

***Korthalsia rogersii* – A Vanishing Endemic Palm of the Andaman Islands**

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“The forest in its pristine glory, if found anywhere in Southeast Asia, it is in the Andaman Islands.” This remark, referring to the tropical islands in the Bay of Bengal, was made by Sir H. G. Champion, who had explored and studied the phytogeography and vegetation types of the Indo-Malayan region during the latter part of the Nineteenth Century. The tropical rain forests in Andaman and Nicobar Islands are known to host about 2000 Angiosperm species. The palms of these islands are of great interest in terms of their degree of endemism. Several insular palms have become “narrow endemics” and presently they are on the road to either endangerment or extinction. *Korthalsia rogersii* Becc., one of the endemic rattans thought to be extinct in these islands until recently rediscovered in South Andaman, is described and illustrated here.

The tropical islands of Andaman and Nicobar comprise more than 320 islands and islets, far off from the Coromandel coast of Peninsular India in the Bay of Bengal; they carry luxuriant tropical rain forests seemingly rather undisturbed by human activities. The tropical climate and geographical isolation from the major landmasses of South and Southeast Asia over millions of years are responsible for a unique flora with remarkable diversity with multi-dimensional affinities to nearer and distant geographical regions such as northeast India, Myanmar and Malesia. Geologically, the Andaman and Nicobar Islands are the emergent peaks of a submerged mountain range in continuation with the Arakkan-Yoma Mountains of Myanmar. It has been officially estimated that over 83% of the total land area of these islands are covered by dense tropical rain forests. However, this statistic on forest cover needs re-estimation, since the recent tsunami blasted among these islands in December 2004, causing severe damage.

According to Rabinowitz (1981), "the magnitude of rarity depends on factors like geographical range in distribution of species,

habitable sites of the species within the limited geographical range and population size of the species." Current enumeration of phyto-diversity of the Andaman and Nicobar Islands highlights more than 3000 taxa, which include about 2000 Angiosperms, within 8249 sq km area of fragmented land in the Bay of Bengal. This floristic statistic indicates the high degree of diversity in limited geographical region. It also suggest that several endemics are surviving as "narrow endemics" with restricted chances for out-breeding in small gene pools confined to isolated pockets. This fragile ecological equilibrium, if altered by any means, would certainly culminate in endangerment of species.

The wild palms of Andaman and Nicobar Islands have a wide range of distribution from aquatic tidal zones to hilltop vegetation, and many of them, especially several endemic palms, are on the way of endangerment or extinction. According to current information, the Andaman and Nicobar Islands host 38 wild species of palms including 22 endemic taxa. Thirteen endemic taxa exclusively belong to the Andaman group and another seven taxa



1. *Korthalsia rogersii* –
Habit, a close up view
from TBGRI campus.

are restricted to the Nicobar group of islands. Two endemic species have common occurrence in both groups of islands. Fifteen indigenous insular palms, including a new species of *Phoenix* recently described from North Andamans, are believed to be either rare or critically endangered (Balakrishnan & Rao 1983, Mathew & Abraham 1994, Renuka & Vijayakumaran 1995, Barrow 1998, Mathew 1998).

Rattans, the spiny climbing palms, comprise three genera in Andaman and Nicobar Islands – *Calamus*, *Daemonorops* and *Korthalsia* – and comprise 18 taxa. These climbing rattans have immense economic value in the cane industry. *Calamus andamanicus* and *C. longisetus* are economically important species. However, several rattans of these islands are becoming rare and some are known only from type collections. *Korthalsia rogersii*, *Daemonorops kurziana*, *Daemonorops manii*, *Calamus nicobaricus*, *Calamus pseudorivalis*, *Calamus dilaceratus* and *Calamus unifarius* var. *pentong* are categorized as endangered or nearing extinction.

The genus *Korthalsia* contains 27 species centered on the perhumid areas of the Sunda Shelf with outliers to the north as far as Indochina, Myanmar and the Andaman Islands and with three species being found east of Wallace's Line (Dransfield 1981). In Andaman group of islands, it is represented by two species, *Korthalsia laciniosa* and *K. rogersii*. The former is a common species found to occur in the moist deciduous and semi-

evergreen forest belt of these islands. This robust durable cane is occasionally used for the framework of cane chairs by local people. *Korthalsia rogersii* is a critically endangered species known only from two collections (C.G. Rogers 143, Andamans, 22 Mar. 1904 & C.G. Rogers 62, S. Andamans, Potatang stream, 02 Feb. 1904). According to Dransfield, the type specimens of *Korthalsia rogersii* deposited at Kew apparently resembles a miniature version of *Korthalsia laciniosa* with unarmed sheaths and ocrea. However, he suggested that this insular taxon has more similarities with *Korthalsia concolor*, an endemic species of Borneo, rather than *Korthalsia laciniosa*.

Korthalsia rogersii has been relocated in South Andamans in 1993 by one of the authors (SPM) during his exploration for the Flora India Project of the Botanical Survey of India. Later in 1994, live samples collected from South Andamans were introduced in the Tropical Botanical Garden and Research Institute (TBGRI). One of these live samples has flowered and fruited in 2004. However, the live specimen displayed differences in the length of petiole and inflorescence as described by Basu (1992) and Renuka (1995). A detailed taxonomic account based on the herbarium collections from Burmanalla, South Andamans and the live plant conserved in TBGRI is given below.

Taxonomic Description

Korthalsia rogersii Becc. in Ann. Roy. Bot. Gard. (Calcutta) 12(2): 131. 1918.

Korthalsia rogersii – 2 (left). Inflorescence and leaves. 3 (right). Fruiting branch.





Korthalsia rogersii – 4 (upper left).
Mature fruits in close up. 5 (bottom
left). Ruminant endosperm. 6
(upper right). Seedling.

Clustering, slender, hapaxanthic, hermaphroditic, climbing, aerially-branching rattan palm. Stem ca. 40–45 m long, with sheath 10 mm diam., without sheaths 7 mm diam.; internodes c. 20 cm. Sheaths without knee, sparingly armed with ca. 4–5 bulbous based spines, 2–5 mm long, and covered with brown indumentum; ocrea tightly sheathing, covered with indumentum, unarmed, disintegrating only at distal ends, not forming an ant chamber; leaves with petiole 50–120 cm long, culminating in a well developed cirrus with recurved spines, 2–5 mm long, close towards distal ends; petiole well developed, ca. 7–8 cm long, oblate spheroid in cross-section, armed with spines, 3–5 mm long, brownish at base, black at tips; rachis angled adaxially, armed with 2 rows of spines, covered with brownish indumentum; leaflets rhomboid, praemorse ca. 5–8 pairs; ansa (leaflet stalk) versatile, 1.5 cm long yellowish green; proximal leaflets to 14 × 7 cm; mid leaflets to 15 × 9 cm; distal leaflets smaller; margins unevenly praemorse with teeth to 5mm; leaflets multicostate, costae 9–10, radiating from ansa; lamina mid-green on adaxial surface, whitish on abaxial surface; terminal leaves subtending inflorescences smaller, with 5–6 leaflets. Inflorescences to 45–50 cm long, lax, bursting through the leaf-sheaths, 3–4 in number, branching to 2 orders,

each branch subtended by closely sheathing tubular bracts, 7 × 1 cm, persisting up to maturity, unarmed and with brownish indumentums, bract limbs triangular; main axis subtending ca. 4 or 5 or more first order branches (partial inflorescences), each with up to 5 rachillae; rachillae lax, 10 × 0.5 cm, brownish, rachilla bracts enclosing a pit filled with woolly brownish hairs. Flower to 5 × 1 mm; calyx cup-shaped, sepals 3, 2 × 1 mm, gamosepalous, broadly ovate, light brown; corolla rigid, fleshy, petals 3, 5 × 1 mm, boat-shaped; stamens 6, 3+3, slightly inflexed towards the center, filaments short, fleshy at base, brownish, 4 × 1 mm, dehiscing abaxially; carpels 3, rounded, style short, stigma pyramidal, 3 × 1 mm. Fruit obovoid with persistent calyx and stigma, 20 × 18 mm, scales imbricate arranged in 15 vertical rows; endosperm ruminant.

Specimens examined: South Andaman, Burmanullah, 24 Dec. 1994, S. P. Mathew 20904 (K), 45201, 47138 (TBGT).

Conservation Status

The Tropical Botanic Garden and Research Institute located in the foothills of the Southern Western Ghats was established for the conservation of plant genetic resources of

the country, especially from Peninsular India and Andaman and Nicobar Islands. The Institute has a well established Palmetum, which conserves 102 species and 7 varieties in 67 genera of palms. To strengthen the germplasm collections of TBGRI from the Andaman Islands, a team of botanists explored the South Andaman Islands in 1994 and collected many live samples and seeds. During the exploration, the population of *Korthalsia rogersii* was relocated at Burmanallah, the southernmost part of the South Andaman main island and interestingly the palm was fruiting. The fruiting season was about to terminate and a few samples were collected. The seeds were brought back very carefully and germinated under controlled conditions at TBGRI. One of the seedlings survived at the institute campus and flourished, flowering after eight years. Detailed taxonomical studies were carried out in 2004, and the specimens and images were sent to Dr. Dransfield at Royal Botanic Gardens, Kew, who confirmed the identity as *Korthalsia rogersii*. The rediscovery of this species has great significance in view of the Institute's mandate.

Burmanallah in South Andamans is a forest village where the settlers are mostly migrants from South India who settled during the period of Indian independence. Coconut palms and fishing are their main income generating sources. The villagers also depend on minor forest produces such as canes and bamboos for their livelihood and other domestic needs. The tropical rain forest in this region is luxuriant and hosts *Korthalsia laciniosa* and several other *Calamus* spp. The uncontrolled and unsustainable extraction of canes from this region is a major threat to this species. During our exploration in the Andaman Islands, we could locate only one population of *Korthalsia rogersii* at this region surviving along with *Korthalsia laciniosa* on a steep undulating slope. The major constraint for conservation of critically endangered palms of these islands is the paucity of information. Extensive explorations for insular palms among the islands of Andaman and Nicobar would certainly be essential for collecting accurate information, especially on critically endangered palms and their populations. According to current information, no intensive

protective steps by any government agencies have been taken for the *in situ* conservation of *Korthalsia rogersii* at Burmanallah. Detailed studies on seed biology and storage of this endangered endemic palm may be of value for its conservation.

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