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Calamus vitiensis (ARECACEAE), A NEW RECORD OF RATTAN IN SUMBAWA ISLAND, INDONESIA

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ABSTRACT

Calamus vitiensis, previously known to occur only in Papua New Guinea, Australia (Queensland), the Solomon Islands, Vanuatu, and Fiji is newly reported from Batudulang, a mountainous area in West Sumbawa, part of Lesser Sunda Islands. A complete report consisting of description, notes, and illustrations is presented.

Keywords: *Calamus*, Lesser Sunda Islands, new record, Sumbawa

INTRODUCTION

Calamus is one of the largest genera in the family Arecaceae with at least 400 species. The genus is all native to and distributed from tropical Africa, tropical and subtropical Asia, to South West Pacific (Vorontsova *et al.* 2016). Reports have been made on the occurrence of rattans, including *Calamus*, in the Malesian region, particularly in Malay Peninsula, Sabah, Sarawak, Brunei (Dransfield 1979; 1984; 1992; 1997; Dransfield& Patel, 2005), and the Philippines (Baja-Lapis 2010). A whole revision of the genus was also made by Beccari (1908; 1911). During a recent expedition in Batudulang village, Batulanteh district, a mountainous area in the western part of Sumbawa Island, a species of *Calamus* was collected. This expedition, in conjunction with the flora of Lesser Sunda Islands project, was launched by Herbarium Bogoriense in 2015. After a thorough study, the description of this species of *Calamus* does not match those of any *Calamus* species in Lesser Sunda Islands, but matches very well the description of *C. vitiensis* Warb. ex Becc. Based on several records (Govaerts 2005; Dowe 2010; Baker *et al.* 2003), *C. vitiensis*so far is only known to occur in Papua New Guinea, Australia (Queensland), the Solomon Islands, Vanuatu, and Fiji. So far, based on Baker *et al.* study (2003) using morphometric techniques recognized four species of *Calamus aruensis* complex in New Guinea and Pacific including one species under this study: *Calamus aruensis*, *C. vitiensis*, *C. dasyacanthus* and *C. pacypus*, where both later species are endemic to New Guinea. The four species can be easily recognized by sheath spines and cirrus characters.

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MATERIALS AND METHODS

The morphology of newly recorded species was described from herbarium specimens deposited in Leiden Herbarium (L), Kew Herbarium (K), Firenze Herbarium (FI) and Herbarium Bogoriense (BO). Baker *et al.* (2003) as main source of publication also used in this manuscripts. Detailed morphological measurements were made using ruler and a long arm microscope. DNA extraction amplification and sequencing of two barcoding regions, namely rbcL and matK were carried out using published primers under standard conditions (Kress & Erickson 2007).

RESULTS AND DISCUSSION

Taxonomic Description

Calamus vitiensis Warb. ex Becc. Ann. Roy. Bot. Gard. (Calcutta) 11:350 (1908). Type: Small Island of Taviuni of the Fiji group, October 1881, 1,200 m asl, Weber 111 (holotype B destroyed; isotype FI!). — *Calamus stipitatus* Burret, Notizbl. Bot. Gart. Berlin-Dahlem 15: 814 (1943). Type: Solomon Islands, Island of San Cristobal, Kirakira, August 23, 1932, L. J. Brass 2719 (holotype B, destroyed; isotypes BM, BO!, BRI). — *Calamus vanuatuensis* Dowe, Principes 37: 206 (1993). Type: Vanuatu. Erromango, Nouankao R., Chew Wee-Lek RSNH 118 (holotype PVNH; isotype K!).

Slender solitary rattan climbing to 15 m. Stem with sheaths 20 mm in diam., without sheaths 7 mm in diam.; internodes 12.5 cm. Leaf cirrate, to ca. 2m long including cirrus and petiole very short; sheath dark green, spines absent to numerous, yellow-green to brown, triangular, spine bases sometimes slightly swollen adaxially, spines usually rather uniform size, solitary or occasionally also with very few partial whorls of up to 6, spine impressions on sheath sometimes conspicuous, sheath mouth unarmed; knee present conspicuously; ocrea present; flagellum absent; petiole very short to 20 mm, rounded abaxially, unarmed or with few to many short triangular spines; rachis 1.2–2 m; leaflets 10–22 each side of rachis, arranged regularly or in widely spaced pairs, broadly lanceolate, longest leaflets 18–43 × 3.5–7 cm, apical leaflets 7–23.5 × 0.9 – 1.5 cm, basal leaflets small, leaflet surfaces unarmed or with very few bristles 0.8–2.2 mm on adaxial surface of major veins, leaflet margins unarmed or with very few bristles 0.2 – 5 mm, most numerous near apex, transverse veinlets inconspicuous; cirrus 0.6–2 m, cirrus spines arranged regularly. Staminate inflorescence unseen. Pistillate inflorescence, up to ca. 2 m long including 26 cm peduncle, branched to 2 orders; prophyll 14–31 × 1–1.2 cm, strictly tubular, with 2 keels, prophyll mouth entire, with acute, triangular limb to one side, sometimes subtending primary branch, indumentum as on sheath, unarmed or lightly armed with short spines; peduncular bracts absent or rarely 1, rachis bracts and peduncular bract (if present) 5.7–25 × 0.3–1.5 cm, similar to prophyll, unarmed to lightly armed as prophyll; primary branches 6-12, to 28 cm long, 8–28 cm apart, straight to recurving, with up to 40 rachillae, bracts on primary branch funnel-shaped; rachillae 0.9–9.5 × 0.1–0.2 cm, sublinear to arcuate; rachilla bracts 1–2 × 1.5–2 mm, distichous to subdistichous, often rather widely spaced; flower clusters sometimes distinctly stalked, stalk 0.8–1.5 mm long. Fruit globose, still very young.

Distribution

Papua New Guinea, Australia (Queensland), the Solomon Islands, Vanuatu, and Fiji, West Sumbawa.

Habitat and Ecology

Calamus vitiensis is a common species in the primary and secondary forest, between 60-750 m asl (Dransfield *et al.* 2008). Based on the results of this field work, this species can be found in the mountainous area around 600 m asl.

Vernacular name

Fiji: Ngganuya (Taveuni). Papua New Guinea: Wusiu (Manus). Solomon Islands: Kalitao, Kalitau (Kwaraae). Vanuatu: Gawolo (Vanua Lava). Sumbawa: Owe (Samawa).

Uses

General cordage, cane for tying houses, for making swings for children, sap from cut stem used for curing eye ailments.

Notes

This is the first occurrence of *Calamus vitiensis* in Sumbawa, Lesser Sunda Islands. Voucher information and GenBank accession numbers of this species can be seen in Table 1. The sequences of *Calamus vitiensis* are the first record for the GenBank, since there is no other accession of *C. vitiensis* in GenBank.

Specimens examined

Fiji, Taveuni, slopes of Mt. Manuka, east of Wairiki, August 03, 1953, AC Smith 8132, sterile (L!).Jayapura, July 1956, Sijde BW 4003 (L!).

Manokwari Regency: Arfak Plains, Settlement Unit Seven, April 1994, Mogea 6246 (BO!, K, L!, MAN, NY). Merauke Regency: Kwell, Sept. 2000, Maturbongs et al. 653 (BO, K!, MAN). Mimika Regency: Mile 39 on road from Timika to Tembagapura, March 1998, Heatubun et al. 260 (AAU, BH, BO!, K, L!, MAN). Nabire Regency: Samabusa, Feb. 2001, Maturbongs et al. 676 (BO!, K, MAN). Sorong Regency: Sorong, Klasaman, km 14, Sept. 1995, Maturbongs 278 (K, MAN); Raja Ampat Islands, Batanta Island, Waylebed, July 1996, Maturbongs 307 (K, MAN); Raja Ampat Islands, N Misool Island, 10 km SW of Limalas, Jan. 2002, Maturbongs et al. 695 (AAU, BO!, K, LAE, MAN); Raja Ampat Islands, Waigeo Island, Waifoi, June 1997, Maturbongs 510 (K, MAN); Raja Ampat Islands, Salawati Island, Wayom, July 1996, Maturbongs 303 (K, MAN); Yapen Waropen Regency: Yapen Island, trans-Yapen highway, Oct. 1998, Maturbongs & Sagisolo 616 (BO!, K, L, MAN, N). Sumbawa, western part of Batudulang village, Batulanteh district, May 16, 2016, LD Sulistyaningsih 295, fertile (BO!) (Figure 1 & 2).

Table 1 Voucher information and GenBank accession numbers for *Calamusvitiensis*.

Species	Gene region	GenBank accession number	Voucher (Herbarium location)
Calamus vitiensis	rbcL	**MG886842**	LDS295(BO)
	MatK	**MG886843**	LDS295(BO)

A B

Figures 1 A. Habit; B. Leaf sheath armature

A B

Figures 2 A. Infructescences; B. Close up of infructescences

CONCLUSION

One new record of *Calamus vitiensis* reported from mountainous area of Batudulang, West Sumbawa, part of Lesser Sunda Islands. The sequences of this species also the first record for the GenBank, since there is no other accession of *C. vitiensis* in GenBank.

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