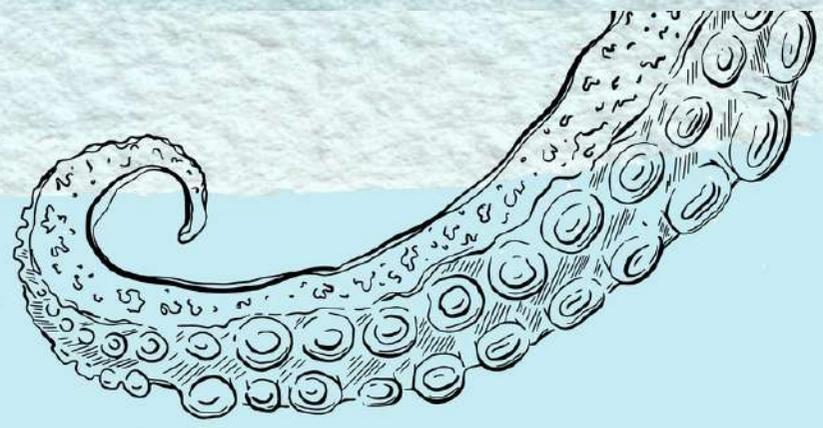
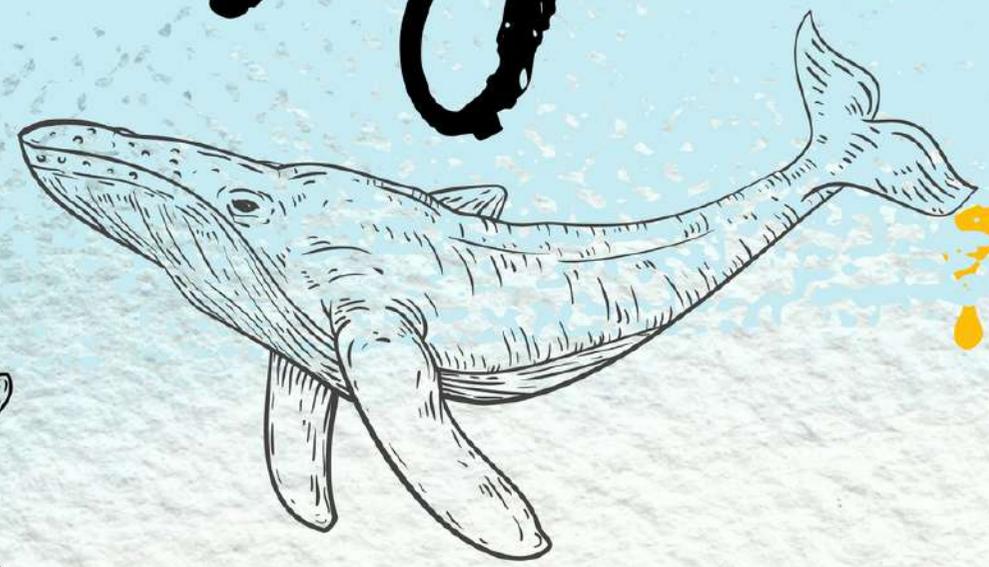
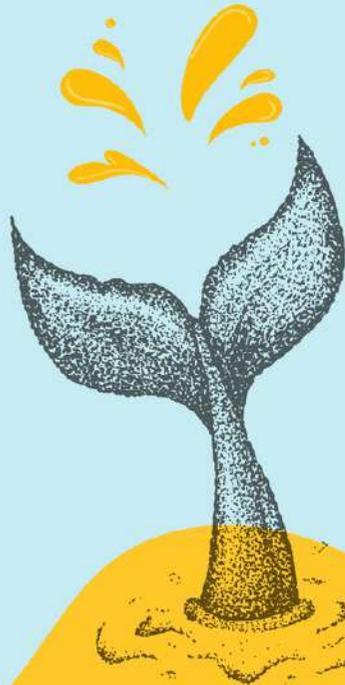




April 2023



not just soup



shark stories,
turtle tales
& more...

Issue 2

Dear Reader,

"The way of water has no beginning and no end. Our hearts beat in the womb of the world. Water connects all things, life to death, darkness to light. The sea gives and the sea takes."

I recently had a wonderful cinematic experience in a movie theatre where I watched *Avatar: The Way of Water*, which is where the above lines are from. It led me to take a brief dive down memory sea and recall the wonderful legends and tales I had read as a child, at a time when krakens and sea serpents slithered into my imagination often. I daresay they continue being objects of fancy for many kids today.

Whether it is the overactive human imagination at work or our deep mistrust towards beings yet unknown to us, we still believe that sea creatures that look straight out of a Jules Verne book exist. If we dive deeper to uncover the origins of these legends, we may find that two of the largest invertebrates in the world – the colossal squid and the giant squid, along with giant oarfish, are amongst the most elusive marine creatures that live under the sea even today. Maybe these were misidentified as scary sea monsters in the past when we had very little clue about undersea dwellers.

We will attempt to reintroduce you to some of these creatures through our newsletter and try to demystify them through the lens of marine science. We may not share as close a bond with marine creatures today as the reef people of the Metkayina clan from the fictional world of Pandora (*Avatar*) do with the Tulkun, but let us not forget our origins and ties with the sea.

We hope this issue of *Not Just Soup* will hit you like a fresh gush of sparkling sea waves. Let us know if we have added enough sea salt for your taste.



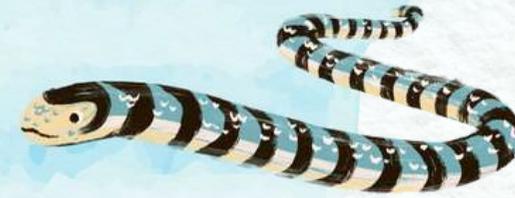
"For when the sea serpent swivels her meandering tail
Pearl pink scales shining in the pale moonlight
The waves make way for her and so does the whale
All in awe of her spellbinding grace and might."

~ Debangini



Know Your Sea Snake

Hook-nosed sea snake
(*Hydrophis schistosus*)



The Indian Ocean has a great sea snake diversity and one of its most common inhabitants is the hook-nosed sea snake, also known as the beaked sea snake. It is a rather large, highly venomous snake that can grow up to 190cm, though the average size is about 100-120cm. The name originates from its unique snout which has a beak-shaped rostral scale curved downwards. With a slightly bluish-grey or olive-green upper body covered with several dark bands and a yellowish-white underside, it has a typically flat and oar-like tail.

The hook-nosed sea snake is a habitat generalist, so it inhabits mangrove forests, upstream of rivers, shallow open seas, river mouths, estuaries and coastal lagoons, where its preferred prey, catfish, occur in high abundance. You may find it over soft substrates such as mud and sand. This snake is a frequent by-catch (*which is one of the biggest threats to sea snakes*) in various fishing gear used along the Indian coasts.

Sources:

1. Rao, C. (2017). How Life Came a Full Circle for the Snakes That Call the Ocean Their Home. *The Wire*. <https://thewire.in/environment/sea-snakes-maharashtra-fish-stock-wildlife-protection-act-great-barrier-reef>
2. Sekar, S. (2019). Threatened and undocumented sea snakes of India. *Mongabay-India*. <https://india.mongabay.com/2019/03/threatened-and-undocumented-sea-snakes-of-india/>
3. *Hook-Nosed Sea Snake (Hydrophis schistosa)*. (n.d.). Indian Snakes. Retrieved April 6, 2023, from <http://indiansnakes.org/snakedetails/hook-nosed%20sea%20snake>

Photograph: Chetan Rao





Researcher's Isle

Shawn D' Souza



Tell us about your current work.

I'm a PhD student at the Centre for Ecological Sciences, Indian Institute of Science, Bengaluru. I study human-induced behaviour change in coral reef-associated fish in the Andaman Islands. I also help out with the Sharks and Rays program at Dakshin Foundation. My interests lie in how humans and animals interact, and how that shapes ecosystems.

What has your journey been like till this point?

My research has led me to various places from forests to shores and under the sea, in pursuit of butterflies, birds, snakes and fish. It has been a largely positive and rewarding journey so far. I have been fortunate to have the freedom and support to pursue questions that deeply interest me and to

work in places with welcoming communities that taught me so much. I am also grateful for the invaluable friendships I've created along this journey.

What are some of the challenges you have faced along the way or continue to face?

I find the work that I do challenging yet rewarding; from spending long hours behind the computer screen to waiting patiently for the forest department to issue permits, the challenges that my colleagues and I face are quite varied. The work can also make you feel isolated at times but having the excellent company of fellow scientists and field staff has been helpful.

Advice you would want to give to those who want a career in marine research and conservation?

Based on my experience so far, I've found that conducting ecological research in India has become more challenging. Nevertheless, I would encourage anyone interested in marine research to follow their curiosity, ask many questions and be persistent

You can find Shawn @cheesesnakes on Instagram and Twitter. You can visit his website shawn.cheesesnakes.net to know more about his work





Straight from the field



Olives Galore
Chandana Pusapati



Every year, sea turtle researchers and the frontline staff in India wait with bated breath to witness the mass nesting, or arribada, where tens of thousands of olive ridley sea turtles nest synchronously. Female olive ridleys arrive en masse on the beach during this time and scramble away to find a spot to nest, while teams of researchers, field staff and forest department personnel gear up to begin the hourly census that continues into the early hours of the next day. The long, gruelling, sleepless nights of carrying out the counts are interlaced with the grandeur sight of a beach packed with turtles glistening with moonlight bouncing off their carapaces. This year in Rushikulya, one of India's largest mass nesting sites, the arribada began in February-end, lasting over 8 days!

Photographs: Chandana Pusapati and Bipro Behera



Brain Surf

True or False?

Look for answers at the end



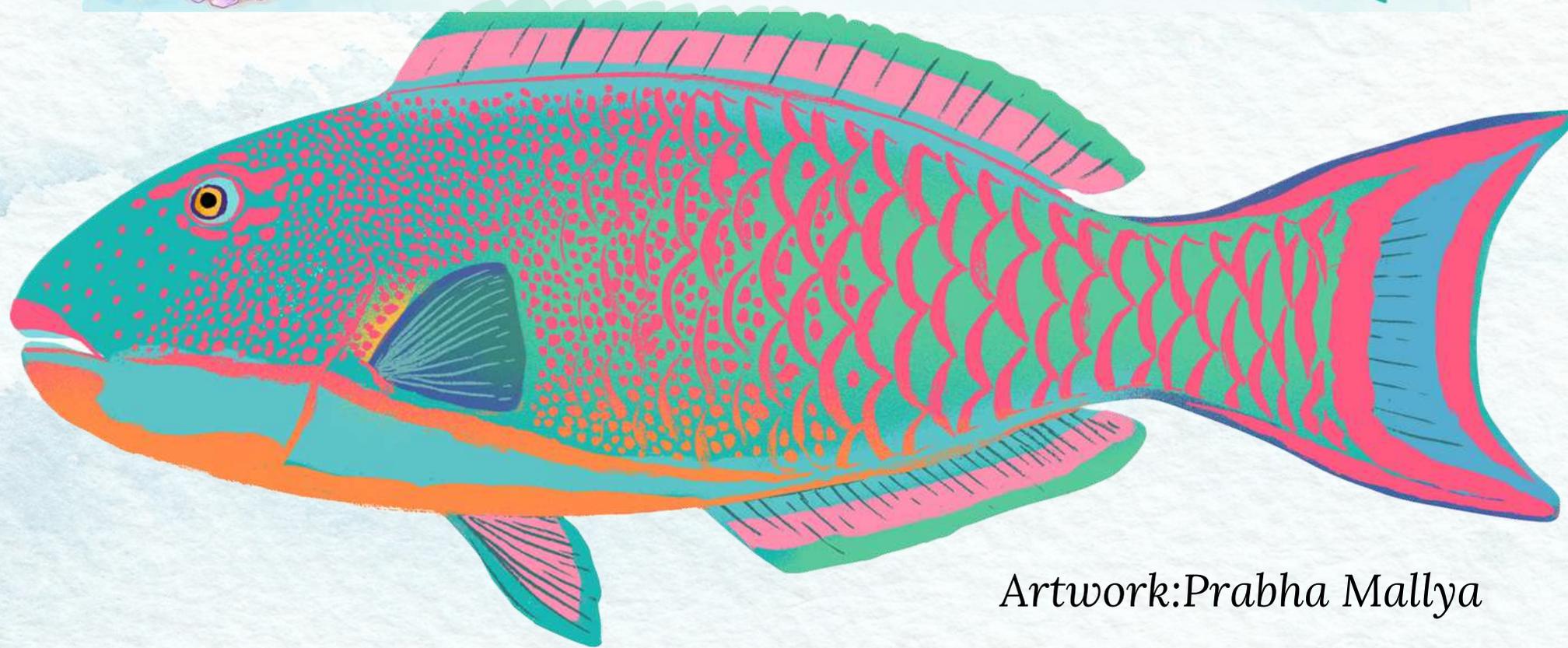
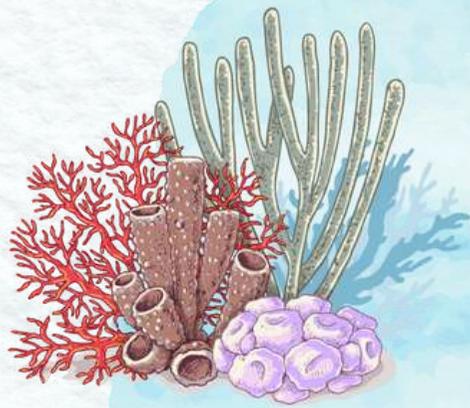
1. Seahorses are awful swimmers.

2. Giant squids have two giant hearts.

Reef Logbook

Alexa, play *She's a Rainbow* by The Rolling Stones

Meet the Bicolor Parrotfish



Artwork:Prabha Mallya

The bicolor parrotfish (*Cetoscarus bicolor*), a 90cm long fish, can be mainly found in the Indian Ocean, the Red Sea, the Pacific, and Australian and Indonesian waters. Like all parrotfishes, it shows varying degrees of habitat preference and utilisation of coral reef habitats. This species can eat large amounts of algae (relative to their size) from rocks. Full-grown males (in terminal phase) are blue-green with pink markings. Females (in initial phase) are dark purplish to reddish brown, peppered with black spots below, with a large pale yellowish area below the dorsal fin. Like many other wrasses, the bicolour parrotfish changes sex and colour during its life cycle.

Note: Some authors consider *C.bicolor* to be restricted to the Red Sea and refer to the Indian Ocean population as *C.ocellatus*, although there is no formal taxonomic study that separates the two yet.

Sources:

1. Comeros-Raynal, M. T., Choat, J. H., Polidoro, B. A., Clements, K. D., Abesamis, R., Craig, M. T., Lazuardi, M. E., McIlwain, J., Muljadi, A., Myers, R. F., Nañola, C. L., Pardede, S., Rocha, L. A., Russell, B., Sanciangco, J. C., Stockwell, B., Harwell, H., & Carpenter, K. E. (2012). The likelihood of extinction of iconic and dominant herbivores and detritivores of coral reefs: The parrotfishes and surgeonfishes. *PLoS ONE*, 7(7). <https://doi.org/10.1371/journal.pone.0039825>.
2. Myers, R. F., Russell, B., Clements, K. D., Choat, J. H., Lazuardi, M. E., Muljadi, A., Pardede, S., & Rahardjo, P. (2012). *Cetoscarus bicolor*. IUCN Red List of Threatened Species. Retrieved April 4, 2023, from <https://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T190690A17793737.en>.

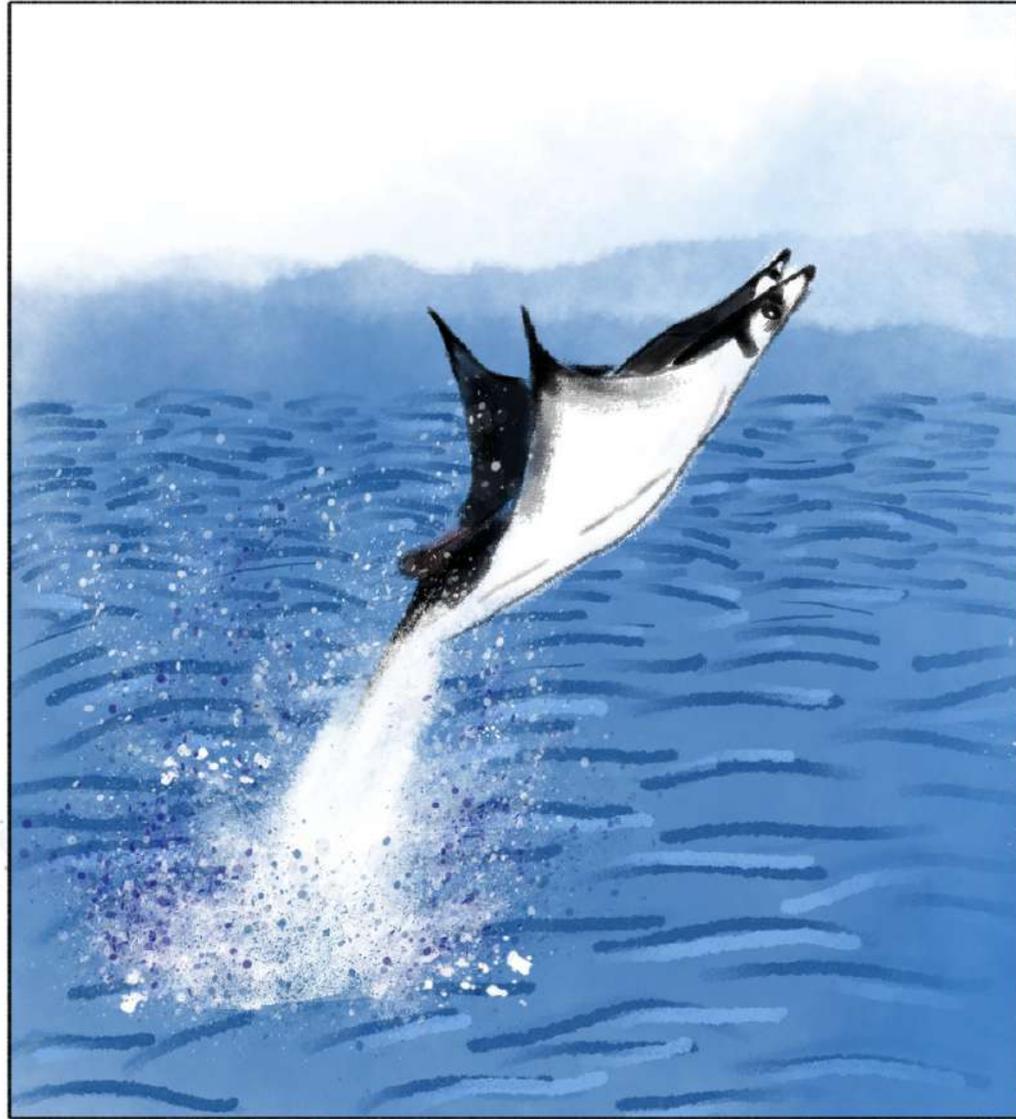
If you wish to become part of India's first underwater citizen-science program, join us!



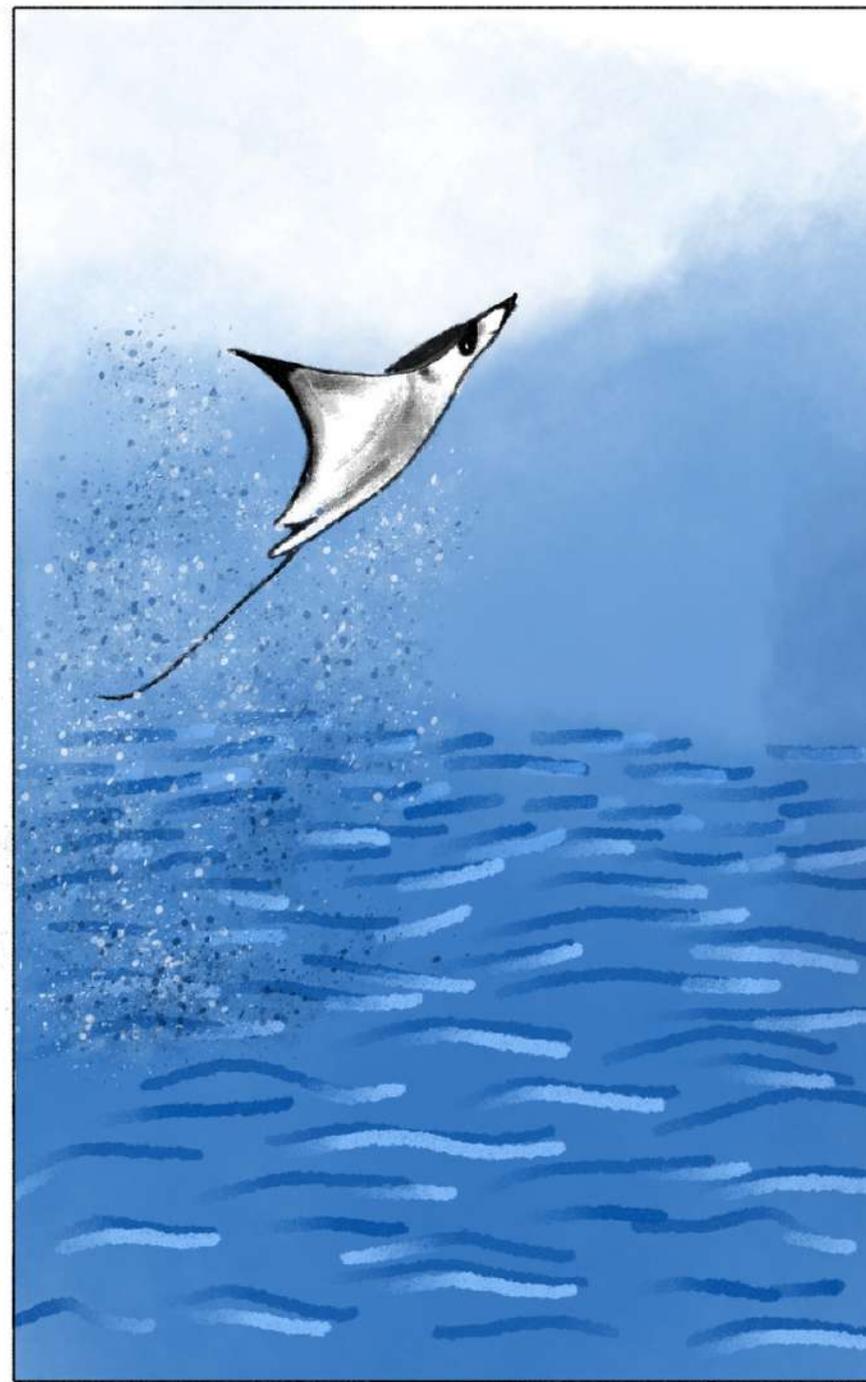
Pearls of Fishdom

Garima Bora





Artwork: Garima



Mobula rays are known to leap out of the sea, launch themselves in the air, flop their fins and splash back into the water. The reason is unknown but researchers speculate that it is a method of communication, specifically, either to attract other rays into a mating event or a mass hunting activity. Watch this BBC video to learn more about these fascinating creatures.



Tee hee...it's time for another sea-lly joke

To whom did the fish in the sea owe money?
(which, as you can see, they failed to pay)



Artwork: Debangini



LOAN SHARK!





From the Galley



The following is in continuation to the intriguing anecdote from the last issue, where we read about Satish Bhaskar's account of the Onges and the roasted green turtle in an extract from 'Letters from the Andamans', Hamadryad:

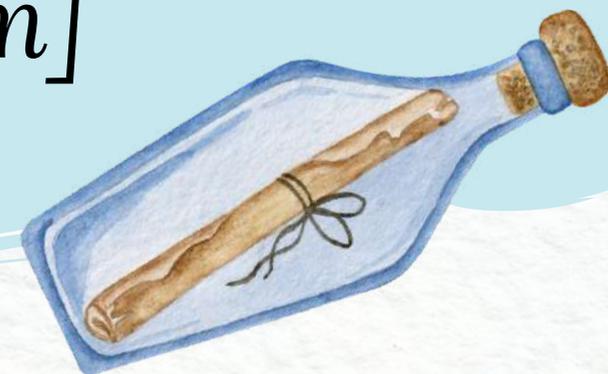
“Most of the leatherback nesting takes place on 8 km long west bay which is about 1½ days walk from the nearest human presence at the lighthouse construction site which in itself is quite remote. I had travelled 3½ days without seeing a human footprint. Coming back, I ran into an Onge tribal camp, occupants missing, and green turtle meat roasted and just begging to be eaten, which I surreptitiously did (never having eaten turtle before and being quite famished – had eaten only biscuits and vitamins for the past four days). I left two biscuit packs for the Onges to salve my conscience, actually mainly to reduce chances of stopping a spear if found out!”

Source: Bhaskar, S. (1979). Letters from the Andamans, Hamadryad 4(2): 3–6.





In memory of Satish Bhaskar,
the legendary sea turtle
researcher [*or marine
superstar as the sea folks like
to call him*]



"Satish Bhaskar was a pioneer of sea turtle research and surveys in India. He covered nearly all the beaches of the Andaman and Nicobar Islands in one long visit in 1978-79 and returned many times over the next decade to survey nesting beaches there. The first to document leatherback nesting in Great Nicobar and Little Andamans which became index sites for monitoring, he spent several seasons at South Reef Island to monitor hawksbills. His five-month stint at Suheli in Lakshadweep to monitor green turtles is another legendary Satish story. Over the years, he covered almost all the beaches across India and conducted pioneering surveys in West Papua, Indonesia.

Satish was my mentor from my undergraduate days in Chennai, but more importantly, he laid the ground for subsequent generations to conduct sea turtle research in India.

You can read about him in this [special profile](#) in the *Indian Ocean Turtle Newsletter*. We have also compiled [excerpts](#) from the book, *From Soup to Superstar*, that cover his sea turtle work over two decades. Check out his [list of publications](#) and a [compilation of his work](#). His articles in Hamadryad and elsewhere can be found in the [Sea Turtles of India](#) bibliography.

Sadly, Satish Bhaskar passed away on the 22nd of March this year. Let's all share a moment of appreciation for this amazing man."

~ Kartik Shanker



Remembering Anne Theo Heloise

(28 August 1985–6 February 2023)



The following article written by Kartik Shanker is a dedication to Anne, an inspiring young marine biologist (featured in our last issue) who tragically passed away in February.



"One story captures Anne Theo's spirit and personality best. On her first work dive in the Lakshadweep Islands, Anne got separated from her group. Her fellow researchers and I surfaced after the mandatory search and became increasingly worried as there was no sign of her. The sea was getting choppy and we were running out of options. Anne surfaced seconds later, about 10m away, looked at us and said 'Where were you guys?' Anne was never lost, the rest of the world was.

Anne had not considered in-water research when she began her PhD at the Indian Institute of Science, Bangalore. In fact, she was not even a particularly good swimmer at the time. But once the project was conceived, she trained herself rapidly in the Institute's swimming pool and got her dive certification as well. However, a larger problem loomed. Many marine biologists she consulted were not enthusiastic about her plan to study mixed-species groups (MSGs) in reefs- they thought that reef fish

MSGs were too ephemeral and might not be interesting. Anne was undeterred- she spent her first field season in the Lakshadweep Islands gathering evidence that MSGs were common, could be videographed and there were a host of interesting ecological questions that one could address about them. Her work, which emphasised fundamental ecological and behavioural differences between shoaling and attendant fish groups, would inform theoretical frameworks that were developed for a global review.

Anne had a long history of friendships and partnerships in the field. Over a period of several years, her buddies- on land and in the water- included researchers from multiple different institutions. More recently, she mentored junior students doing marine ecology in both analysis and fieldwork, including identifying surgeonfish and parrotfish species that only she could tell apart. She was a whiz at R, taught courses and conducted workshops in statistics and quantitative ecology. She played a key role in developing and proposing this [special issue](#) and edited five of the manuscripts therein.

Anne's plans for the world were unfettered. She wanted to create a science cooperative that transcended the politics and pitfalls of academia. She wanted to end patriarchy and capitalism. Tragically, before she could do any of those things, Anne passed away on 6 February 2023. She leaves behind a vast community of close friends, colleagues and family that will miss both her fierce arguments and easy affection. She is survived by her husband and fellow ecologist, Guillaume Demare, her brother, Dennis and her mother, Mary. The lasting impression she made on people and the legacy of her research will live on..."

Source: Shanker, K. (2023). *Dedication: Anne Heloise Theo (28 August 1985–6 February 2023)*. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 378(1878), 20230041.

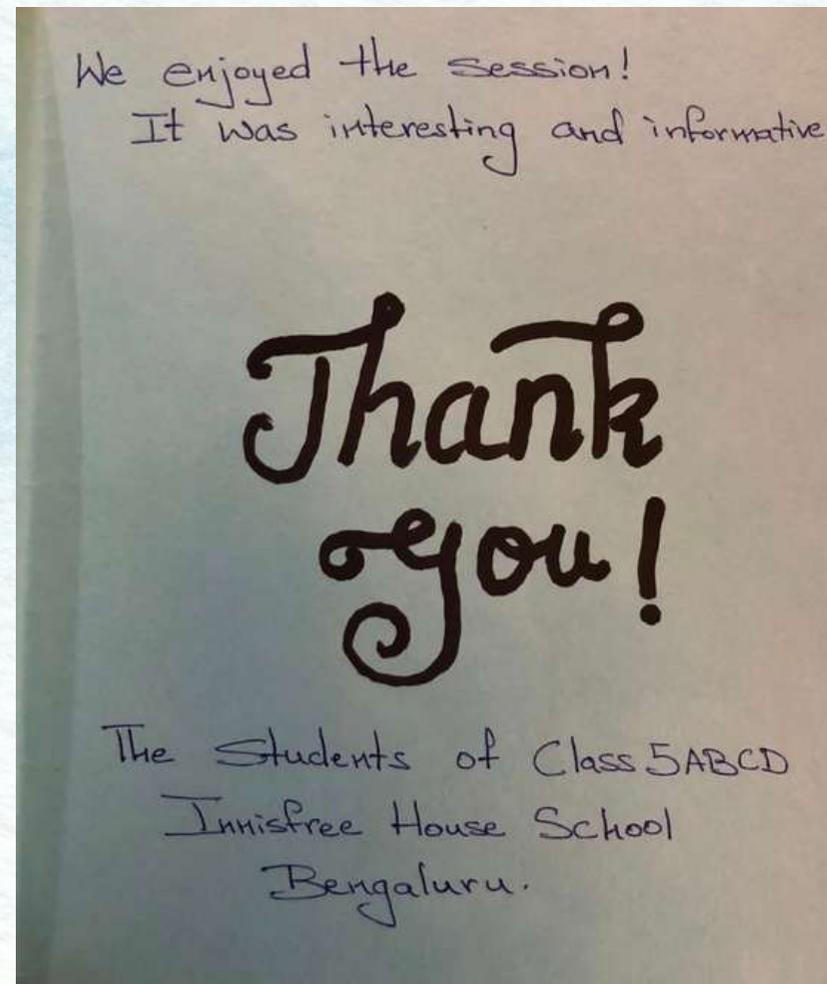
<https://doi.org/10.1098/rstb.2023.0041>



Sea Board



Back To School



A card made by the 5th standard students of Innisfree school, Bengaluru for the Marine Flagships outreach team, after their session.

Program Officer Adhith Swaminathan conducting an outreach session for school kids in the Andamans.

Last year, outreach programmes for schools were curated based on long-term research findings of periodic surveys and annual monitoring programmes in the Andaman and Nicobar Islands, which were conducted by different organisations starting with Madras Crocodile Bank Trust and Andaman Nicobar Environment Team, and more recently, Dakshin Foundation and Centre for Ecological Sciences, Indian Institute of Science. In November 2022, these programmes were conducted[DR1] in 16 schools of North & Middle Andaman to engage and sensitise the local communities, where over 1000 students attended and learnt about the significance of the sea turtle nesting sites and their value as an integral part of the island ecosystem.

Marine Flagships Outreach team at Dakshin Foundation conducted an hour-long interactive session on basic turtle ecology and sea turtle conservation for fourth and fifth-standard students of Innisfree House School, Bengaluru in February 2023. It was a productive session and the school expressed an interest in having more such events with the team in future.

Frontline Heroes of Andaman and Nicobar Islands!

~Adhith Swaminathan

Dakshin Foundation has been engaging with the forest department in Andaman and Nicobar Islands since 2018 through capacity-building workshops for the frontline staff who work on sea turtle programmes that involve the monitoring of beaches frequented by any of the four nesting species- green, hawksbill, olive ridley and leatherback, and ensure the safety of the nests by relocating them to hatcheries.

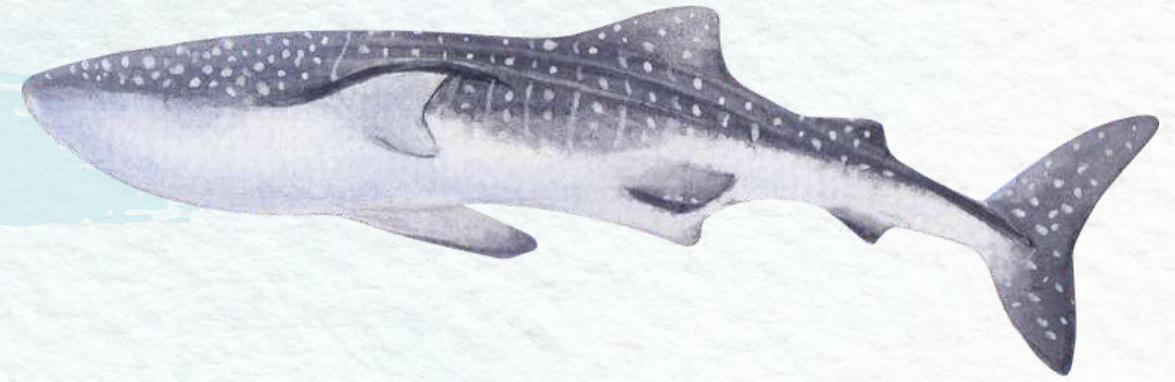


In November 2022, before the commencement of the turtle nesting season, multiple workshops were conducted in North and Middle Andaman for personnel working in Kalipur, Lamia Bay, Padget Island, Elizabeth Bay, Cuthbert Bay and Havelock Island.

These workshops aimed to identify gaps in knowledge and standardise protocols to improve the existing conservation programmes across the region and had a specific focus on arribada census techniques, similar to the protocols followed in Rushikulya, Odisha.

Despite the labour-intensive nature of these programmes, many staff members, especially in the North and Middle Andaman Islands, frequently enrol themselves year after year. Many of them have been working on sea turtle conservation programmes for over two or three decades and have been integral to their success. In recent years, they have also been instrumental in discovering a new mass nesting beach in the Middle Andaman Island, which is the only mass nesting beach in India outside of Odisha.

Other Updates



- Listen to an episode from [The Thing About Wildlife podcast](#), featuring Tanmay, James and Babu from Dakshin Foundation. [*Tanmay Wagh is the Project Coordinator of the Long Term Ecological Observatories (LTEO) programme; James Tirkey is the Base Coordinator and a Field Assistant at Andaman and Nicobar Environment Team (ANET); Babu is the Boat Captain of the research vessel Khlee, and maintenance-in-charge at ANET*].
- Check out this [breathtaking photo story](#) on the Barren Island by Adhith Swaminathan and Nitya Prakash Mohanty published in RoundGlass Sustain.
- Read [this paper](#) on distribution patterns of nearshore aggregations of olive ridley sea turtles in Rushikulya, Odisha authored by Chetan Rao, Chandana Pusapati, Muralidharan M, Nupur Kale, Alissa Barnes and Kartik Shanker.
- Download [The State of the World's Sea Turtles \(SWOT\) Report 2023](#).



Making Waves

News from the coasts



1. Over 500 common species of fish, seaweed, coral and invertebrates living on reefs around Australia have declined in the past decade, according to a recent study.
2. Special satellite tags have been fitted to olive ridley turtles on the Tiwi Islands and flatback turtles on the remote North West Crocodile Island by indigenous sea rangers and scientists to track the turtle movements, for a better understanding of turtle habitats and behaviour. Read here.
3. Researchers have mapped out what might be the world's largest seagrass ecosystem using cameras and trackers attached to tiger sharks as part of a study. Give this fascinating paper a read.

Answers to Brain Surf:

1. True. Seahorses are the slowest-moving of all fish species because they have an impeccably tiny fin in the middle of their backs which is the only way they can propel themselves. Even with small pectoral fins that assist in steering, seahorses are sadly known to be so delicate that they can become fatally exhausted when waters get rough during storms.
2. False. Brace yourselves, giant squids have THREE hearts (like all squids)! A median heart pumps oxygenated blood throughout the body, which it receives from two smaller ones that pump blood through the gills.



Spotlight on the olive diggers



My tryst with olive ridleys at the *arribada* in Rushikulya, Odisha ~ Irfan Ali



Spotlight on the olive diggers



“Being an island boy, I was fascinated by sea turtles right from childhood. This year, I got the chance to witness one of the biggest marvels of nature- an arribada! I wasn’t prepared to see hundreds of turtles on the same beach. I was speechless, yet there was a big smile on my face. I spent a whole night observing them- some were digging the sand to lay eggs, a few were covering their eggs and yet others were waiting for their turns to dig. It was a once-in-a-lifetime opportunity for me, and I am grateful to have experienced it.”

~ Irfan Ali

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Share your work on marine research and conservation with us.

You may get featured in our next issue!



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