



# Conservation of Mangroves and Marine Biodiversity in Maharashtra



**Government:** Maharashtra, India

**Region:** South Asia

**Sector(s):** Resilience to Climate Change

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320 sq.  
km

Mangrove Cover in the state of Maharashtra

## Summary

The Western Indian State of Maharashtra, with a coastline of 720 km, has 32,000 hectares of mangroves, a third of which is in the metropolitan city of Mumbai and its suburbs. In January 2012, the State Government of Maharashtra set up the Mangrove Cell to protect and conserve the mangrove ecosystem of the State. Despite initial problems like staff shortage and financial constraints, the Mangrove Cell successfully protected the State's mangrove forests, which led to an increase in the Mangrove cover of the State (from 186 sq. km in 2013 to 320 sq. km in 2019). The Mangrove Cell also partnered with external agencies such as UNDP-GEF and GIZ to implement various Mangrove and marine conservation activities in coastal Maharashtra (from 2012-13 to 2017-18). To ensure the sustainability of its Mangrove protection efforts and marine biodiversity conservation initiatives (started under the UNDP-GEF and GIZ projects), the Mangrove Cell created the 'Mangrove and Marine Biodiversity Conservation Foundation of Maharashtra' (also known as Mangrove Foundation). **The Mangrove Foundation** was set up in 2015 with a corpus of around USD 15 million that has increased to USD 70 million in 2020-21. From the interest generated on its corpus, the Mangrove Foundation finances the conservation of the State's Mangroves, two Marine Protected Areas and a host of marine conservation programmes.

# Sonneratia alba

## State Mangrove Tree

First coastal state in India to declare a state mangrove tree species to enhance conservation.

### Results

The Mangrove Cell and Foundation have implemented various mangrove and marine biodiversity conservation and protection initiatives such as the following:

- **Mangrove Protection:** To check and prevent the destruction of mangroves, regular patrolling of the mangrove areas is undertaken by the Mangrove Cell, which has led to the booking of a large number of offence cases and seizure of vehicles. With almost a third of the mangrove forests in Maharashtra falling within one of the most populated metropolises of the world, Mumbai, a specialised unit called the Mumbai Mangrove Conservation Unit was established under the Mangrove Cell to check and prevent incidences of encroachment and mangrove destruction in and around Mumbai.

Many illegal structures, which had cropped up on mangrove lands in various areas of Mumbai, have been removed/demolished by the Mangrove Cell (more than 5000 structures). Also, the Mangrove Cell is in the process of constructing a compound wall in some of the sensitive mangrove areas in Mumbai (total length of the wall – 4.85 km), which will help to stop encroachment in these areas.

- **Mangrove Afforestation:** Thousands of mangrove saplings have been raised in nurseries for establishing mangrove plantations in different coastal districts of the State. Presently 12 mangrove nurseries are being maintained in various coastal districts of the State. From 2012-13 to 2020-21, a total area of about 1819 hectares distributed over 120 locations across coastal Maharashtra has been covered under the mangrove plantation programme, and more than 8.3 million mangrove saplings have been planted.
- **Implementation of two externally funded conservation projects:** The Mangrove Cell, with the help of the Ministry of Environment, Forest and Climate Change (MOEFCC), implemented the United Nations Development Programme (UNDP) – Global Environment Facility (GEF) Project in the district of Sindhudurg from 2012-13 to 2017-18 and a project under the Indo-German collaboration, supported by GIZ and MOEFCC in Thane Creek and parts of coastal Ratnagiri from April 2014 to April 2017. Through the UNDP-GEF Sindhudurg Project, the Mangrove Cell addressed a wide range of interconnected conservation issues, from the sustainability of coastal fisheries, conservation of endangered species to the development of sustainable livelihood initiatives. Under the GIZ project, the Mangrove Cell took up conservation issues – particularly in Thane Creek (one of the biggest creeks in Asia) and in parts of coastal Ratnagiri and developed a state-of-the-art coastal and marine biodiversity interpretation centre at Airoli (a suburb of Mumbai).
- **Work of the Mangrove Foundation:** The Mangrove Foundation, set up in 2015, functions under the aegis of the Mangrove Cell, Maharashtra Forest Dept. and provides financial support to most of the mangrove protection and conservation activities. The Mangrove Cell undertakes the implementation of various sustainable livelihood development programmes for the local communities in the coastal districts of Maharashtra. Apart from this, the Mangrove Foundation also coordinates and finances

the sea turtle, and other marine protected animal conservation programmes in the State. It also commissions/conducts research activities, awareness programmes and capacity building activities related to the conservation of mangroves and marine biodiversity of the State.

- Since 2017, the Mangrove Foundation has been implementing a Government of Maharashtra scheme on 'Mangrove Conservation and Livelihood Generation' in the coastal districts of Maharashtra. Under this scheme, local communities are being provided with sustainable livelihood activities (mainly mangrove and estuarine conservation-related aquaculture activities such as mud crab and oyster farming, fish cage culture, ornamental fish culture and ecotourism initiatives). Presently the scheme is being implemented in about 120 coastal villages of Maharashtra, with women members of the community as the key drivers of these programmes. This scheme has been successful in generating support of the local coastal communities for mangrove and marine conservation issues, and since 2019 a revenue of more than 9.1 million INR has been generated by the local communities through various livelihood activities mentioned above.
- The Mangrove Foundation also carries out capacity building and training programmes, mainly for the village beneficiaries who are part of the various livelihood activities. The Foundation also conducts various types of awareness and outreach programmes for sensitising different groups of the society regarding the conservation of coastal and marine biodiversity.
- Apart from this, the Mangrove Foundation has collaborated with various research institutions/organisations such as Bombay Natural History Society, Institute of Wood Science and Technology, Salim Ali Centre for Ornithology and Natural History, Wildlife Institute of India, Dakshin Foundation, Indian Institute of Space Science and Technology, ICAR-Central Marine Fisheries Research Institute, ICAR – Central Institute of Brackishwater Aquaculture etc., to carry out various research projects on different aspects of coastal and marine biodiversity.
- The Maharashtra Forest Department has been carrying out the Olive Ridley sea turtle conservation programme in coastal Maharashtra since 2002-2003, and from 2018 onwards, the Mangrove Foundation has lent technical and financial support to this programme. Also, the Mangrove Foundation has established a sea turtle transit and treatment centre at Airoli for treating the stranded sea turtles along the coast of Mumbai, and similar centres are being developed in other parts of the coastal Maharashtra by the Foundation.
- The Mangrove Foundation has also collaborated with the State Fisheries Department to run a compensation scheme wherein fisherfolks cut their fishing nets to release protected marine species like sea turtles, dolphins, whalesharks, etc. which get entangled in their fishing nets, and the Mangrove Foundation pays compensation to these fisherfolks for their net damage. Until now, more than 200 fisherfolks have been compensated under this scheme, and a total amount of more than 3.3 million INR has been released as compensation. 171 sea turtles, four dolphins and porpoises, 30 whalesharks and four guitarfishes have been released safely back to the sea.

## Next steps

- The Mangrove Cell and Foundation will continue its mangrove protection and afforestation programme across Maharashtra, which will help in securing the presently degraded mangrove areas in the State.
- The sustainable livelihood programme will be scaled up so that by the end of 2025, about 200 villages may become a part of this scheme.
- Development of sea turtle treatment and transit centres in coastal districts of Raigad, Ratnagiri and Sindhudurg will lead to better management of stranded sea turtles along the entire coast of Maharashtra (since Airoli in Mumbai and Dahanu in Palghar already have functional transit centres).

## Enabling conditions

- The State Government of Maharashtra, acting on the orders of the Bombay High Court, created a dedicated unit of the Forest Department, the Mangrove Cell, to protect and conserve the mangrove forests of the State.
- Along with the protection of mangrove forests, the Mangrove Cell also assumed the responsibility for the conservation of the coastal and marine ecosystems in the State of Maharashtra.
- The Mangrove Cell was able to leverage the networks within the Government to enter into agreements with external agencies such as UNDP-GEF and GIZ, which allowed the Mangrove Cell to implement various innovative and landscape-level conservation initiatives for mangroves and marine biodiversity in the State.
- Partnerships with organisations and expert institutions developed under the externally aided projects have helped in continuing conservation efforts being taken up by the Mangrove Foundation.

*Mangroves, coastal and marine biodiversity conservation requires an integrated approach and substantial financing. The Mangrove Foundation, which complements the on-going mangrove protection efforts, has enabled a broader approach that blends ecosystem conservation while supporting alternative livelihood programmes for hundreds of coastal communities along Maharashtra coast.*

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Foundationon

## Challenges and key lessons learned

- In the past, conservation of mangroves, coastal and marine biodiversity was not one of the topics of focus in the conventional framework of managing forests in the country. Since the management of these ecosystems requires specialised knowledge and expertise, the formation of the Mangrove Cell has led to a more effective management of mangroves and marine ecosystems in the State.
- In the Mangrove Foundation, dedicated teams have been created to carry out the tasks of research and capacity building, livelihood development initiatives and awareness and outreach programmes that support the overall goal of conservation of mangroves, coastal and marine biodiversity.

### More information

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