



## Report

# NEW REPORT ON SOUTHERN MOST MYRISTICA SWAMP FROM THE WESTERN GHATS, KERALA, INDIA

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The freshwater swamps dominated by any of the members of the Myristicaceae family like *Gymnacranthera canarica* and *Myristica magnifica* (= *M. fatua* var. *magnifica*) are called *Myristica* swamps (Bhat and Kaveriappa, 2009). These are unique ecosystems exclusive to the Western Ghats and one of the major reasons for awarding Heritage site status by UNESCO. These swamps are recognised to be the trace of primitive forests of the Western Ghats with an age of 140 million years (Chandran and Mestha, 2008). The first report on *Myristica* swamps from India was six decades ago in the year 1960 from Kerala with major distribution on Shendurney wildlife Sanctuary, Kulathupuza and Anchal forest ranges of southern Western Ghats (Moorthy, 1960; Champion and Seth, 1968). Later, Santhakumaran *et al.*, (1995) reported the distribution of swamps in central Western Ghats from Goa for the first time and from Karnataka, Chandran *et al.*, (1999) reported presence of this unique ecosystem. Recently, Gayathri and Malhar, (2018) reported the northern most *Myristica* swamp from Maharashtra.

The plants species of *Myristica* swamps are showing high endemism with in the Western Ghats (Bourdillon, 1908; Sasidharan and Sivarajan, 1996; Ramesh and Pascal, 1997; Chandran and Mestha, 2001) and also majority of them are under red listed category (Nayar and Sastry, 1987, 1990). There are number of aquatic as well as terrestrial insects and vertebrates which are mostly endemic to the *Myristica* swamps (Nair *et al.*, 2007). Due to the richness of biodiversity as well as endemism of species locating, conserving such a fragile ecosystem is highly significant (Chandran and Mestha, 2001). So far, according to GPS data, the southernmost *Myristica* swamp was at Kulathupuza forest area. We have been

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surveying evergreen forests in the Western Ghats since 2016 for a systematic study on Myristicaceae members. On 2019, we found some canopy of Myristicaceae members in a deep valley encircled by *Acacia* plantations of the Forest Department near Idinjar, Brimore very close to Agasthyamala Biosphere Reserve (8°46'00.3"N 77°04'06.7"E, 200 m.s.l). The valley comprises a small stream supporting the typical swampy ecosystem with the occurrence of 'knee roots' and pneumatophores which are important diagnostic characters of *Myristica* Swamp (Fig. 1-C, D&F). Detailed systematic characterisation of dominant tree species confirmed them as *Myristicamagnifica* and *Gymnacranthera canarica* that are 'exclusives' and typical elements of Swamps. The present area of the swamp is around 2000m<sup>2</sup> which may be diminished due to anthropogenic activities. It is bordered by *Acacia* plantation and the valley was fortunately left untouched due to its geographical imperfections for a plantation. The stream that originated from swamp flows downwards to human inhabiting area. The nearest Reserved Forest is 600 m (straight line distance) away which mostly includes evergreen vegetation. Authorisation of *Myristica* swamp from Brimore marks it as the current southernmost extent of *Myristica* swamp in the Western Ghats, as based on previous reports from Kulathupuza (Thiruvananthapuram Forest Division, Kerala) which is 8 km (straight line) away from this site.

The principal tree species identified from the site are as follows:

### *Myristicamagnifica*

Eight mature trees were observed, 25-30 m long having aerial roots rising from the lower part with pneumatophores. Leaves are large 20-25 cm × 12-15 cm, obovate, margin undulate, apex acute, base rounded.

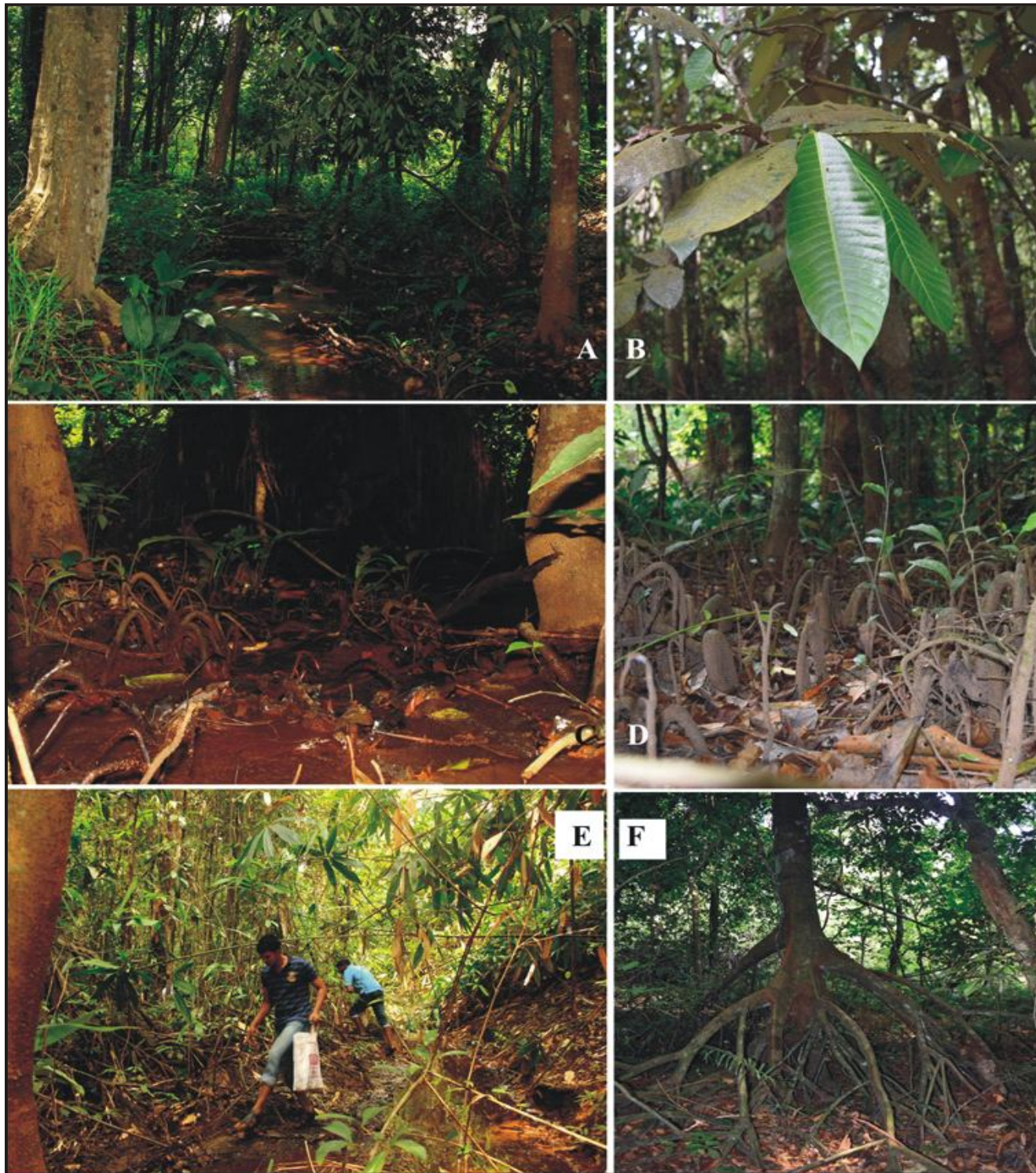
Fruits are brown, oblong and tomentose. Seeds black elliptic, covered with bright orange red aril. *M. fatua* var. *magnifica* is listed as endangered in the IUCN red list. Seedlings of different age groups were also observed.

#### *Gymnacranthera canarica*

Nineteen mature trees were observed 20-30 m having

Pneumatophores. Leaves medium 15-20 × 5-6 cm, elliptic, margin undulate, apex acuminate base round. Fruits green, globose, glabrous. Seeds globose, arils red. *G. canarica* is listed as Vulnerable in the IUCN red list.

Other than the above dominant species, *Vateria indica*, *Lagenandra ovata*, *Mastixia arborea*,



**Fig. 1:** A & E- Myristica swamp area; B- Leaves of *M. magnifica*; C & D- Pneumatophores; F- Knee and Buttress roots in *M. magnifica*.

**Table 1:** Dominant plant species.

S.No.	Dominant plant species	Distribution Status	Conservation status	Reference
1	<i>Myristica magnifica</i>	Endemic to the Western Ghats	Endangered	Sasidharan and Sivarajan, (1996) and IUCN Red Data List 2020-2
2	<i>Gymnaecanthera canarica</i>	Endemic to the Western Ghats	Vulnerable	
3	<i>Vateria indica</i>	Endemic to the Western Ghats	Vulnerable	
4	<i>Xanthophyllum arnotianum</i>	Endemic to the Western Ghats	Vulnerable	
5	<i>Lagenandra ovata</i>	Endemic to the Western Ghats	Least concern	
6	<i>Mastixia arborea</i>	Endemic to India & Sri Lanka	Least concern	
7	<i>Ochlandra travancorica</i>	Endemic to the Western Ghats	Not available	
8	<i>Calamushookerianus</i>	Endemic to the Western Ghats	Not available	

*Calamushookerianus*, *Ochlandratravancorica* were found and all were typical swampy, endemic and red listed elements (Table 1).

The present observation of *Myristicas* wamp near to the border of southern Kerala and Tamil Nadu confirms the point that this geographical zone was certainly aflourishing ground to primeval evergreen forests. However, due to extensive deforestation and plantation activities these kinds of fragile ecosystems were severely disjointed and became patchy. The Swamp land is facing threat of filling due to possible soil erosion while tilling the encircled plantation. Thus there will be a chance for blocking natural water flow and the endemic flora and fauna of this Swamp will be adversely affected. The site is a probable remnant of a large swamp which diminished considerably due to human interventions. Further studies and conservation efforts are essential to maintain these isolated, ecologically fragile sites of 'Living Fossils' in the evergreen forests of the Western Ghats.

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