

Wild and native palms of Kerala

We went on a field trip to Vagamon, Kerala from 04–07 December 2023, to understand the landscape of Kerala, the shola grasses, and the grassland habitat. During the field exploration we climbed a few hill tops and waterfalls and observed some of the endemic palm trees.

The diversity of palms in India is very rich. Palms belong to the family Arecaceae, also called Palmae, a monocotyledon family. Globally, they are distributed in tropical and temperate regions. In India there are about 21 genera and 100 species of palms in three geographical regions – Peninsular India, northeastern India, and Andaman & Nicobar Islands. Peninsular India is represented by 11 genera and 32 species of palms. The majority of the genus are monotypic; genus *Calamus* is an exception. The indigenous genera distributed in Kerala are *Arenga*, *Bentinckia*, *Calamus*, *Caryota*, *Corypha*, *Phoenix*, and *Pinanga* (Abhilash & Sathian 2013).

1. *Bentinckia condapanna* Berry ex Roxb.

Bentinckia condapanna Berry ex Roxb. commonly referred to as Hill Arecanut. It is named after Sir William Henry Cavendish Bentinck, an ex-Governor General of East-Indies by Berry in Roxb, Flora of British India III, 621. In India the genus is represented by only 2 native species, *Bentinckia condapanna* Berry ex Roxb and *Bentinckia nicobarica* (Kurz) Becc. The specific name of *Bentinckia condapanna* is a compound word derived from two words, 'conda' and 'pana'. Conda describes the casual knot in the hairstyle worn by the women in South India; while pana describes the palm (Manilal & Renuka 1983).



Distribution map of palms in Kerala.



Distribution map of palms in Kerala.



The habitat of *Bentinckia condapanna*. © Sanjay Molur.



Morphological description: *B. condapanna* is a solitary, monoecious (both male and female reproductive structures are present on the same plant) palm that has a thin stem of roughly 15–20 cm and approximately 10 m in height. The leaves are pinnately compound. The caudex is 2–3 m across. Leaflets are linear-lanceolate, 50–70 x 3–5 cm, evenly scattered and sessile. The sheath is rounded and encircling the stem. Spadix is axillary and branched with numerous spathes. Male flowers measure up to 0.25 cm size and are small and sunken in the spirally arranged pits towards the tip of branches. Female flowers are measured as 0.38–0.51 cm sized and are larger towards the base of the spadix. The ovary is 3-celled. The fruit is sub-spherical which turns purple when ripe. The terminal buds and juvenile leaves are edible (Mohanani & Henry 1994).



Distribution: *B. condapanna* is highly restricted in its distribution. It only occurs in southern Western Ghats states of Kerala and Tamil Nadu at the rock cliffs with an elevation of 1,500 m. It has been recorded from Agastyamala & Peppara (Thiruvananthapuram), Kalathupuzha (Kollam), Moozhiyar & Kakki (Pathanamthitta) and Pachakkanam, Uppupra, Peerumedu (Idukki) in Kerala (Renuka 1999). During our field exploration in (Urumbikkara hill top) Idukki and Kottayam districts, Kerala; Dr Sanjay identified this palm as *Bentinckia* from a far distance. We climbed down and observed that the population consists of 4–5 adult individuals on the steep rocky cliff (9.6023125 °N, 76.9266875 °E).

2. *Corypha umbraculifera* Linn.

Morphological description: The tree trunk is approximately 18 m in diameter. Leaves are 1.8

Bentinckia condapanna: a) A tree at the cliff. b) Part of fruiting branch. © Sanjay Molur.

m long and 3.9 m broad. Spines on the petiole are paired (Mohanani & Henry 1994). It flowers once in its lifetime when 30–40 years old, a monocarpic palm. The palm stores a significant amount of starch in its huge trunk before it flowers; this starch is used to create the massive terminal inflorescence. This palm is the national floral emblem of Sri Lanka (Renuka 1999).

Distribution: *C. umbraculifera* is distributed in semi-wild conditions of Malappuram, Kozhikode, Palakkad, and Kottayam districts of Kerala. It is also cultivated in some districts. During our way towards Eravikulam National Park, Munnar, Kerala; one of the fellows Maithreyi Hegde observed the flowering of *Corypha umbraculifera* as it was distinctly visible from the canopy cover. There was only one individual in flowering. The same palm has been reported from Sri Lanka also (Renuka 1999).

3. *Arenga wightii* Griff.

Morphological description: It is a solitary and monoecious palm. The *Arenga* stem grows to a height of 10 m by 30 cm. Leaves are approximately 4–7 m long. The adaxial surface of leaflets are dark green while the abaxial surface is white with two auricles at the base. Inflorescence is produced in the axil of the leaf. Fruits are globose yellowish-green when ripe (Renuka 1999).

Distribution: It is distributed in the evergreen forest of Peerumedu, Dhoni, Wayanad, Nelliampathy, Neriamangalam, Muthikulam, Attapaddy, Kottiyur, and Sholayar at an elevation of 300–1000 m (Renuka 1999). During the trek to Kottathavalam waterfalls, Kottayam district, Kerala Dr Sanjay observed this palm. There were



The inflorescence of *Corypha umbraculifera*.
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Arenga wightii on the slopes of Kottathavalam waterfalls. © Sanjay Molur.

2–3 individuals seen from the top of a waterfall. He also called it Indian coconut. It was on the rocky edge which was again difficult to reach.

The species is very important for the Muthuvan tribe in Idukki district as they extract starch from the cylindrical stem when the plant is 15–30 years of age. The starch is concentrated in the pith region so the tree is cut down and sliced into different length. They also consume large quantities of wine from the palm (Manihottam & Francis 2007).

4. *Calamus brandisii* Becc.

Morphological description: The stem is slender. Leaflet few fascicled lanceolate ensiform naked beneath sparsely setose above on the 3 costae, petiole slender with very long straight spines, rachis with long stout solitary straight and recurved spines, sheath armed with solitary or aggregate slender flattened straight spines mouth with very long needle-shaped spinules. Male spadix elongates shortly flagelliferous with few partial inflorescences. Spathes narrow tubular, upper funnel shaped unarmed. Flowers 4-seriate in bud (Mohanani & Henry 1994).



Calamus brandisii and *Phoenix pedunculata* interspersed on the slopes of Kottathavalam waterfalls, Kottayam district, Kerala. © Sanjay Molur.

Distribution: *Calamus* is distributed in the evergreen forest at an elevation of 1,000–1500 m at Bonacaud & Agasthyamala in Kerala, Kalakkadu, Muthukuzhivayal, and upper Kothayar in Tamil Nadu (Renuka 1999). We all observed this palm during our field visit to Kottathavalam waterfalls, Kottayam district, Kerala. It was spread on the entire slope on the way towards the waterfalls. It appeared as if it was planted.

5. *Phoenix pedunculata* Griff.

Morphological description: A dwarf pleonastic, clustered palm that grows up to 3 m in height. The persistent leaf bases, grouped in an almost helical pattern, span the whole stem. Leaves: 1–2 m long, flexible leaflets that range in colour from pale green to slightly bluish-green, fascicled. Flowers on different plants for the male and female. Fruits from orange to black in colour. It blossoms from January to March and bears fruit from October to December (Renuka 1999).

Distribution: It is typically found in higher elevation grasslands, between 1,000 and 2,000 m. It has been seen at Thekkady, Muthikulam, Chinnar, Peerumedu, Parambikulam, Silent Valley, and the Eravikulam slopes in Kerala (Renuka 1999). *Phoenix pedunculata* was interspersed with *Calamus brandisii* on the slopes of Kottathavalam waterfalls, Kottayam district, Kerala.

The terminal bud and the pulp of the fruit are edible. Leaves are used as brooms. In Tamil Nadu broom industry based on *Phoenix* is a major threat to the survival of the species (Renuka 1999).

Note: *Phoenix pedunculata* Griff has now been shifted to a variety. *Phoenix loureiroi* var. *pedunculata*.

Threats to the species: All the palm species have a variety of uses and they have been exploited since time immemorial. The shoot apex of *B. condapanna* is the most favourite of elephants. (Kulkarni & Mulani 2004). The leaves have been exploited for human uses like for thatching purpose, for making writing material, umbrellas, and baskets. The tree trunk is used for fibre and sap. The seed of *C. umbraculifera* is as hard as ivory so it has been used to make buttons (Irawanto 2013).

Overexploitation of the plant material, habitat loss due to change in land use pattern and anthropogenic pressure are the reasons for shrinkage of population.

Conservation status: Most of the abovementioned palms are found in some of the inaccessible rocky cliffs which are hard to climb. So, there is not enough data on population count, species description. Only few of the species have been assessed like *B. condapanna* as Vulnerable (Johnson 1998).

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Male and Female inflorescence of *Phoenix pedunculata* at the high altitude grasslands. © Sanjay Molur & L.M. Aparna.

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