



Three new species in *Calamus* sect. *Podocephalus* (Arecaceae: Calamoideae) from the Philippines, Indonesia, and Papua New Guinea

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Abstract

Three new species in *Calamus* sect. *Podocephalus* (Arecaceae: Calamoideae) are described and illustrated: *Calamus daemonoropoides* from the Philippines, *Calamus parutan* from East Java and Bali, Indonesia, and *Calamus zieckii* from Papua and West Papua, Indonesia and Papua New Guinea. These are compared with similar species in the section.

Key words: Malesia, Palmae, rattans, systematics, taxonomy

Introduction

Calamus Linnaeus (1753: 325) sect. *Podocephalus* Furtado (1956: 48) comprises species mainly distinguished by having stalked, rather than sessile rachillae. Groups I, IIB, and XIV in Beccari's (1908) earlier classification of *Calamus* were included by Furtado (1956) in the section. Recent studies on the phylogenetic relationships within *Calamus* using 5S nuclear DNA spacer sequence data (Baker *et al.* 2000) suggest that sect. *Podocephalus* is non-monophyletic. However, this study was based only on a single gene and a limited sampling of taxa. The phylogeny of the section itself needs careful re-examination using a broad range of molecular and morphological data and larger taxon sampling, which may lead to a redefinition of the limits of the section. Currently, based on morphology, we can infer that sect. *Podocephalus*, as circumscribed by Furtado (1956), includes two distinct, possibly unrelated groups of species: 1) the *Calamus flagellum* Griff. ex Martius (1850: 333) group (equivalent to Beccari's groups I and IIB), which are non-climbing species or climbing species with either flagelliferous leaf sheaths or cirrate leaves, and 2) the *Calamus erinaceus* (Beccari 1902: 225) Beccari (1911: 232) group (Group XIV), species that are all high-climbers with cirrate leaves.

From an economic standpoint, the *Calamus erinaceus* group is important in that it is one of two large groups of rattans, the other being sect. *Phyllanthectus* Furtado (1956: 81), where the best quality rattan canes (*e.g.* *Calamus merrillii* Beccari (1908: 390), *Calamus ovoideus* Thwaites ex Trimen (1885: 269), *Calamus zollingeri* Beccari (1902: 199) belong, and where the most promising of the underexploited canes can be expected to be found (Dransfield 1985). All species in the *Calamus erinaceus* group have, in fact, been included in the list of rattan species with highest priority for research and development by the International Network for Bamboo and Rattan (INBAR) and the International Plant Genetic Resources Research Institute (IPGRI) (Rao *et al.* 1998).

The distributional range of sect. *Podocephalus* extends from southern India, Sri Lanka, Andaman and Nicobar Islands, throughout Malesia, to northeastern Australia. There are currently an estimated 15 species belonging to the *Calamus erinaceus* group of the section (Beccari 1908, 1913, 1923; Fernandez & Dey 1970; Rustiami 2011). In this paper, I describe three more new species in this group from the Philippines, Indonesia, and Papua New Guinea.

Notes. *Calamus zieckii* is a very distinct species in the *Calamus erinaceus* group of sect. *Podocephalus* with its leaflets arranged singly or in divaricate pairs (rarely in groups of up to 6) and the abaxial surface with brownish indumentum. Another species belonging to this rattan group that is common in New Guinea is *Calamus warburgii* K.Schum. (Schumann & Lauterbach 1900: 203). This species, however, differs from *Calamus zieckii*, is much more robust with larger diameter sheathed stems, more densely armed with fine, needle-like spines, larger leaves, leaflets arranged regularly, and seeds that are oblong-ovoid and with pitted surface.

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