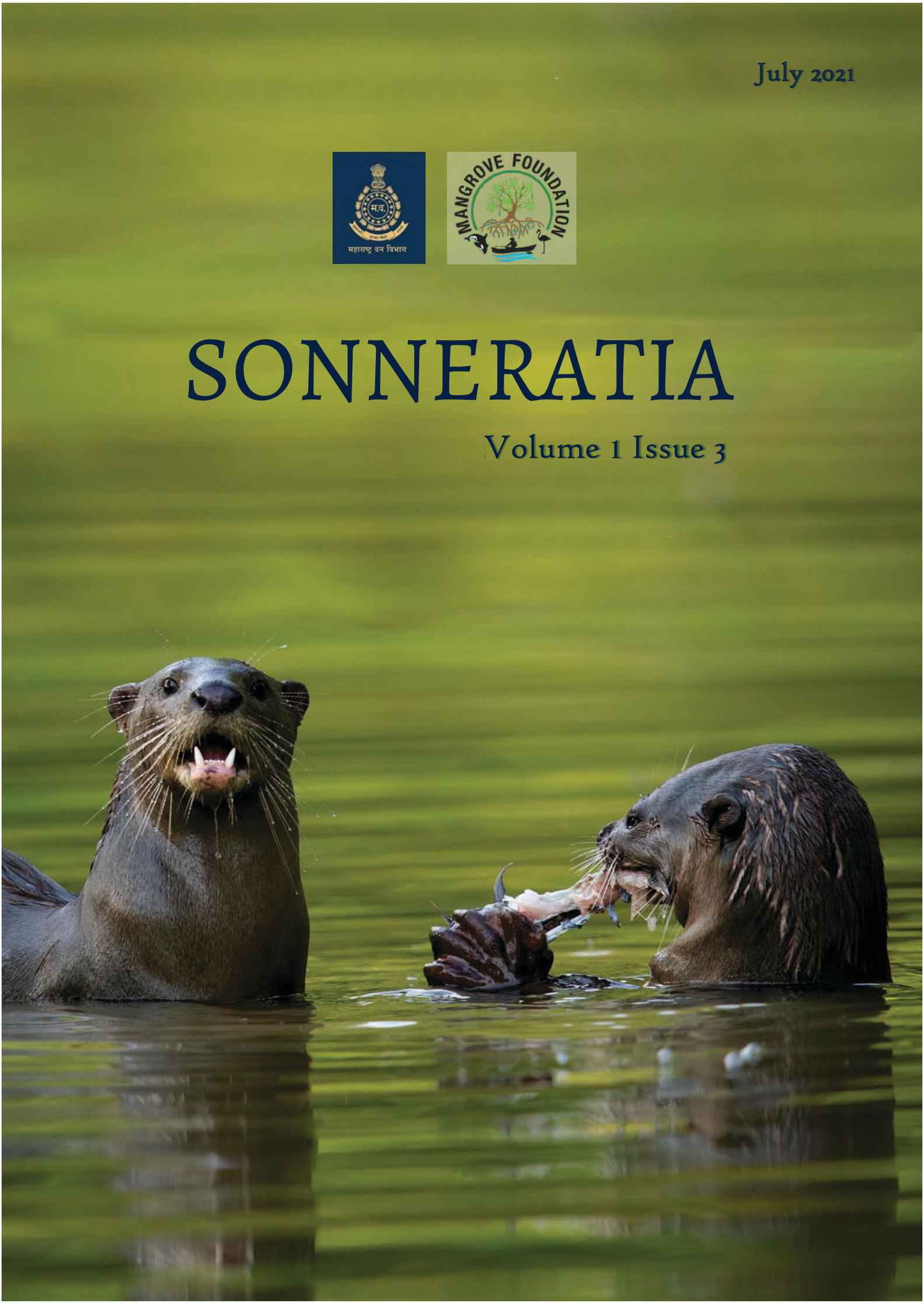
July 2021

महाराष्ट्र वन विभाग

MANGROVE FOUNDATION

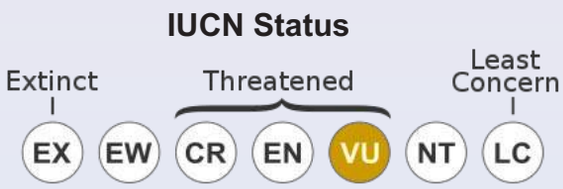
SONNERATIA

Volume 1 Issue 3



Smooth-coated Otter (*Lutrogale perspicillata*)

Wildlife (Protection) Act, 1972: Schedule II



Habitat Terrestrial, Freshwater (Inland waters), Forest, Shrubland, Grassland, Wetlands (Inland), Marine Neritic, Marine Intertidal, Marine Coastal/ Supratidal, Artificial/ Aquatic & Marine.

Distribution

Threats Urbanisation, reclamation and degrading wetlands and other habitats, Agriculture, Aquaculture, Modification of water bodies (dams & water management/use), Poaching, etc.

Conservation Efforts

1. Listed on Appendix II of CITES in 1977.
2. Creation of networks of Protected Areas.
3. Identification of sites as wetlands of national and international importance under Ramsar Convention.
4. Ban on poaching and trade.
5. Educational and Awareness Initiatives.

Source: IUCN RedList

IMAGE COURTESY

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Back page poster
Mangrove Foundation

Image Source
Mangrove Foundation Photo Bank
Justine Hofman

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Editorial

It is with great pleasure that I present to our readers the third edition of the 'Sonneratia Newsletter'. This newsletter has been a very effective way of sensitizing the general public about various conservation and protection measures undertaken by the Mangrove Cell and Mangrove Foundation regarding mangroves, coastal and marine biodiversity in Maharashtra.

One of the major conservation initiatives of the Maharashtra Forest Department for more than a decade now has been the on-going Olive Ridley Turtle Conservation Programme in coastal Maharashtra. Started in 2002, the Maharashtra Forest Department worked with local communities and regional NGOs for the conservation of the nests of the Olive Ridley Turtle which come to nest on the beaches of Raigad, Ratnagiri and Sindhudurg districts.

The conservation programme involves relocation of the Olive Ridley Turtle eggs to a protected hatchery site on the beach and the safe release of new-born turtle hatchlings to the sea after an incubation period of around 50-60 days.

This year, Maharashtra has seen a significant rise in the nests of the Olive Ridley Turtles which is a very heartening news to all the wildlife lovers and conservationists across the country.

The Mangrove Cell and Mangrove Foundation have supported the Olive Ridley Turtle Conservation Work in Maharashtra with regular capacity building and awareness activities, scientific research projects and financial assistance to the various coastal districts for carrying out the conservation programme.

This edition covers the various news articles regarding the turtle conservation work in the state and has a special graphical poster representing the turtle conservation programme in Maharashtra. Apart from this, the issue also covers information regarding various mangrove protection activities in the state, some nice publications brought out by the Mangrove Foundation and an excellent article on a unique protected fish species: the seahorse.

Thus, I sincerely hope that the readers will find this issue to be an interesting one.

- Dr. Manas Manjrekar,
Deputy Director - Research & Capacity Building,
Mangrove Foundation

Milestones

1. Coffee table book published by Mangrove Foundation

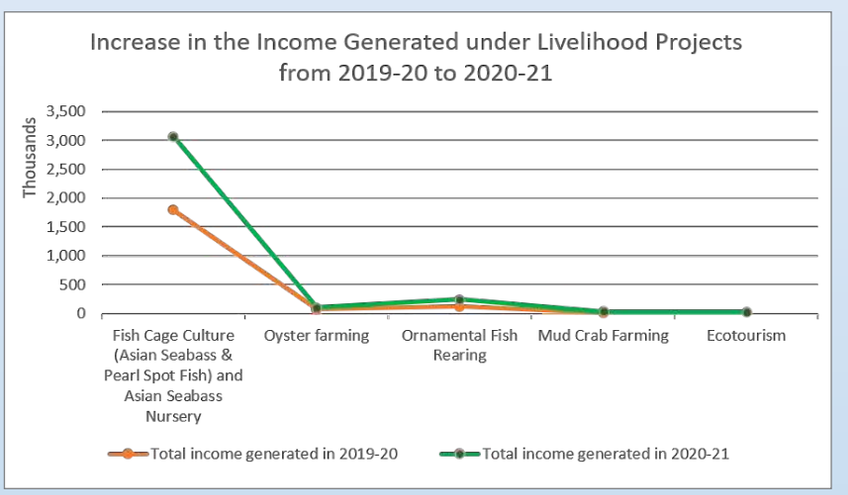
05th June is celebrated as World Environment Day. This year on this special occasion the Mangrove Foundation released a coffee table book titled, **'Bio-Sentinels of Coastal Maharashtra'** at the hands of Hon'ble Chief Minister of Maharashtra Shri. Uddhav Thackeray.

This book displays the mangroves and marine biodiversity along the coast of Maharashtra highlighting its importance. The book is available at Coastal and Marine Biodiversity Centre, Airoli.

2. Increasing income yield from livelihood development projects during 2020-2021

The 'Mangrove Conservation and Livelihood Generation' scheme has been implemented since 2017 through 109 village-based Mangrove Co-Management Committees. Total 232 Self-help Groups are involved in the scheme benefiting a total of 2,842 locals from coastal Maharashtra.

In the financial year 2020-2021, 50% rise was seen in the total income generated by the beneficiaries through the sustainable livelihood projects under the said scheme which is approximately 35 lakh rupees. In the times of COVID-19 pandemic these livelihood activities have provided a good source of alternative income to many local coastal communities in the state.



3. *'मासे जाणून घेऊया'* book published by Mangrove Foundation

On 19th June 2021, Mangrove Foundation released a book titled *'मासे जाणून घेऊया'* authored by Late Dr. Vinay Deshmukh, Fishery Scientist and Dr. Nandini Deshmukh, Retd. Zoology Professor, Mumbai University. The book mainly talks about commercial marine fish species in Maharashtra and other fishery related information.

You can watch the inauguration session on our YouTube Channel.

4. Inauguration of boat for crocodile and mangrove safari in Songaon, Ratnagiri

Mangrove ecotourism is a project undertaken at Songaon village in Ratnagiri district under the 'Mangrove Conservation and Livelihood Generation' Scheme.

A 10-seater tourist boat named 'Vashisthi' was procured by Maharashtra Forest Department and allocated to the beneficiaries of the Scheme from Songaon village to conduct crocodile safari as a part of the ecotourism initiatives. The beneficiaries were trained for conducting crocodile and mangrove safari, birdwatching, life-saving techniques, etc. by the Mangrove Cell and Mangrove Foundation.

5. Mangrove based livelihood scheme started in 2017 has been extended till 2024-25.

The Government of Maharashtra, on 20th September 2017, had initiated a scheme on 'Mangrove Conservation and Livelihood Generation' in the coastal districts of Maharashtra. The scheme is being implemented by the Mangrove Foundation through the village-based Mangrove Co-Management Committees (MCMC). Under this scheme various sustainable aquaculture livelihood activities are being implemented by the local communities and various measures for mangrove conservation are also being taken up. Looking at the effective progress of the scheme, the Government of Maharashtra has decided to extend the said scheme till 2024-25 on 19th May 2021.

To know more click here

6. Installation of informative boards at Bhandup Pumping Station

The Bhandup Pumping Station (BPS) is a key wetland which acts as a refuge for migratory birds in Thane Creek attracting a large number of tourist/wildlife enthusiasts to BPS every year. To create awareness and spread more knowledge about the biodiversity of the area, Mangrove Foundation has installed various informative boards along the trail at Bhandup Pumping Station in April 2021. These boards contain information regarding various flora and fauna observed there.

Seahorse

A unique, rare and threatened fish

The natural ecosystems formed in marine coastal regions produce and maintain important fisheries and other biological resources. However, human interventions such as coastal development, pollution, over exploitation of marine resources and habitat destruction resulted in the marine crisis and endangering many marine organisms. Seahorse is one such important, unique, charismatic and most threatened fish found in coastal reefs, seagrass beds, seaweeds as well as in mangrove ecosystems which are under increasing threat.

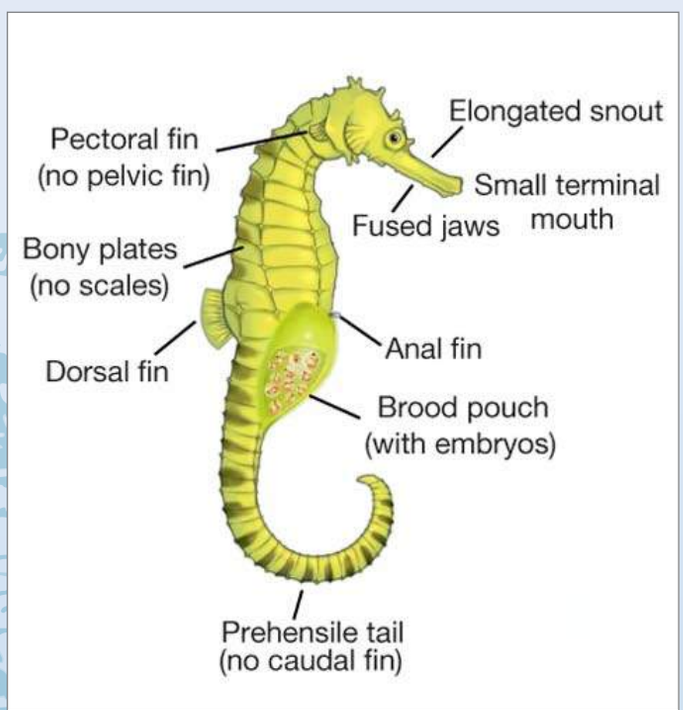
Seahorses (Genus *Hippocampus* derived from Greek word '*Hippos*' signifying horse and '*kampos*', a sea monster) belonging to the family Syngnathidae are true bony fishes. *Hippocampus* is the only genus of the Syngnathidae family which brood their eggs within a fully enclosed pouch. The female seahorse transfers mature eggs into the male's brood pouch and the further processes like fertilisation, nourishment, protection takes place inside the pouch. The lifespan of seahorses is around 3-4 years. They are known to be found in shallow coastal tropical and temperate waters (<150 m depth) with a latitudinal distribution from about 45° north to 45° south with the greatest species diversity in the Indo-Pacific region. Due to their unique unusual shape, biology and medicinal use they have always been part of people's attraction.

Yellow spotted seahorse, *Hippocampus kuda* male & female

Globally 46 species of seahorses are reported to occur in marine and brackish water environments in tropical and temperate seas. Presently 10 seahorse species are reported from Indian marine waters. As far as Maharashtra coast is concerned only one seahorse species i.e.;Yellow spotted seahorse, *Hippocampus kuda* is reported.

Species Status

Biological Characters



Biological characters of seahorses are responsible for their population decrease in the natural environment. Seahorses are monogamous and once the adult pair is formed, they stay together for their entire life. If by any reason, one of the partners is lost due to storms, predation or by human capture, it's difficult for the counterpart to form a new pair.

Seahorses have low fecundity meaning production of fewer offspring. The size of Seahorses brood is just 500-1000 nos. depending upon the size of brood pouch which is further low in case of dwarf and pygmy seahorses.

Third important reason is prolonged parental care by male seahorses of approximately 15-20 days depending upon water temperature. During parental care, male seahorses completely seal its brood pouch opening and refuse any new clutch of eggs from the female. As they are monogamous, the female does not transfer these eggs to another male and drops the egg clutch into water.

Another reason for decreasing populations of seahorse is its limited mobility and capture of brooding males by humans.

UNIQUE CHARACTERS OF SEAHORSES

- Head and neck resemble a horse
- Body resembles a caterpillar
- Tail is coiled like a monkey
- Eyes move like Chameleon
- No body scales or teeth in pipe-shaped mouth
- Brood pouch like a Kangaroo
- Vertical swimming pattern
- Monogamous in nature

Human Exploitation


Dried seahorses for sale

Recent estimation suggests that at least 25 million dried seahorses (> 20 metric tonnes) are traded annually for traditional Chinese medicine (TCM). Also, they are traded as aquarium fish and curios. These trades involve nearly 77 nations and territories. In TCM, seahorses are credited with having a role in increasing and balancing vital energy flows within the body, as well as a curative role for ailments such as impotence and infertility, potent aphrodisiac, asthma, high cholesterol, goitre, kidney disorders and skin afflictions such as severe acne and persistent nodules.

Till year 2001, India was one of the largest exporters of dried seahorses globally and contributed to about 30% of the global seahorse trade. A significant increase in international demand for seahorses in late 80's and decline in sea cucumber fishery particularly in the Palk Bay and Gulf of Mannar region from 1992 onwards led to the development of target seahorse fishery along the East coast of India. The rapid increase in dried seahorse trade resulted in the over-exploitation of the natural seahorse population as an incidental catch, risking the species to extinction. Capturing broods carrying male seahorses is another concern as the whole progeny is destroyed along with an adult male. Along Maharashtra coast, trade of seahorse has not been reported recently. However, seahorse caught in the gill nets are often carried by people to home due to their unique shape.


Incidental catch in gill nets

Threats

- Trawling and other destructive fishing methods, Incidental catch in drifting nets.
- Loss and degradation of habitats, Human disturbance, intervention and persecution.
- Predation by large fishes e.g., Tuna, sharks, crabs.
- Reduction in prey organisms.
- Slow moving pattern and not known for migration.

Natural Threats

Monsoon upwelling on the West coast of India is one of the major reasons for the seahorse population decline. Due to cold water mixing and drop in salinity by freshwater discharge into the main estuarine system, seahorses struggle for holdfast (place of attachment) and food (due to strong water current). The prolonged absence of suitable holdfast and food result in their subsequent mortality.

@Justine Hofman

Conservation measures: Legal Protection

Understanding the increasing pressure on wild populations and over-exploitation of seahorse, in 2001, the Government of India has placed all seahorse species (including all pipefishes) under Schedule I of Wildlife (Protection) Act, 1972 through a Gazette notification of the Ministry of Environment, Forests and Climate Change. According to this, any kind of trade (live or dried form) and capturing from the natural environment is completely banned and a punishable offence.

Seahorse Aquaculture

Understanding the high demand of seahorse in spite of the legal protection, the seahorse aquaculture has been considered as one of the approaches to reduce the fishing pressure on the wild seahorses. This has gained worldwide importance and many countries are involved in cultured seahorse trade with license acquired from CITES(Convention on International Trade in Endangered Species of Wild Fauna and Flora). Seven species, including H. kuda found in India accounted for more than 99% of the internationally-traded, captive-bred seahorses. The aquaculture can be an additional livelihood source for the fisher folks of India.

Awareness

Seahorses are inhabitant of coral reefs, seagrass meadows, seaweed beds and mangrove ecosystems. Seahorses are the most attractive marine fishes due to their unique characteristics. Therefore, the seahorses can become a marine flagship species even for a small habitat which will in turn help in protection of the associated ecosystems and other marine species with adequate and extensive awareness initiatives.

Dr. Sushant Sanaye works with the Mangrove Foundation as the Deputy Director- Livelihood Development. He holds a doctorate degree in the field of Fisheries. He looks into livelihood activities such as Fish cage culture, Ornamental Fish Rearing, Oyster and Mussel Farming, Mud Crab Farming under the 'Mangrove Conservation and Livelihood Generation' Scheme undertaken by Mangrove Foundation.

Olive Ridley Sea Turtle Conservation in Maharashtra

Hatchery site selection & Construction

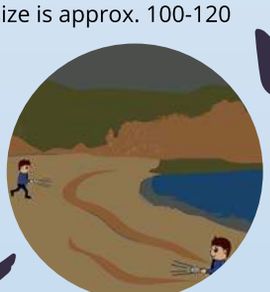
- Away from high tide line
- Safe from predators

Nesting Season

Female turtle comes to the beach in early morning or late night during the nesting season (Nov-March) to lay eggs

Egg Laying

- Search for suitable location to lay eggs beyond high tide line
- Clutch size is approx. 100-120 eggs



Patrolling of Beach by Nest Manager

Nest Managers (Local volunteers) patrol the nesting sites in the night & early morning to look for turtle tracks & nest

Locating the Nest

- Once nests are located they are flagged/marked
- Nests below high tide line (HTL) - relocated to the Hatchery (Ex-situ nests)
- Nests above HTL are protected with a fence at the same location (In-situ nests) & flagged

Nest Relocation to Hatchery

- Eggs are removed with the surrounding wet sand
- Depth and diameter of the artificial nest is same as natural nest

Hatchery Management & Incubation Period

- Each nest is tagged with date of relocation & no. of eggs
- Covered with a basket to protect from birds & minimise the heat effect (Sometimes with plastic during rains)
- After 45-55 days nest inspected regularly by nest managers
- Depression is seen on the sand just before emergence of hatchlings

Release of Hatchling

- Nest is monitored thrice a day after completion of the incubation period for hatchlings emergence
- They are released immediately after emergence
- Released few feet away from the water level as it is believed that the beach location gets imprinted helping them to come back to same location for nesting

Staff's Corner

Reef-associated ichthyofauna from a marginal coral reef habitat along the west coast of India: Implication for management strategies

Kalyan De, Sushant V. Sanaye, Sambhaji Mote, Mandar Nanajkar, and Baban Ingole

Coral reefs harbour remarkable high biodiversity of reef fishes and it is the most important community, significantly contributing to ecosystem functioning and reef resilience. However, under the continuous effect of climate change and human activities, corals and reef fishes are in peril. For the first time, this study documented coral reef-associated ichthyofauna from Malvan Marine Sanctuary (MMS) on the Central West coast of India- an understudied marginal patch coral reef habitat. Experiencing severe stress due to concurrent coral bleaching, fishing, sedimentation, intensifying tourism, and coastal development activities.

A total of 47 species of reef fishes belonging to 35 genera and 26 families were reported, also a list of hard corals from MMS was prepared, thus highlighting the biodiversity of reef building corals and reef fishes in the MMS and threats to them. Therefore, urgent intervention with sustainable fishery management policies and long-term reef protection measures is a prerequisite for the persistence of the corals and the associated reef fishes in the MMS.

Read the Full paper here

Abudefduf bengalensis

Pomacanthus annularis

१. विकास महत्वाचाच, पण कांदळवनांची जपणूकही तितकीच महत्त्वाची - उद्धव ठाकरे

राज्याचे माननीय मुख्यमंत्री श्री. उद्धव ठाकरे यांनी २४ मार्च २०२१ रोजी कांदळवन संवर्धन आणि राज्य विकास या संदर्भात एक बैठक घेतली. या दरम्यान कोकण आणि मुंबई नजीक विकासकार्य करत असताना तेथील कांदळवनांना धक्का लागणार नाही याची काळजी घेण्याचे निर्देश त्यांनी सर्व अधिकाऱ्यांना दिले. तसेच, ऐरोलीतील किनारी आणि सागरी जैवविविधता केंद्रासारखीच अधिक केंद्रे मुंबई विभागात तयार करण्याचेही त्यांनी सुचविले. कांदळवन संवर्धन आणि संरक्षणाबाबत अधिक सतर्कपणे काम केले जावे. स्थानिकांच्या मनात कांदळवनांविषयी आपुलकी निर्माण होऊन त्यांच्या सहाय्याने कांदळवनांचे संरक्षण व्हावे याकरिता जनजागृती कार्यक्रमांचे आयोजन करण्याचे निर्देशही त्यांनी या सभेत दिले.

अधिक माहीतीसाठी येथे क्लिक करा

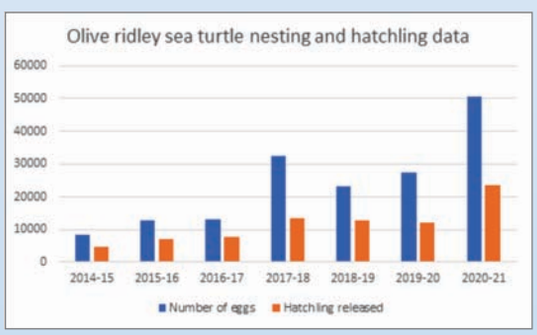
२. 'एमटीडीसी' आणि महाराष्ट्र शासनाकडील कांदळवन क्षेत्र वन विभागाच्या ताब्यात

गोराई आणि मनोरी खाडीपरिसरातील 'महाराष्ट्र पर्यटन विकास महामंडळा'च्या (एमटीडीसी) मालकीची जवळपास ४६६.७२ एकर जमीन वन विभागाच्या कांदळवन कक्षाकडे (मँग्रोव्ह सेल) हस्तांतरित करण्यात आली आहे. सदर क्षेत्र भारतीय वन अधिनियम, १९२७च्या कलम ४ अंतर्गत 'राखीव वन' म्हणून घोषित करण्यात येईल. तसेच मीरा-भाईंदर विभागातील १०३६ हेक्टर पेक्षा अधिक कांदळवन क्षेत्रास वरील अधिनियमांतर्गत 'राखीव वन' घोषित करून संरक्षणासाठी वन विभागाच्या ताब्यात देण्यात आले.

पर्यावरण मंत्री श्री. आदित्य ठाकरे यांनी पुढाकार घेऊन मुंबई, ठाणे, नवी मुंबई, रायगड, पालघरमधील जिल्हाधिकारी आणि महानगरपालिकेच्या अधिपत्याखालील कांदळवनांच्या जमिनी वन विभागाच्या ताब्यात देण्याच्या सूचना दिल्या होत्या. त्यानुसार कांदळवनांचा बराचसा भाग वन विभागाकडे हस्तांतरित करण्यात आला आहे. ज्यात आता गोराई आणि मनोरी खाडीजवळील कांदळवनांचा समावेश झाला आहे.

अधिक माहीतीसाठी येथे (गोराई आणि मनोरी क्लिक करा, मीरा-भाईंदर क्लिक करा)

3. Turtle conservation in Velas during lockdown



Turtle conservation in coastal districts of Maharashtra has been on-going since 2002. This year, the number of Olive Ridley Turtle nests increased to 451 compared to 288 in 2020. The highest increase was recorded in the Sindhudurg district (68 in 2020 to 146 in 2021) followed by Ratnagiri district (148 in 2020 to 277 in 2021).

Velas a village in Ratnagiri district, recorded an increase in the number of turtle nests to 44 this year. Velas is also known as 'Turtle Village' for the turtle conservation efforts by locals as well as the Forest Department and for organising the first 'Turtle Festival' in 2002 which has since attracted tourists every year. This year due to the pandemic conditions the festival was organised virtually as 'Turtle Carnival' by Mangrove Foundation through Instagram LIVE during which the viewers enjoyed watching the turtle hatchlings being released in the sea and also learned about turtle conservation efforts.

To read the full story about increased turtle nests click here
To read the news of Velas in Marathi click here

4. 47 Olive Ridley Turtle hatchlings were released after Cyclone Tauktae hit the Maharashtra coast and damaged some nests

The Cyclone Tauktae not only damaged human property but also the Olive ridley turtle nests in the hatcheries in Ratnagiri and Sindhudurg districts. These hatcheries are the places where the turtle nests are protected from shore predators via a net fencing. These hatcheries are handled by the locals with the guidance of the experts and the Forest Department. A total of 29 Olive Ridley nests from Ratnagiri and Sindhudurg districts were damaged by the cyclone.

Despite the damage, 47 hatchlings were released on 22nd May 2021 from Dabhol village in Ratnagiri district post cyclone.

Click here for the full story on Turtle nest damage

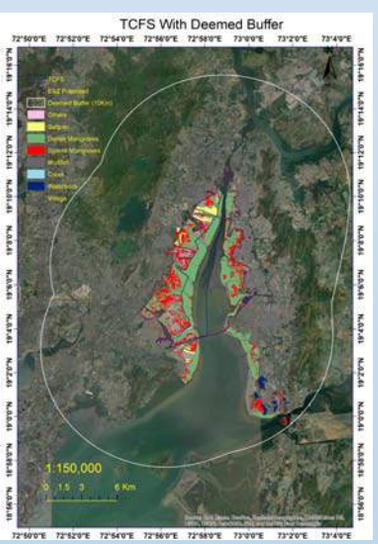
Click here for the full story on release of Turtle hatchlings

5. Eye in the sky to watch Maharashtra mangroves

Mangroves in Maharashtra received legal protection as per the landmark order of the Hon. High court in 2006. The Mangrove cutting or encroachments on mangrove areas are punishable offences and the Forest Department is taking strict actions in these regards. In spite of all the legal restrictions and actions, many areas around Uran, Kharghar, etc. are facing mangrove loss due to various anthropogenic activities . To curb these losses the Mangrove cell has decided to carry out drone surveillance of these areas so as to improve protection of mangroves in these areas.

To read the full story click here

6. 48.32 Sq. Km around TCFS is proposed to be Eco Sensitive Zone (ESZ)



The ESZ is meant to act as a buffer for Protected Areas (PAs) and reduces developmental pressures around a Wildlife Sanctuary or National Park. Thane Creek Flamingo Sanctuary (TCFS) is home to a variety of mangrove species and the associated fauna including birds, fish, butterflies, insects and mammals. Thus, the area around the sanctuary needs additional protection. To protect this biodiversity rich site, an area of 48.32 Sq. Km. around the TCFS has been proposed as a draft ESZ.

To read the full story click here

Other Programmes

1. Virtual Flamingo trail via Youtube LIVE

On the occasion of World Environment Day 05th June 2021 the Mangrove Foundation conducted an Youtube LIVE session 'Flamingos Live from Mumbai'. During this session over 600 viewers enjoyed the huge congregation of Lesser Flamingos at T. S. Chanakya wetlands, Navi Mumbai and could observe the flamingos feeding, preening and roosting. The flamingos were seen with a beautiful pink plumage as they would shortly undertake the journey to their breeding grounds.

You can watch the session on our Youtube Channel.

2. Mangrove Plantation under CSR initiatives

The Mangrove Foundation has been actively involved in CSR initiatives with various institutions, organisations and companies. Under this the activities like mangrove plantations, conservational measures to protect the existing mangroves, sustainable livelihood generation for coastal communities through aquaculture and skill development, education & awareness programmes, etc. are carried out.

Under the CSR programme, the Mangrove Foundation has signed an MoU with United Way Mumbai on 26th August 2020 for restoration of 10 hectares of degraded mangrove area out of which 5 hectares have been completed so far.

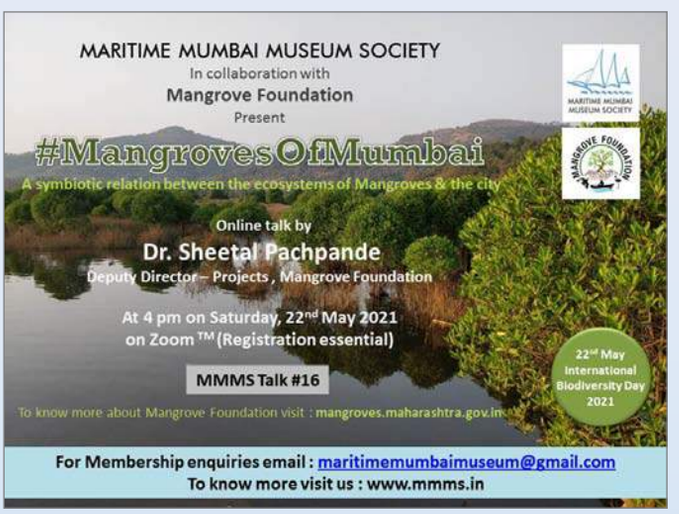
To know more about our CSR initiatives,visit our website .

3. Collaborative educational programmes

On the occasion of International Day for Biological Diversity i.e. 22nd May 2021, Mangrove Foundation in collaboration with Maritime Museum History Society conducted a webinar on 'Mangroves of Mumbai'. The webinar was delivered by Dr. Sheetal Pachpande, Deputy Director - Projects, Mangrove Foundation.

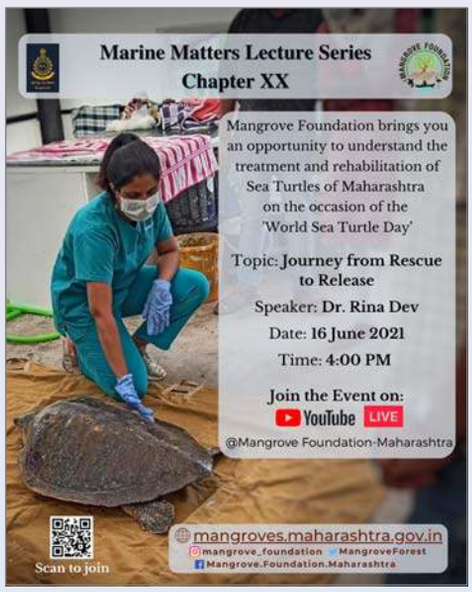
Also, on World Sea Turtle Day i.e. 16th June 2021 Mangrove Foundation in collaboration with Mumbai Zoo (Veer Mata Jijabai Bhosale Udyan and Zoo), conducted a webinar on 'Sea Turtle Conservation in Maharashtra' which was delivered by Mr. Mohan Upadhaye, Research Assistant, Mangrove Foundation.

You can watch both the sessions on our YouTube Channel.

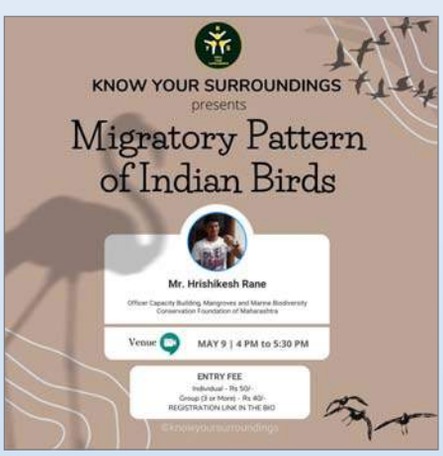


Glimpse of Our Activities

Webinar on Corals- Treasure of Seas by Harshal Karve



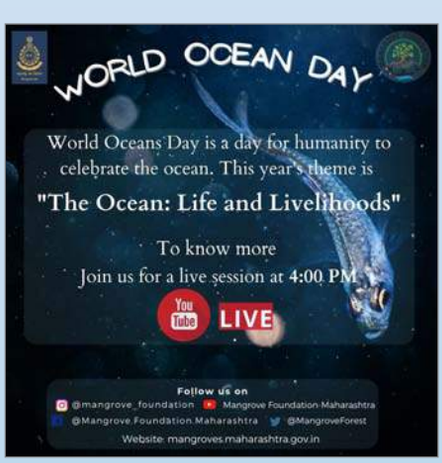
Webinar on Treatment and Rehabilitation of injured Sea Turtles in Maharashtra



Webinar on Migratory Pattern of Indian Birds by Hrishikesh Rane

Instagram LIVE Turtle Carnival

'मासे जाणून घेऊया' book launch event



YouTube LIVE on World Ocean Day

ENDANGERED SPECIES DAY CROSSWORD

SCAN TO PLAY

Across

7. Tern species with a black belly.
9. Fruit Bat named after a popular Ornithologist.
10. Pack hunters from central Indian forests.
11. A specific colored reptile from the seas.
13. Mangrove specialist bird from Sundarbans named after its feet.
14. This wading bird is named after the unit of speed used at Sea.
16. Fish whose name is derived from a weapon.
17. A royal giant, both worshipped and poached.

Down

1. Poached for its scales.
2. Scavenger from the Pharaoh's land.
3. Grazers from the deserts of India.
4. Endemic goat from the Western Ghats.
5. The largest mammal in the world.
6. The smallest bird in its family known for leaping breeding displays in monsoon.
8. Macaque species from Western ghats named after its tail.
12. Largest fish in the World.
15. No prizes for guessing this Endangered animal.

For Ans Key Click here

Participate in our work

Readers can participate in our conservation work through contributing their coastal and marine biodiversity related photographs, articles, poems, etc. by sharing them on submissions.mfn@gmail.com

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