



## Status of True and Mangrove Associates in the Ashtamudi Estuary

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### Abstract

The present study was undertaken to record the occurrence of mangroves along the Ashtamudi estuarine system. Four sites along the stretches of Ashamudi lake were selected. 17 species of true mangroves and mangrove associates were identified from the vegetation. It showed that there was depletion and disappearance of some mangroves their its associates.

**Keywords:** Ashtamudi, Mangroves, Mangrove Associates, Status of mangrove

### 1. Introduction

Mangroves are one of the most productive ecosystems in the world (Kathiresan and Bingham, 2001). They provide important ecosystem services like nursery ground for many aquatic organisms, prevent soil erosion and form the primary source of food for some edible invertebrates such as prawns, crab etc. The Total Mangrove covers in the world are 150,000 sq. km (World Atlas of Mangroves, 2010) and occur in 123 countries. South Asia comprises 10,344 sq. km, which is 6.8 per cent of the world's mangrove cover. India's contribution is 45.8 per cent of the total Mangrove cover in South Asia (Forest Survey of India, 2015). In Kerala mangrove forests exist at Veli, Kollam, Kumarakom, Kannamali, Chewai, Nadakkavu, Edakkad, Pappinisseri, Kunjimangalam and Chithen (Ramachandran and Mohan, 1987). District gazetteers and publications contain references to mangroves of Kerala in General (Ramachandran & Mohanan, 1990) and that of Kollam in particular (Mohanan, 1984). Recent studies showed a marked decline in the mangrove along the Ashtamudi lake (Sherly Williams et al., 2012); (Sumesh et al., 2014). As the data on the recent status of mangroves along the Ashtamudi lake is very limited, the present study was undertaken.

### 2. Materials and Methods

Ashtamudi lake is the second largest brackish water lake in Kerala with an area of 32 Km<sup>2</sup>, situated in Kollam district, Kerala, between latitude 8° 48' N and 9° 28' N, Longitude 76° 28' and 77° 17' E. Mangroves were collected from four sites - Neendakara, Asramom, Ashtamudi, and Panayam (Fig 1) from February 2019 to January 2020. Herbarium sheets of the mangroves were prepared and the specimens were identified with the help of published keys (Jain and Rao, 1977; Kathiresan and Bingham, 2001).

### 3. Results and Discussion

In the present study, the mangrove species along the Ashtamudi lake (Table 1) includes *Acanthus ilicifolius*, *Avicennia officianalis*, *Exoecaria agallocha*, *Lumnitzera racemosa*, *Bruguiera gymorhiza*, *Archrostichum aureum*, *Bruguiera sexangula*, *Rhizophora apiculata*, *Sonneratia* and the Mangrove associates (Table 2) includes *Pandanus sp*, *Thespesia populnea*, *Clerodendron*, *Hibiscus sp*, *Cerebera odalam*, *Calamus rotang*, *Nypa fruticans*, *Calophyllum Sp*. *Avicennia*, *Bruguiera*, *Rhizophora* and *Sonneratia* are the species that are commonly seen in all the sites. *Acanthus ilicifolius*, *Exoecaria agallocha* and *Archrostichum aureum* etc are species that are found to be declined along the Ashtamudi estuary. *Lumnitzera racemosa*, the true mangrove species and *Calamus rotang*, the mangrove associate, were the unique species recorded from Needankara and Asramam regions, respectively. In the present study 9 true Mangrove species and 8 mangrove associates were identified and it was revealed that a drastic decline in the abundance and distribution of mangroves and their associates. Ramachandran et al. (1985, 1986), after a very detailed survey along the entire coastal area of Kerala found 39 species of Mangroves and its associates. Sherly Williams et al. (2012) observed 11 species of true mangroves, 12 mangrove associates along stretches of Ashtamudi lake and the Suman et al. (2014) reported 11 true species of mangrove and 6 species of mangrove associates along the Ashtamudi lake. This investigation has revealed that the existence of mangroves is under severe threat due to human interventions and hence observed its depletion. The common anthropogenic activities along this estuarine system are reclamation and levelling of land, mangrove vegetation for house and commercial construction, petrol pumps, harbouring mechanised boats, and the exploitation of mangrove species for medicinal and other purposes. As the mangrove ecosystem is the nursery for a large number of aquatic

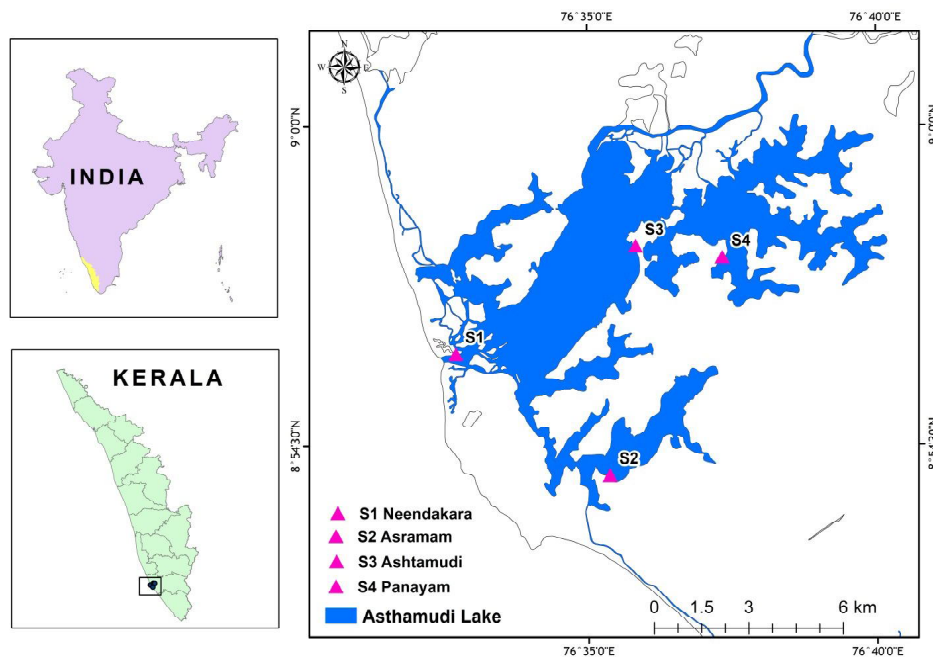


Fig. 1. Map showing study sites

Table 1. Occurrence of true Mangroves at four Sampling sites

Sl No	Species	Family	Habit	Medicinal properties	IUCN status	Sites			
						I	II	III	IV
1.	<i>Acanthus ilicifolius</i>	Acanthaceae	Shrub	Used in Asthma	EN	+	+	+	-
2.	<i>Avicinia officianalis</i>	Verbenaceae	Small tree	Used in rheumatism, paralysis, asthma, dyspepsia	EN	+	+	+	+
3.	<i>Exoecaria agallocha</i>	Euphorbeaceae	Tree	Used in epilepsy, ulcers, leprosy, rheumatism, and paralysis.	VU	+	-	+	-
4.	<i>Lumnitzera racemosa</i>	Combretaceae	Small tree	Used in cutaneous pruritus, herpes, scabies, and thrush	EN	+	-	-	-
5.	<i>Bruguiera gymorhiza</i>	Rhizophoraceae	Small tree	Used to lower blood pressure, bleeding, hemorrhage and ulcers.	CR	+	+	-	-
6.	<i>Archrostichum aureum</i>	Fern	Herb	Used in Sinus Pain	LR	+	+	-	+
7.	<i>Bruguiera sexangula</i>	Rhizophoraceae	Small tree	Used in Burns	CR	-	+	-	-
8.	<i>Rhizophora apiculata</i>	Rhizophoraceae	Small tree	Pain, inflammation and reduced blood glucose level	EN	-	+	-	-
9.	<i>Sonneratia</i>	Sonneratinaceae	Tree	Used for worm control	EN	-	+	-	-

EN – Endangered, LR – Low risk, CR – Critically endangered, VU –Vulnerable

Table 2. Occurrence of Mangrove associates at four Sampling sites

Sl No	Species	Family	Habit	Medicinal properties	Sites			
					I	II	III	IV
1.	<i>Pandanus</i> Sp	Pandanaceae	Shrub	Used to treat oliguria and urinary troubles.	+	+	+	-
2.	<i>Thespesia populnea</i>	Malvaceae	Tree	used to treat dysentery and haemorrhoids	-	+	-	-
3.	<i>Clerodendron</i>	Verbenaceae	shrub	anti-inflammatory, anti-oxidant, anti-hypertensive, anticancer, antimicrobial, anti-diarrheal etc	-	-	+	-
4.	<i>Hibiscus species</i>	Malvaceae	shrub	to treat cutaneous infections, swellings, boils and mumps.	-	+	-	-
5.	<i>Cerebera odalam</i>	Apocynaceae	Small tree	Oil from the seeds as a cure for itching or applied to the hair as an insecticide.	-	+	-	-
6.	<i>Calamus rotang</i>	Arecaceae	palm	Used to for wounds, diarrhoea, fever, dysentery, mouth ulcers, and skin conditions.	-	+	-	-
7.	<i>Nypa fruticans</i>	Arecaceae	palm	To treat toothache, headache, ulcers, and centipede bites	-	-	+	+
8.	<i>Calophyllum</i> sp	cluceaceae	shrub	traditional medicine for the treatment of chronic diseases such as ulcer, eye infections, haemorrhoids, hypertension, infections.	-	-	+	-

inhabitants and also the ecosystem services it provides, immediate measures must be taken to conserve this fragile ecosystem.

#### 4. Conclusion

Mangroves ecosystems are very important as it provides ecosystem services to millions of people. The mangrove ecosystem of Ashtamudi lake is of particular importance because of the existence of certain unique species and so

its conservation and management needs special attention. Knowledge of the true status of mangroves is needed for its effective management. Conservation needs to be linked with a broader perspective with active community involvement, environmental security and reducing any risks from natural calamities. Such measures need to be adopted more holistically given anticipatory adaptation measures, which hold the clue for successful and effective management.

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