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Freycinetia gunungmejensis Sinaga



Freycinetia aculeata Sinaga

TWO NEW SPECIES OF FREYCINETIA (PANDANACEAE) FROM MANOKWARI, WEST PAPUA

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ABSTRACT

SINAGA, N. I. 2010. Two new species of *Freycinetia* (*Pandanaceae*) from Manokwari, Papua. *Reinwardtia* 13(2): 183–187. — Two new species of *Freycinetia* from Manokwari, Papua were described; *Freycinetia gunungmejensis* Sinaga and *Freycinetia aculeata* Sinaga. These two species are placed into two different groups. *F. gunungmejaensis* is placed in the non imbricate leaves group that has a non imbricate arrangement of leaves, caducous auricle, 1-keeled prophyll at the base of inflorescence, auxiliary or terminal inflorescence, and with cauline leaves on the terminal inflorescence/ Whereas *F. aculeata* is included in the imbricate leaves group that has an imbricate arrangement of leaves, persistent auricle, without prophyll, terminal inflorescence and without cauline leaves. The differences between these new species and closely related species are discussed below and their description and distributions are provided.

Key Words: *Freycinetia*, Manokwari, Papua, *Pandanaceae*.

ABSTRAK

SINAGA, N. I. 2010. Dua jenis baru *Freycinetia* (*Pandanaceae*) dari Manokwari, Papua. *Reinwardtia* 13 (2): 183–187. — Dua jenis *Freycinetia* yang berasal dari Papua dipertelakan sebagai jenis baru yaitu *Freycinetia gunungmejensis* Sinaga dan *Freycinetia aculeata* Sinaga. Kedua jenis ini berada dalam kelompok yang berbeda. *F. gunungmejensis* termasuk dalam kelompok dengan daun yang tidak tersusun seperti sirap, memiliki kuping yang mudah gugur, profil berlekuk 1 yang tersusun di bawah perbungaan, perbungaan terminal dan aksilaris dan dengan daun kauline pada perbungaan terminal. Sementara itu *F. aculeata* tergolong kelompok daun bersirap karena jenis ini memiliki susunan daun bersirap, kupingnya tidak mudah gugur, tidak mempunyai profil yang tersusun dibawah perbungaan, perbungaan terminal dan tanpa daun kaulin. Perbedaan kedua jenis baru ini dengan taksa lainnya yang berdekatan akan didiskusikan, pertelaan dan persebaran kedua jenis tersebut akan disajikan.

Kata Kunci : *Freycinetia*, Manokwari, Papua, *Pandanaceae*.

INTRODUCTION

Seven species of *Freycinetia* Gaud. from Manokwari were published by Solms *et al.* (1883) including one new species, *F. beccarii*, from Andai. In 1910, Martelli reported 3 new species from Manokwari namely *F. andajensis*, *F. oblanceolata* and *F. arfakiana*, and Rendle (1917) reported *F. flaviceps* and *F. gibseae*. Later, Kanehira & Hatusima (1941) also recorded *F. linearis* in Manokwari. After this, no more species from this area were published.

From this study it showed that *Freycinetia* from Papua is divided into 4 groups, namely the imbricate, semi imbricate, non imbricate, and grass-like groups (Sinaga *et al.*, 2010, in preparation).

The species in the imbricate group have a stem that is covered by leaves from base to the apex,

and is rarely branching; leaves are imbricate, linear or lanceolate; auricle persistent, membranaceous; cauline leaves yellow, orange, red or mixed color; inflorescence terminal, prophyll absent. The second group is semi imbricate group that has leafless (glabrous) stems from the base to halfway up stem, laterally branching, with leaves found only on the terminal part of stem; leaves semi imbricate, linear or lanceolate; auricle persistent, membranaceous or chartaceous; cauline leaves absent; inflorescence axillary, prophylls 9 - 36. The third group is the non imbricate group, possessing leafless stems at the base and gradually covered by leaves toward the apex, numerous branching, branches short, less than 50 cm long, covered by leaves; leaves non imbricate, elliptical to oblong and oblanceolate; auricle caducous or deciduous, membranaceous; cauline leaves absent; Inflores-

cences mostly terminal, with occasional axillary inflorescences, prophyll absent on terminal inflorescences but found on axillary inflorescences, 3 to 6. The last group is the grass-like group, possessing leafless stems at the base and densely covered by leaves at the apex, numerous branching, branches short, less than 20 cm long; leaves pseudo-rosette in appearance, linear or lanceolate, in some species observed elliptical; auricle persistent, chartaceous, dry; cauline leaves absent; terminal inflorescence, prophyll absent. These both new species were put under two different groups, *Freycinetia gunungmejensis* belongs to non imbricate group and *F. aculeata* belongs to the imbricate group.

This study was conducted in 2004 to 2009 by collecting the specimens from Gunung Meja (*Sinaga NI 2998*) and from Prafi, Manokwari (*Sinaga NI 4058*) in 2006. These both specimens were unidentified. After more collections were obtained from Amban (*Sinaga NI 4121*) and Prafi (*Sinaga NI 4120*) (Fig. 1), have allowed me to complete the information for previously unidentified collections. Finally, these specimens were concluded as two new species, *F. gunungmejensis* Sinaga and *F. aculeata* Sinaga.

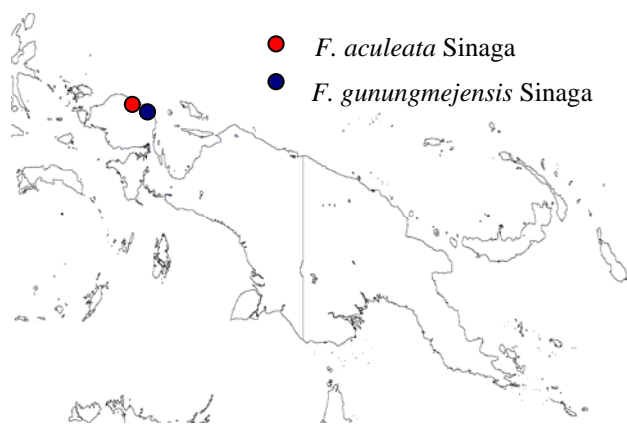


Figure 1. Collections of *F. gunungmejensis* Sinaga and *F. aculeata* Sinaga used in this study.

***Freycinetia gunungmejensis* Sinaga, spec. nov.—**
Fig. 2.

Folia oblongus, 12 – 18 cm longis, 4–5 cm latis, lamina chartacea, apice denticus, venis longitudinalibus distinctis in pagina adaxial, minus in abaxial. Spatha 9, albus basi, inflorescentia albus. Infructescentia terminalis, axilaris, ternate. Syncarpia globosis, berries prismaticus, stigmatibus 1 centrum. Typus. *Sinaga NI 2998*, Papua, Manokwari, Gunung Meja (Holotypus: MAN, Isotype: BO).

Climbing plant with many branches that are free from adventitious roots but are covered by leaves. *Stem* terete, between 0.5 cm and 1 cm in diameter; internodes 2 cm, nodes distinct. *Foliage leaves* arrangement tritichous, un-imbricate, oblong, 12–18 by 4–5 cm, dark green in shady and light green in open area; internode between the leaves 1.5–2 cm, apex cuspidate, spines on the apex margin and abaxial mid veins, fewer spines on the middle leaves margin and rarely on the base leaves; adaxial has distinctly longitudinal veins, 14 veins on a half leaves; abaxial glabrous; auricle adnate, 2 by 0.5 cm base widest, conjugate base on 1/2 auricle, caducous, pale purple. *Cauline leaves* found under the inflorescence, lanceolate to obovate, 10–12 by 2–4 cm, pale green; apex margin and abaxial mid vein prickly. *Prophyll inflorescence* 1-keeled, 6, pale purple; the lowermost prophyll are scale-like, 0.5 cm long by 0.4 cm width, but the length increase upwards along the pedicel axis; the uppermost prophyll 2 cm by 0.8 cm, apex caudate. *Bracts* consists of 3 whorls: exterior bracts ovate, 4 by 3 cm, fleshy, membranaceous; apex acuminate, pale green; basal pale yellow; middle bracts slightly cymbiform, 5 - 8 by 4 cm, base slightly fleshy, apex acute, pale green, white base; interior bract lanceolate, 3 by 1 cm, fleshy, white. *Inflorescence* terminalia and also axillary, cephalia 3, globose. *Pistilate inflorescence* peduncle terete, 1 cm in diam.; pedicle semi terete, 2 by 0.3 cm, stout, pale brown; rachis globose, to 1 cm in diameter; ovary slightly globose, white. *Infructescence* globose, 1.2 or 4 cm in diam., bright yellow turning orange when mature; berry prism, 0.5 to 0.6 cm tall; stigma 1, surrounding by areola; areola thin.

Distribution. New Guinea. Papua. Manokwari

Ecology. Primary forest, locally disturbed. Altitude 80 to 120 m above sea level (asl).

Specimen examined. New Guinea: Papua, Manokwari, Gunung Meja, altitude 120 m asl., July 2004, *Sinaga NI 2998* (MAN, BO); 80 m asl., 4 Augst 2009, *Sinaga NI 4121* (MAN).

Notes. This species is closely related to *F. oblanceolata* but the leaves of *F. oblanceolata* are oblanceolate, auricle triangulate, prophyll not emerging upward with foliage leaves, without prophyll on the inflorescence, inflorescence always terminalis and stigma 2-3. These differences make this species proposed as a new species. The name *gunungmejensis* refers to the location of the new species on Gunung Meja.

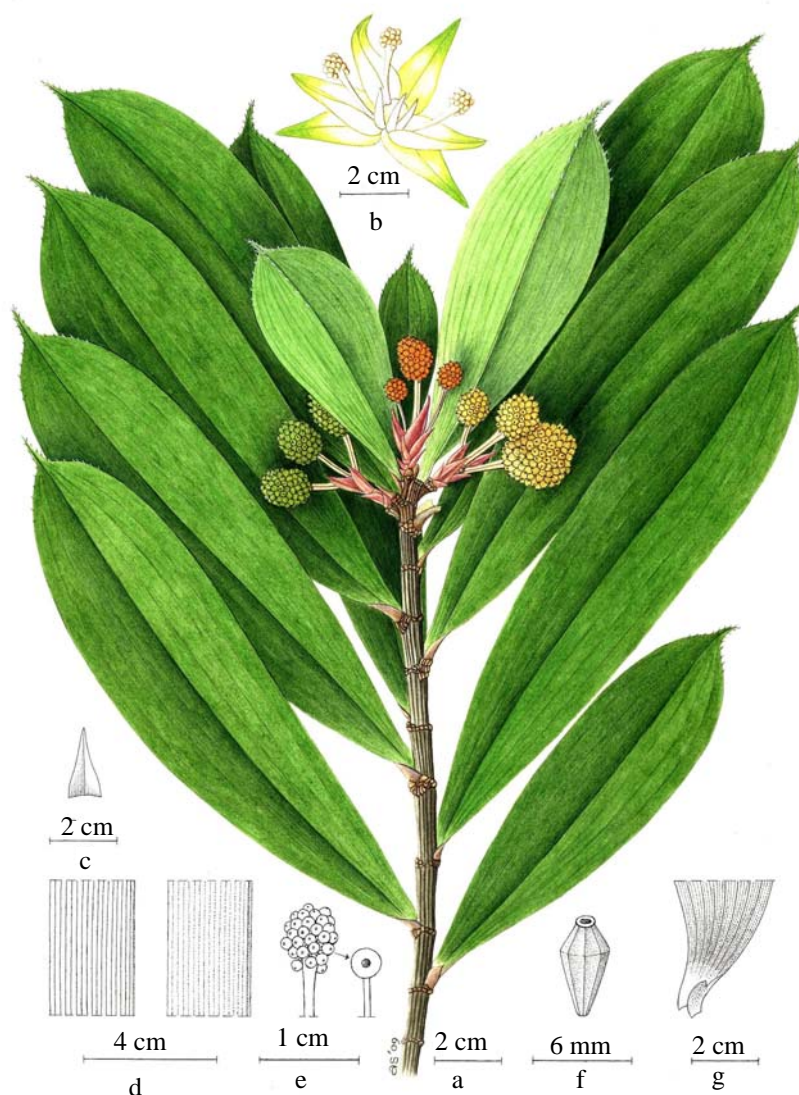


Figure 2. *F. gunungmejensis* Sinaga, *spec. nov.* : a. tip of branch with both terminal and axillary infructescences, young fruits green and mature fruits yellow turning orange, pale purple prophyll still remain on fruits, and oblong leaves with spines concentrated on the tip and leaf margin close to tip, also pale green cauline leaves on the tip; b. pistillate inflorescence with ternate flowers with globose rachis and yellowish white base, green tips on bracts. c. prophyll bract; d. adaxial surface of leaf on the left and abaxial on the right; e. staminate flowers; f. berry, prism with one stigma at the flat tip; g. auricle on the base leaves.

***Freycinetia aculeata* Sinaga, *spec. nov.* — Fig. 3**

Folia imbricatus, linearis, 20–30 cm longis, 1.5–2 cm latis, lamina marginibus aculeata, apice caudatus. Auriculis truncatus, 3 cm longis, 1 cm latis, purpurea, nec membranaceus. Infructescentia terminalis, ternate. Fruto cylindraca, berries turbinatus, stigmaticus 2 (1) (4). Typus: Papua, Manokwari, Prafi, *Sinaga NI 4058* (Holotypus: MAN, Isotypus: BO).

Climbing plant, predominantly apically dominant, ascending with short branches. Stem terete, 1 cm in diam., 1 cm internodes. Leaves imbricate, linear, 20 - 30 by 1.5 - 2 cm, fleshy;

apex acuminate, short and long sharp spines along margin, sharp spines also on the apex and present along abaxial middle veins too, pale yellow; veins on adaxial and abaxial side not prominent; auricle truncate, 3 by 1 cm, short transversal veins prominent, purplish, easy drying. Bracts consists of 3 whorls, exterior bractea ovate, 5 by 4 cm, margin entire; apex linear, with spines, acuminate, green; base greenish white, ovoid; middle bracts lanceolate, 1 by 0.5 cm, white; interior bracts ovate, 3 by 4 cm, fleshy when mature, brownish white; apex and margin entire. Staminate inflorescence pedicle 2 by 0.7 cm, stout, semi terete, pale orange; cephalia oblong, 2 by 1 cm;

filament to 3 mm tall, thin, anther ovoid to slightly globose, mature grey. *Pistillate inflorescence* peduncle terete, 1 by 1 cm; pedicle semi terete, 1.5–2 by 0.3 cm, pale orange, covered by brown or pale yellow sharp spines; cephalia oblong, 1 by 0.5 cm; ovary turbinate, yellowish white, 6–7 by 1–1.5 mm; stigma, 2 (1) or (4), semi terete rarely circular and falcate, surface flat, surrounding by bold areola. *Inflorescence* terminalia, cephalia 3 rarely 4, cylindrical. *Fruit* cylindrical, 3–4 by 1–2 cm, young green, mature red; berries ovoid;

narrow prism, when mature become globose, basal fruit conjugate.

Distribution. New Guinea. Papua. Manokwari.

Ecology. Wet tropical forest near the Prafi river, 150 to 200 m *a.s.l.*

Specimen examined. New Guinea: Papua, Manokwari, Prafi, Arfak Mt., 150 m asl., 11 Sept 2006, *Sinaga NI 4058* (MAN, BO); 200 m asl., 2 Aug 2009, *Sinaga NI 4120* (MAN).

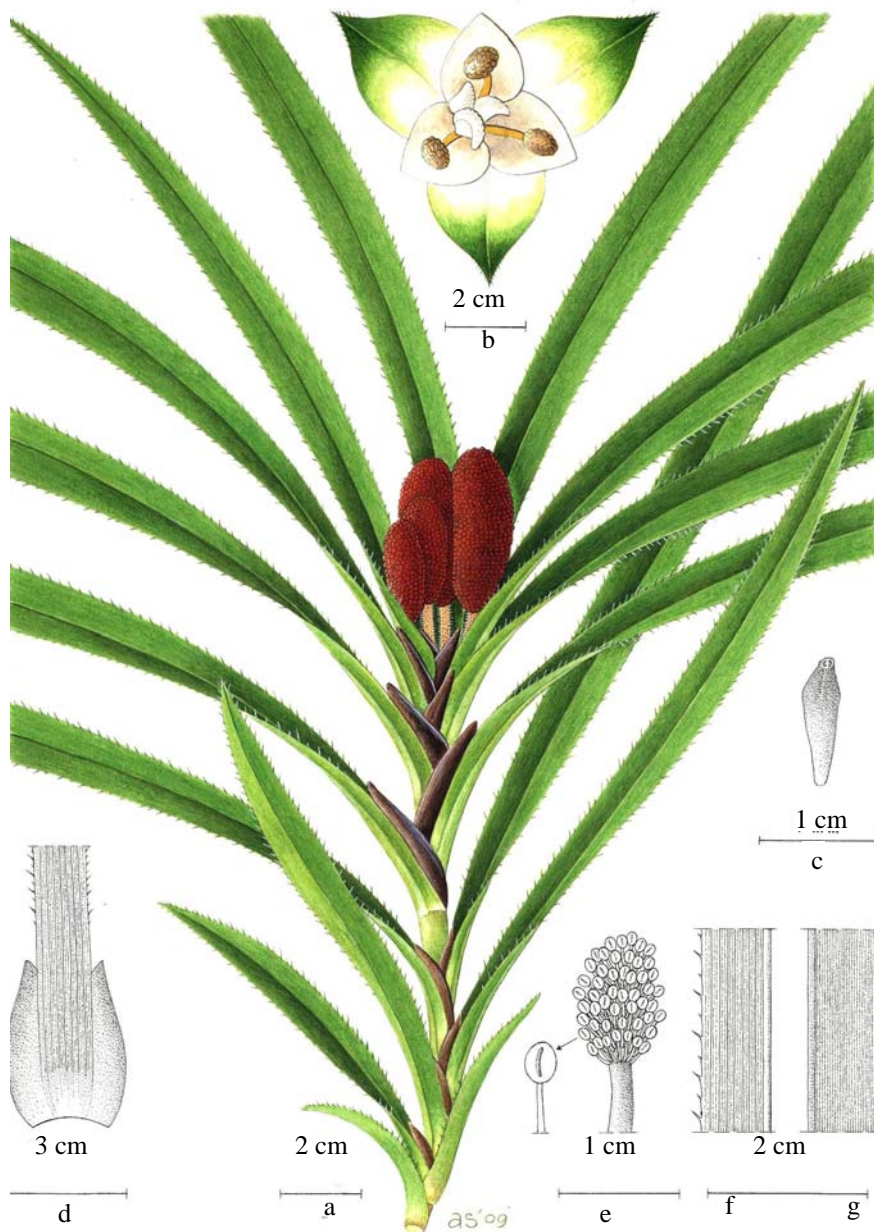


Figure 3. *F. aculeata* Sinaga *spec. nov.*: a. tip of branch with terminal infructescences shown mature red fruits, yellow pedicels that are covered by sharp spines, dark purple auricle on the base leaves and spines cover all leaf margins; b. pistillate inflorescence with ternate flowers with oblong cephalia and white yellow base, green tip on exterior bracts, white middle bracts and white interior bracts; c. berry, narrow prism; d. auricle on the base leaf; e. staminate flowers; f. adaxial surface of leaf; g. abaxial surface of leaf.

Notes. This species appears to be closely related to *F. excelsa* but shows differences in the leaves, auricle, bracts, fruits, rachis and stigma. The leaves of *F. excelsa* are narrower than *F. aculeata*, the lamina surface (both adaxial and abaxial) has prominent veins, 14–16, while *F. aculeata* has no prominent veins. The auricle is narrower in *F. excelsa* compared to *F. aculeata*, the interior bracts are red in *F. excelsa* and greenish white in *F. aculeata*. Other differences are found in fruits, the cephalia is cylindrical in *F. excelsa* but oblong in *F. aculeata*. Furthermore *F. excelsa* has circular stigma that is located on the concave surface of the ovary tip which is different to the semi terete, falcate or circular stigma on the flat surface of ovary tip in *F. aculeata* and is named after the sharp spines that are present along the margin and middle abaxial veins of leaves and the pedicle.

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INSTRUCTION TO AUTHORS

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HARRY WIRIADINATA & RISMITA SARI. A new species of <i>Rafflesia</i> (<i>Rafflesiaceae</i>) from North Sumatra	95
ARY P. KEIM. A new species of <i>Freycinetia</i> (<i>Pandanaceae</i>) from Papua New Guinea.....	101
ROBERT GRADSTEIN <i>et al.</i> Bryophytes of Mount Patuha, West Java, Indonesia.....	107
ABDULROKHMAN KARTONEGORO & J. F. VELDKAMP. Revision of <i>Dissochaeta</i> (<i>Melastomataceae</i>) in Java, Indonesia.....	125
NURSAHARA PASARIBU. Two new species of <i>Freycinetia</i> (<i>Pandanaceae</i>) from Sumatra, Indonesia.....	147
ARY P. KEIM. & M. RAHAYU. <i>Pandanaceae</i> of Sumbawa, West Nusa Tenggara, Indonesia.....	151
K. MAT-SALEH, RIDHA MAHYUNI, AGUS SUSATYA, J. F. VELDKAMP. <i>Rafflesia lawangensis</i> (<i>Rafflesiaceae</i>), a new species from Bukit Lawang, Gunung Leuser National Park, North Sumatra, Indonesia.....	159
J. F. VELDKAMP & R. M. K. SAUNDERS. <i>Goniothalamus tripetalus</i> (Lam.) Veldk. & R. M. K. Saunders (<i>Annonaceae</i>), <i>comb. nov.</i>	167
M. M. J. VAN BALGOOY. An updated survey of Malesian Seed Plants Families.....	171
NURHAIDAH IRIANY SINAGA. Two new species of <i>Freycinetia</i> (<i>Pandanaceae</i>) from Manokwari, West Papua	183
NURHAIDAH IRIANY SINAGA, RITA MEGIA, ALEX HARTANA & ARY PRIHARDHYANTO KEIM. The ecology and distribution of <i>Freycinetia</i> Gaud. (<i>Pandanaceae</i> ; <i>Freycinetioideae</i>) in the Indonesian New Guinea.....	189
EIZI SUZUKI. Tree flora on freshwater wet habitats in lowland of Borneo: Does wetness cool the sites..	199
NANDA UTAMI & HARRY WIRIADINATA. <i>Impatiens mamasensis</i> (<i>Balsaminaceae</i>), a new Species from West Celebes, Indonesia.....	211
M. ARDIYANI, A. D. POULSEN, P. SUKSATHAN, F. BORCHSENIUS. <i>Marantaceae</i> in Sulawesi.....	213