutive form of *F. angustifolia.* Nevertheless, the possession of quaternate infructescences and differences in the number of stigmas distinguish it from *F. angustifolia* (Table 1).

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