

Sustenance of mangroves on the west coast of Kerala

Mangroves are important halophytic plant communities, mainly consisting of shrubs or small trees growing along the coastal areas or brackish waters. Mangroves are well-known for its quintessential role in sustaining the marine ecosystem. These nature's walls of the sea are well known for its brilliant salt filtration system and sophisticated root system to tolerate the salt-water interaction and wave action. But these nature's wonders are facing extreme degradation due to human activities and accumulation of toxic industrial effluents. The main focus of the present study was on the Cochin Islands of Ernakulam district of Kerala, a major port city in the country on the west-coast of Kerala bordering the Laccadive Sea. Cochin has a very ancient history as it was one of the most important spice trading hubs of India in the 14th century. An island in the vicinity of the sea is losing prima face cover of the mangroves.

Bruguiera gymnorrhiza which is rare had shown its presence only in few districts, i.e. Kollam, Alappuzha and Ernakulam, where Ernakulam had more number of species when compared to other districts¹. The present study revolves around the species *B. gymnorrhiza* which had various kinds of medicinal properties as well as for industrial applications. Commercially it is used for firewood, construction works, canoe parts, fishing stakes, spear, copra-Huskers, chips for pulp production, tool handles and digging sticks. A plant with diverse applications in day to day life is now on the brink of degradation. The huge space is being cleared or encroached for various developmental activities as Ernakulam is embarking to be the business capital of Kerala. As of 5 June 2019, Ernakulam reported 396 hectares of mangrove cover which is dominated by *Avicennia* varieties, but there has been a sharp decline in its abundance. In Puthuvype region also there is a rapid decline in the mangrove cover which is mainly due to the 'urbanization of the city'. Another factor for the

steep decline of the mangrove cover is the expansion of LNG terminal and Val-larpadam Container Terminal, which cut out the salt water supply to these mangroves eventually leading to its deterioration². Puthuvypin, Mangalavanam and Kundannur are the dominant sites where mangroves are found now while the researchers say there was a time when mangroves were profusely found in Vyttila and Elamakara.

B. gymnorrhiza (L.) Lamk. belongs to the family of Rhizophoraceae, a true mangrove. This is a large leafed mangrove which is widely spread across the Pacific mainly from Southeast Asia to the Ryukyu Islands of southern Japan into Micronesia and Polynesia and southward to subtropical Australia. This type of mangrove is common in the middle and upper intertidal zones, rather than in the lower intertidal zone or along the seaward edge of mangrove stands. The species is also distributed in the Indian Ocean, mainly in parts of India, Sri Lanka, Tanzania, Kenya, Mozambique, Zanzibar and Kiswahili. In India the species is mainly found along the coast of Kerala and Andhra Pradesh. *B. gymnorrhiza* is a more shade-tolerant mangrove species and also shows increased basal area composition within the intact forests dominated by *Rhizophora apiculata*³.

B. gymnorrhiza contains high amounts of antibacterial activity. It can be used for the treatment of ulcers, pharyngitis, etc. as it showed potent effect against the bacteria *Streptococcus pyogenes*. The GC-MS analysis of *B. gymnorrhiza* showed excellent results of certain organic compound which had the potential to be used in organic solvent preparation⁴. A decoction of the root, combined with the leaves of *Piper pyrifolium*, is used as a remedy for bleeding, diabetes and hypertension. The bark of the plant is rich in tannin content and can be used for bio treatment of tanning leather. The fruits are used for the treatment of shingles and eye diseases⁵.

Ernakulam district has the second highest extent of mangroves in the state after Kannur. Almost 60% of the mangrove area, come under private ownership in the state. So it is essential to protect these nature's gifts. The mangrove forests are considered to be as unique as human population. Under Sec. 2 (i) of Forest Conservation Act 1980, no forest land can be diverted for non-forestry purpose without the prior approval of the Central Government. This description covers all statutorily recognized forests, whether designated as 'reserve, protected forest' or otherwise for the purpose of Sec. 2 (i) of FCA 1980. According to this clarification, all mangrove areas qualify for the definition of forest irrespective of ownership⁶. The government should come up with strong actions to prevent the conversion of mangroves thereby preserving it as natural resources. The ecological balance will be disturbed if the momentum of life is disturbed; there are various organisms relying on the mangroves, so it is our duty to maintain this ecosystem and nourish it without our interference.

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