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Mangrove Wetlands of Dhani Nalla, Betapur and Baratang Island Gateway, Middle Andaman and Nicobar Islands, India- An Overview

Dr. B. M. Pardeshi

Associate Professor, Department of Chemistry and Department of Environmental Science, B.G.College, Sangvi, Under Savitribai Phule Pune University, India.

Abstract: Mangroves are the coastal heritage of Andaman and Nicobar Islands. Mangroves are diverse group of woody trees, palms, shrubs, vines and ferns that share a common ability to live in waterlogged saline soils subjected to regular flooding. A comprehensive survey during my visit to study of Andaman, Dhani Nallah mangrove is from the Andaman Trunk Road (NH- 4) at Betapur and is about 20 kms from Rangat towards Mayabunder. Dhani Nalla walkway provides an unique opportunity to see diverse mangrove eco-system found in Andaman and Nicobar Islands, India. This place Dhani Nallah is named after a mangrove associate locally called as Dhanipatti.

Various types of Mangrove Trees like Dhani Patti/Mangrove Palm, 'Sundari', 'Blind Your Eyes', 'Jungli Jamun (Syzygium species)', Tall stilted Mangrove, Nypa Fruit, Gray Mangrove, Sundari, 'Orchid' and many different types of Mangrove trees are found inside Dhani Nallah Mangrove Walkway. During my survey of Dhani Nallah Mangrove Walkway leads to a very beautiful long beach called as Dhani Nallah beach, which is known for turtle nesting. The mangrove wetland is under threat like other part of the world.

My survey of 'Longest Walkway of India' i.e., Dhani Nallah Mangrove Walkway in Andaman Island and Betapur walkway represents the more details with beautiful photos during my May 2018 visit to North Andaman (Diglipur), Middle Andaman from Port Blair, India. The present study is an overview based on visit to Dhani Nallah and Baratang walkway and perusal of the existing literature. Surveys were carried in both the places.

Keywords: Mangrove, biodiversity, Dhani Nallah, Andaman & Nicobar Islands, Longest Walkway

I. INTRODUCTION

The mangroves of the Andaman and Nicobar Islands consist of 38 true mangrove species belonging to 13 families and 19 genera, which account for about 50 % of the global true mangrove species. The Andaman Islands have 35 and the Nicobar Islands have 21 true mangrove species. Among the eight regions, the mangrove diversity is high in South Andaman, followed by Middle Andaman, Mayabunder, Diglipur, Nicobar, Little Andaman, Havelock, and Baratang by studies conducted by P Ragavan, P. M. Mohanet.al., Andaman and Nicobar Islands, which account for 25% of the country's coastline, are about one fifth of the country's extensive and diverse mangroves. About 966 sq.km of these Islands are covered by biologically diverse mangroves. The mangroves constitute 10.85% of the total forest area of these Islands. Mangrove forests are important for food production, carbon storage and sequestration, coastal protection, water purification, and tourism, which is an increasing need not only to prevent further, losses, but to increase mangrove areas through restoration. Mangroves are commonly found along sheltered coastlines in the tropics and sub-tropics where they fulfill important socio-economic and environmental functions. These include the provision of a large variety of wood and non-wood forest products; coastal protection against the effects of wind, waves and water currents; conservation of biological diversity including a number of endangered mammals, reptiles, amphibians and birds; protection of coral reefs, sea grass beds and shipping lanes against siltation; and provision of habitat, spawning grounds and nutrients for a variety of fish and shellfish, including many commercial species. High population pressure in coastal areas has, however, led to the conversion of many mangrove areas to other uses, including infrastructure, aquaculture, rice and salt production. Numerous case studies describe mangrove losses over time, but information on the status and trends of mangrove area extent at the global level is scarce. The first attempt at estimating the total mangrove area in the world was undertaken as part of the FAO/UNEP Tropical Forest Resources Assessment in 1980.

In Andaman and Nicobar Islands, 34 true mangrove species belonging to 15 genera, 10 orders and 12 families have been documented by Indian Council of Agricultural Research, Port Blair, Andaman and Nicobar Islands by Roy S. Dam., Krishnan P., Grinson George., Kaliyamoorthy M.P. and Goutham Bharath. Mangroves are diverse group of woody trees, Palms, shrubs, vines and ferns that share a common ability to live in waterlogged saline soils subjected to regular flooding. The term "Mangrove" is derived from two words i.e. "mangue" (Portuguese) which means a mangrove tree and "grove" (English) which means community of trees. These halophytic, highly specialized plants have developed unusual adaptations to the unique environmental conditions of coastal habitats. Possessing the salient feature, the mangroves constitute complex and extensive ecosystems at the interface of terrestrial, fresh water and marine environments. Some genera/species, viz., *Acrostichum*, *Acanthus*, *Pemphis acidula*, *Phoenix paludosa*, *Cynometra*, and *Dolichandrone spathacea*, are globally considered as true mangrove species (Duke 1992; Polidoro et al. 2010), whereas the above-mentioned species were variably classified by Dagar et al. (1991), Singh (1993), Debnath (2004), and Dam Roy et al. (2009) in the Andaman and Nicobar Islands. Mangroves thrive in saline conditions because of specialized root structures and ability to exclude or excrete salt. They are very productive as they are traversed by many creeks, inlets and streams. Mangrove roots trap silt and build up thick and help in preventing soil erosion. These trees can withstand severe environmental stresses including alternate mixes of freshwater and saltwater, prolonged submersion or exposure with every tide and mud with no oxygen and high sulphur content. Andaman and Nicobar Islands, which account for 25% of the country's coastline, are endowed with about one fifth of the country's extensive and diverse mangroves in the floristic diversity. About 966 sq.km of these Islands are covered by biologically diverse mangroves, lush green habitats, which are home for diverse assemblage of flora and faunal biodiversity. These contribute significantly to the livelihood of coastal communities used for fuel, food fishing forage for livestock and medicines. Moreover mangrove serves as the breeding and nursery grounds and shelters for different aquatic lives contributing to the natural productivity. Andaman and Nicobar Islands has higher species diversity as well as high level of endemism in flora, which highlights the importance of these fragile ecosystems. Dhani Nallah Mangrove Nature Walk is located at Rangat adjacent to Andaman Trunk Road (National Highway 4 / NH-4). It is at a distance of 20 Km. from Rangat adjacent to ATR. It is a wooden boardwalk meandering through mangrove creek for a distance of 713 meters. It is the longest walkway of its kind in the whole country. This place Dhaninallah is named after a mangrove associate locally called as Dhanipatti.

II. MATERIALS AND METHODS

A survey was carried out to study the different types of mangrove plants at Dhani Nallah and Baratang walkway of the Andaman Islands during April 2018 and May 2018. All the sites have been visited at least once.

III. RESULTS

Fig.1. shows the map of Andaman and Nicobar Islands powered by Weebly, Fig.2. shows the Mangrove extent per country (percentage). Ref. Global overview Part 1 and Fig.3. show graphical representation of Mangrove area estimates and References in India was 487100 ha in 1997, % by FAO/UNEP, Tropical Forest Resources Assessment. (Ref. Global overview Part 1.).



Fig.1. Andaman and Nicobar Islands, India

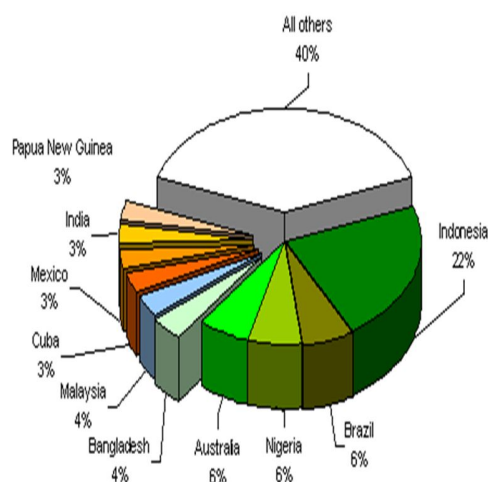


Fig.2. Mangrove extent per country (percentage).

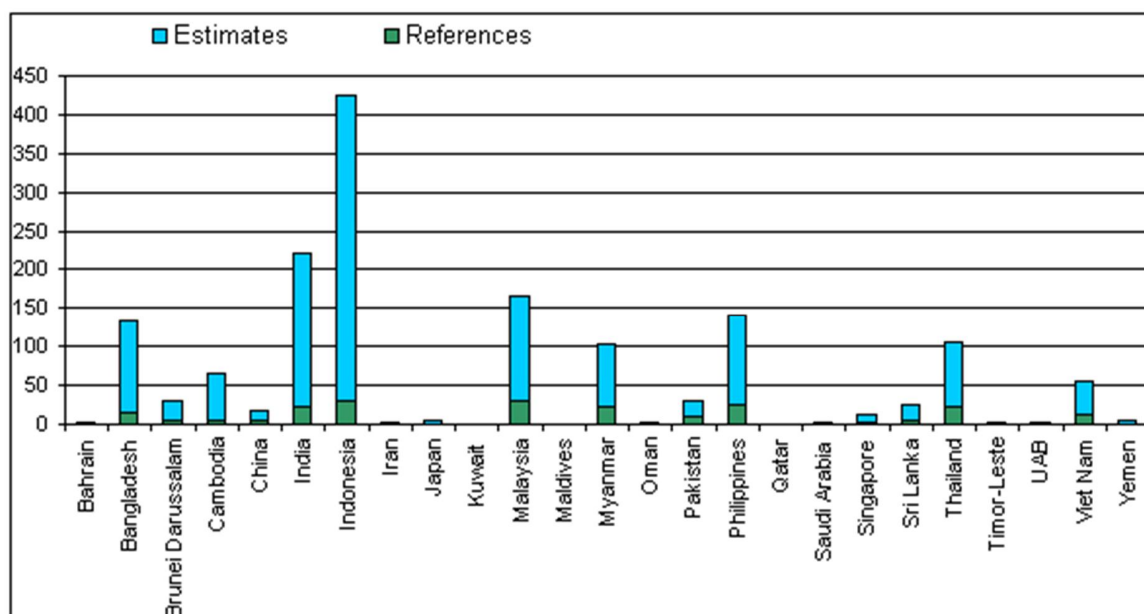


Fig.3. Mangrove area estimates and References.

Table 1. True Mangrove families found in Dhani Nallah, A&N Islands

	Family	Characteristic
1	Acanthaceae	holly mangroves; thorny leaves and terminal spikes.
2	Arecaceae	sea palms and date palms presence of aerial roots called pneumatophods.
3	Avicenniaceae	peg like aerial roots and salt glands in leaves.
4	Caesalpiniaceae	Referred to as Leguminosae ,the presence of pods.
5	MeliaceaeRhi	Terminalia family black mangroves spatula like brittle leaves.
6	Myrsinaceae	river mangroves
6	Sonneratiaceae	Comprises of woody trees, plank roots (snake like)
7	Rhizophoraceae	family of mangrove trees with arching stilt roots and knee roots.
8	Rubiaceae	trees and shrubs rounded leaf tip and Myrsinaceae
9	Sonneratiaceae	species with a wide range of salinity tolerance;
10	Sterculiaceae	The Sundri trees ,buttress roots and blind root suckers

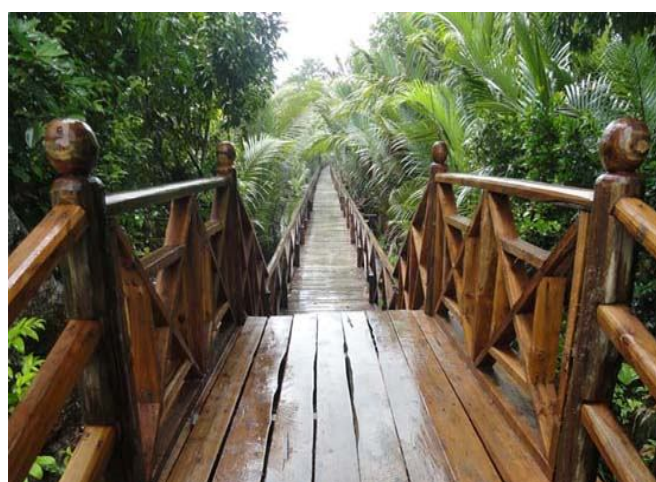


Fig. 4. New Dhaninallah Mangrove Nature Walk



Fig. 5. Old Mangrove Street with Dhanipatti trees



Fig.6. Mangrove trees at Dhaninallah



Fig.7.Walkway to Dhaninallah beach



Fig.8.Non Skid wood walkway

The plants , *Aegiceras corniculatum* (L.) Blanco (River mangrove) , *Aegiceras corniculatum* (L.) Blanco (River mangrove) , *Cynometra iripa* Kostel (Wrinkle pod mangrove) , *Scyphiphora hydrophyllacea* Gaertn (Wild Ixora), *Avicennia marina* (Forsk.) Vierh (White mangrove / Grey mangrove), *Excoecaria agallocha* Linn.(Blind your eye mangrove), *Excoecaria* a Phylum: Magnoliophyta (Yellow mangrove) , *Rhizophora apiculata* Blume (Tall stilted red mangrove), *Rhizophora mucronata* Lamk (Black mangrove) , *Lumnitzera littorea* (Jack) Voigt (Black mangrove) etc. are found in plenty amount.



Fig.9.Dhani tree with Emerald blue fruits



Fig.10. White Dhup tree



Fig.11 Mangrove trees.



Fig.12. Mangrove trees

Fig 9 to Fig 11. Photo Credit: Dr.Pardeshi B.M.

Fig. 4 to Fig.12. shows the different mangroves of Dhani Nallah.

This Walkway leads to a very beautiful long beach called as Dhani Nallah beach, which is known for turtle nesting. Plenty of Mangroves of Andaman seen at Dhani Nallah Betapur Mangrove Walkway. I have been visited Dhani Nallah, M. Andaman Mangrove Forest named 'Betapur Mangrove Walkway' or 'Dhani Nallah Mangrove Nature Walk & Beach' situated in between Portblair to Rangat and Maya bunder in Middle Andaman Island, India. Beach located near Ambkunj & Moricedera beach is in Rangat (Middle Andaman Island).

Mangrove roots trap silt and build up thick, shifting sediments and thus help in preventing soil erosion. These trees can withstand severe environmental stresses including alternate mixes of freshwater and salt water, prolonged submersion or exposure with every tide and mud with no oxygen and high sulphur content. "Betapur Dhani Nallah Mangrove Walk" is a wooden boardwalk meandering through mangrove creek. Dhani Nallah Mangrove Nature Walkway and Beach is an exceptionally beautiful place on this planet. The place is famous for Turtle breeding including Olive riddle sea turtle. The beach is one of the cleanest beach with white sands. About 15 kms from the main Rangat Bazaar, there is entrance area to the walkway leading to the beach. The place is maintained by the DFO Rangat. The Dhani Nallah Mangrove Nature Walk Way is created among mangrove forest with a raised platform made out of wood. The walk way is 715mt long and takes about 25-35 minutes to reach the Beach. The Walk Way is a wooden walkway clearing its way through creeks and Mangrove trees that gives a unique opportunity of enjoying Mangrove flora very closely. On the way, one can see creeks (Jhinga Nallah) that pass through the walk way. The Mangrove Nature Walk Way is probably India's longest mangrove walk way. It is built among the dense mangrove forests near Dhani Nallah beach. On the walk way, there are small resting huts which provide you beautiful view of the mangroves and hearing of the birds' chirpings. The Walkway ends on the white sand beach and the water is emerald blue. The beach is clean and white sand all around. Amkunj Bay beach is another sandy beach, 100 mtrs from the main road i.e. ATR, is developed in a unique way with the help of eco-friendly structures, has a couple of eco-huts and groves named after locally found flora (*casuarina*, Jamun, pandanus). The eco-friendly beach facilities such as log sofas, log teapots, indeed novel and innovative ideas, provides a perfect place to enjoy the real ecofriendly nature.

Karstland, M. Andaman conservation, Baratang Island is other gateway to North & Middle Andaman District of Andaman & Nicobar Islands. This District is quite unexplored because of its virgin beauty and natural wonders. In Baratang Island, Mud Volcano, mangrove and tropical forests, Limestone Caves, Parrot The tropical forests of the Andaman Islands. Karstland forests are vulnerable to two factors": environment and disturbance. Changes in the climate "would influence species diversity and forest regeneration" while disturbances from humans such as intensive tourism and natural disturbances from tropical cyclones and tsunamis, there is a need to orient our conservation efforts towards these forests too. Conserving Karstland vegetation will also help preserve its fauna because it influences the unique subterranean biodiversity in the caves below, which harbor a myriad of endemic fauna from birds and bats to insects and fish. Some endemic species found in the caves of the region include a subspecies of the edible-nest swiftlet, Andaman horseshoe bats, and Andaman barn owls.



Fig .14. Karstland vegetation

Baratang Island , M. Andaman grows on rugged and fragile terrain at elevations up to 76 metres from sea level. Baratang Karstland is protected by swiftlet protectors since more than 10 years under the edible-nest swiftlet conservation program by the Andaman Forest Department. This area is not yet declared as a protected area, but it's a proposed community reserve. It will be interesting to study rest of the karst areas in India to understand karstification and vegetation dynamics, undisturbed areas like Baratang Island are difficult to find.

IV. CONCLUSION

Conservation and Regeneration of Mangroves

- A. Mangroves fulfill many extremely important protective, productive and social functions. Due to increased population pressures in coastal areas and lack of awareness have led to large scale conversion of mangroves to other uses. Number of case studies and evidence exist describing mangrove losses over time. However, access to comprehensive information on the status and trends of mangrove areas at the global level has been limited. So, conserving mangroves should be a priority in any nation's conservation programs and also to plan strategies for their conservation and management (Jayatissa et al. 2002; Wang et al. 2003)..
- B. The Andaman and Nicobar Islands supports a unique biological diversity among limestone rocks, gullies and sinkholes.
- C. Vegetation composition of this ecosystem, and highlights the need for conservation.
- D. These forests are vulnerable to human intervention, climate change, tsunamis and tropical cyclones.
- E. Mangrove forests are not only evocative of tropical coastlines, slow-moving waters and brackish water where freshwater and salt water mix. They are indicators of resilience and strength. These mighty trees form spiraling coastal forests which meets shorelines and save lives during storms.
- F. Losing mangroves means losing more than just mangroves, it means losing livelihoods, food security, valuable timber production, coastal defenses and one of our most efficient and important carbon stores on the planet.

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Conflict of Interest.

Author declare that there is no conflict of interest.



REFERENCES

- [1] Aizpuru, M., Achard, F and Blasco, F. 2000. Global assessment of cover change of the mangrove forests using satellite imagery at medium to high resolution. In: EEC Research project n 15017-1999-05 FIED ISP FR – Joint Research Centre, Ispra.
- [2] <https://www.andamantourism.gov.in/Brochures/ef/mangrove.pdf>.
- [3] Clough, B.F. 1993. The Economic and environmental values of mangrove forests and their present state of conservation in the South-East Asia/Pacific Region. Mangrove Ecosystems Technical Reports vol.3 ITTO/ISME/JIAM Project PD71/89. Rev. 1(F) Okinawa, Japan, ISME. 202 .
- [4] Alongi D.M. (2002). Present state and future of world mangroves, *Environmental Conservation*, 29 (3): 331-349.
- [5] <http://www.fao.org/forestry/mangroves>.
- [6] Dam Roy S., Krishnan P., Grinson George M., Kaliyamoorthy M.P. and Goutham Bharath. Indian Council of Agricultural Research) Port Blair ,Andaman and Nicobar Islands.
- [7] FAO. 2001. *Global Forest Resources Assessment 2000: Main report*. FAO Forestry Paper 140. Rome. www.fao.org/forestry/fo/fra/main/index.jsp.
- [8] FAO. 1994. *Mangrove forest management guidelines*. FAO Forestry Paper 117. Rome, 319 pp.
- [9] Mane A.M., Prabhakaran, N and Manchi, S.S. (2019). Floral diversity, composition, and recruitment on the karstland of Baratang Island, India. *Ecological Complexity*, 37: 47-54. doi.org/10.1016/j.ecocom.2018.11.002
- [10] Banerjee LK, Sastry ARK, Nayar MP (1989) Mangroves in India, Identification Manual. Botanical Survey of India, Government of India. Calcutta, India, 76 pp [Google Scholar](#)
- [11] Bhatt JR, Kathiresan K (2011) Biodiversity of mangrove ecosystems in India. In: Bhatt JR, Macintosh DJ, Nayar TS, Pandey CN, Nilaratna BP (eds) Towards conservation and management of mangrove ecosystems in India. IUCN, India [Google Scholar](#)
- [12] Clark J.R. (1996) .Coastal Zone Management Hand Book; Lewis Publication, CRC Pres LLC, Florida 694 pp.
- [13] Cooke T. (1967) Flora of the Presidency of Bombay Vol.1-3. Botanical Survey of India Calcutta. Forest Survey of India (FSI) (1999). Status of Forest Report, Ministry of Environment and Forests. Government of India, New Delhi.
- [14] Dam Roy S, Krishnan P, George G, Kaliyamoorthy M, Goutham Bharathi MP (2009) Mangroves of Andaman and Nicobar Islands. A field guide. Central Agricultural Research Institute, 63 pp
- [15] Das AK, Dev Roy MK (1989) A general account of the mangrove fauna of Andaman and Nicobar Islands. Fauna and conservation areas: 4. Published by the Director, Zoological Survey of India, Kolkata, India, 173 pp
- [16] Dagar JC, Singh NT (1999) Plant resources of the Andaman and Nicobar Islands. Introduction, general features, vegetation and floristic elements, vols. 1 and 2. Bishen Singh Mahendra Pal Singh, Dehra Dun
- [17] Duke NC (1992) Mangrove floristics and biogeography. In: Robertson AI, Alongi DM (eds) Tropical mangrove ecosystems. American Geophysical Union, Washington DC, pp 63–100
- [18] Hajra PK, Rao PSN, Mudgal V (eds) (1999) Flora of Andaman and Nicobar Islands. Botanical Survey of India, Calcutta Ragavan P, Ravichandran K, Jayaraj RSC, Mohan PM, Saxena A, Saravanan S, Vijayaraghavan A (2014a) Distribution of mangrove species reported as rare in Andaman and Nicobar islands with their taxonomical notes. *Biodiversitas* 15:12–23
- [19] Jagtap TG (1994) Marine flora of Andaman and Nicobar group of Islands, Andaman Seas, India. In: Suryanarayan V, Sudarsen V (eds) Andaman and Nicobar Islands: challenges of development. Konark Publishers, Delhi, pp 133–143
- [20] Jayatissa LP, Dahdouh-Guebas F, Koedam N (2002) A review of the floral composition and distribution of mangroves in Sri Lanka. *Bot J Linn Soc* 138:29–43
- [21] Singh VP, Garge A (1993) Ecology of mangrove swamps of the Andaman Islands. International Book Distributors, Dehradun, 181 pp
- [22] [J.P. Ragavan, P. M. Mohan, Alok Saxena, R. S. C. Jayaraj, K. Ravichandran and Mani Saxena (2015). Mangrove floristics of the Andaman and Nicobar Islands: critical review and current scenario. *Mar Biodiv* DOI 10.1007/s12526-016-0581-3, ISSN 1867-1616.
- [23] The IEEE website. [Online]. (2002) <http://www.ieee.org>



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