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MEET THE TEAM OF FISHERMEN IN VISAKHAPATNAM WHO SAVED THE ENDANGERED WHALE SHARK

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

On December 18, 2020, it was a regular day for Masena and a small team of fishermen who were returning home after work at the Tantadi beach near NTPC on the outskirts of Visakhapatnam. The beach was deserted; barring the sound of waves crashing, it was all quiet. The tide was low by late afternoon as Masena walked at a leisurely pace, manning the Olive Ridley nesting zones that the beach was known for.

None was ready for the action that was in store.

Just then, a bit ahead on the shore they spotted a massive marine species flapping its huge tail even as waves lashed on it. "I knew it was something unusual," says Masena. A closer look at it confirmed Masena's doubt. It was a 15-foot whale shark – the world's largest fish species. This shark is listed as endangered in the IUCN list and protected under Schedule I of the Wild Life Protection Act. Masena, who works closely with the AP Department of Forest for marine life conservation, sprung into action and informed the forest officials.

What followed next was an exemplary success story of a rare rescue mission with the active involvement of the local community. After Masena's first call, it took about two hours for Srikanth Manneperi, a photographer, to arrive at the spot. "The light was fading and I still had to walk three kilometres to reach the spot. I knew I had to act fast to capture the species on camera for identification," he says. Without losing much time, Srikanth used his drone to cover the distance and captured a video to ascertain that it was indeed a whale shark.

Led by Anant Shankar, District Forest Officer of Visakhapatnam, the whale shark was towed back into the waters with the help of a team of fishermen. "It took nearly two hours to release the shark. When I first saw the fish, I knew this species was endangered. It is a gentle, docile creature and lives on plankton and small fish. So I was not afraid and also alerted the other fishermen. We saw the shark flap its huge tail out of distress and stayed away from that part to avoid injury," says Masena.

According to Shankar, the high tides played a significant role in the rescue operations. "But the main role here was played by the local fishing community. This incidence only reiterates the importance of engaging actively with local community to make them ambassadors of marine life conservation," says Shankar.

Whale sharks are highly valued in international markets. There is a big demand for their meat, fins and oil, which pose a threat to the species, particularly by unregulated fisheries. According to recent research findings by nature conservation bodies, in the last 75 years whale shark populations have declined by an estimated 63%. Over-fishing, habitat loss, slow reproduction, climate change and tourism — all remain threats to their population. The species are also victims of bycatch (accidental capture of non-target species in fishing gear). It is in this context that the role of State Forest Departments and NGOs in engaging with local communities becomes significant.

Since 2013, the East Godavari River Estuarine Ecosystem (EGREE) worked closely in association with the Andhra Pradesh Forest Department by conducting awareness programmes and workshops among the local communities in the region for marine and biodiversity

conversation. “The idea is to make the fishing community the ambassadors of marine conservation. We have trained some members of the community for turtle protection camps with the Olive Ridley Turtle nesting season underway. These fishermen are also given awareness on other protected marine species and they in turn play a vital role in the rescue missions of trapped marine species like the recent whale shark incident,” says Shankar.

In the Andhra Pradesh coast, Kakinada, Visakhapatnam, Machilipatnam and Nizampatnam are major shark landing areas. Blacktip sharks, bull sharks, pelagic and big-eye thresher shark, smooth and scalloped hammerhead, and tiger sharks are the species that are hunted frequently on these coasts. Of these, the smooth and scalloped hammerhead are classified as threatened species by International Union for Conservation of Nature (IUCN). Scalloped hammerheads are categorised on the IUCN Red List as critically endangered.

“Not just making the fishing community familiar with marine species, the fishermen also need to be recognised for saving the species. “They have not let the whale shark die even after finding it stranded at a deserted coast. It is not easy to track what fishers do with endangered species in the middle of the oceans or in remote coastal stretches. This indeed is a great conservation success story,” adds Shankar.

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The dominant are still dominating the writing of history, says the writer.

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NUCLEAR, GAS ENERGY LIKELY TO RECEIVE 'GREEN' TAG IN EU

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

The EU is planning to label energy from nuclear power and natural gas as “green” sources for investment despite internal disagreement over whether they truly qualify as sustainable options.

The proposal, aims to support the 27-nation bloc’s shift towards a carbon-neutral future and gild its credentials as a global standard-setter for fighting climate change.

But the fact the European Commission quietly distributed the text to member states late on Friday, in the final hours of 2021 after the much-delayed document had been twice promised earlier in the year, highlighted the rocky road to draft it. If a majority of member states back it, it will become EU law, coming into effect from 2023.

Opposing views

France has led the charge for nuclear power — its main energy source — to be included, despite robust opposition from Austria and scepticism from Germany, which is in the process of shutting all its nuclear plants.

Fossil-reliant countries in the EU’s east and south have also defended the use of natural gas, at least as a transitional source, even though it still produces significant greenhouse emissions.

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A STRIPED REMINDER TO THE SUNDERBANS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

On the move: There have been instances when male tigers drive out competitors from their territory. [File photo](#)

The residents of Mitrabari in the Satjhaleia area of the Gosaba block in the Sunderbans woke up on the New Year with tiger pugmarks in the forest near the habitation. As guards rushed to the spot and started placing nylon nets and trap cages, the tiger attacked one of them and he had to be rushed to a state-run hospital.

This has been the fourth incident of a tiger straying into the Sunderbans in the past few months. On two occasions, tigers strayed from the Sunderbans Tiger Reserve (STR) into the adjoining habitations and on the other two, from the South 24 Parganas forest division.

The forest officials were on December 28 able to trap a tiger more than five days after it had strayed into Gopalganj village in the Kultali area after crossing a 3.5-km stretch of the river. It took more than five days and a lot of patience on the part of the officials to tranquillise and put it in the cage.

Trap cages, tranquilliser teams, nylon nets, drones, water cannons and chilli bombs were used to rescue the tiger from the forest near human habitation in South 24 Parganas. On December 8, a tiger had strayed into the Bhubaneshwari forest and was trapped after a 12-hour operation.

“It is not one tiger straying but different tigers,” Tapas Das, Director of the STR, told *The Hindu*. He ruled out prey shortage in the forest that is leading to the incidents.

He said if there was a shortage, the number of incidents would be more. He said there could be a number of reasons.

“In the Sunderbans, it is difficult to distinguish areas where the forest which are tiger bearing and which are close to habitation. So the tiger often strays into these forests,” he said. He also said there could be territorial fights among the tigers that may result in the incidents. “There could be one male driving other males out of the territory.”

Forest Minister Jyotipriya Mullick said the Sunderbans is facing the problem of plenty due to good forest management.

The last tiger census in 2021 had put the number at 96 and 74 of them were captured through camera traps and identified as unique individuals.

Incidents of attacks on fishermen who venture into the forest for livelihood have also been reported. A tiger attacked two fishermen on Friday near Rangmari Char near Haldibari forest in the Sunderbans. It jumped on their boat when they were catching crabs. While the other fishermen beat it up with sticks, the big cat was able to inflict injuries on two of them.

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HOW INDIA'S UNGUIDED QUEST FOR SOLAR ENERGY IS BRINGING ABOUT ECOLOGICAL AND CULTURAL ERASURE

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Aerial view of the Pavagada Solar Park, spread across 53 sq. km., in Tumukuru, Karnataka. | Photo Credit: [Getty Images](#)

At the recently concluded COP26 in Glasgow, India proclaimed on the global stage that by 2030, it would elevate its renewable power capacity to 500 GW from 150 GW today, and that it would meet 50% of its energy requirements from renewable energy. Even as energy analysts scratch their heads about whether India's 50% pledge refers to capacity or generation (more on this later), one thing is clear: we are in the middle of an unprecedented expansion in the renewable energy sector.

As for solar energy, between 2014 and 2021, India increased its capacity 15-fold. The government now aims to increase the 2020 installed solar capacity of 37 GW three-fold by 2022, to a staggering 270 GW — possibly even more — by 2030. India's noble ambitions for solar energy, clearly, are soaring.

But under the sun's glare, even tall, noble ambitions can cast long, dark shadows on the land and its people. While India's intent of expanding solar energy is certainly laudable, the devil is in the detail. The scale of India's solar energy ambition, and the pace it has set to achieve this, certainly merit closer examination, particularly from an ecological standpoint, since the strongest argument in favour of these projects is environmental. We must therefore ask: how do we reconcile the putative benefits of power generation with potential ecological and human costs?

To examine this, we need to descend from the sophisticated world of technology and economics into the mundane realm of the earth and its people. To begin with, the generation of gigawatt upon gigawatt of solar power requires vast stretches of open lands blessed with year-round sunshine. In this respect, India is rather lucky. Over half of India's terrain is sunny and semi-arid, receiving 1,000 mm of rainfall or less every year. In other words, these lands are too dry to support forests with a continuous canopy.

Staggeringly diverse

Native vegetation in this zone is made up of grass, herbs and shrubs. When we recently mapped these Open Natural Ecosystems (ONEs), we discovered that they are staggeringly diverse, ranging from woodland savannas, scrublands and grasslands, to rocky outcrops, ravines and dunes. ONEs also have a remarkable assemblage of animal species, many of which, such as the black buck and the critically endangered great Indian bustard, occur only in the Indian subcontinent.

Besides being home to unique life-forms, ONEs provide valuable ecological services. Research shows that under certain environmental conditions, ONEs can sequester more carbon than if trees were planted on them. ONEs also support grazing-based livelihoods of millions of pastoralist and agro-pastoralist communities across the country. These low-density communities, with their rich cultures, have also had a long history of coexistence with these ecosystems and their unique wildlife.

Yet, India's ONEs continue to be misunderstood, misrepresented, and destroyed. Successive governments have carried forward a colonial legacy of terming ONEs as 'wastelands' and sought to make them 'productive'; they have tried to 'develop' them, thereby incentivising their erasure. Unlike with forests, there are no conservation laws that protect against diversion of biodiversity-rich ONEs. And so, these landscapes have become among the easiest kinds of lands to despoil and destroy. Renewable energy technologies — wind and solar power, in particular — are heavily reliant on open spaces. What better option for such 'development' than our 'wastelands'?

Extremely vulnerable

"The unfortunate classification of our semi-arid and arid grassland-savanna ecosystems as wastelands has made them extremely vulnerable to co-option for a range of developmental projects, including large solar farms, which are projected as green and sustainable," says Jayashree Ratnam, Director of the Wildlife Biology and Conservation Program at the National Centre for Biological Sciences, and a global authority on savanna ecosystems. "Such labels hide the significant loss of unique biodiversity, ecosystem services and ancient livelihoods that have sustained people in these landscapes for thousands of years. When these ecological and social costs are considered, it is unlikely that such benign labels will remain applicable."

The famous 17th century British philosopher, John Locke, has had a profound influence on a range of topics, from liberalism, epistemology, and political philosophy to British colonial policies on taxation and land reform. According to anthropologist Judy Whitehead, Locke's "concept of wasteland, as opposed to value-producing land, constituted a founding binary opposition that constructed how landscapes were categorized. Associated with wildness, wilderness, and savagery in the 19th century, the category of wasteland also defined who would and who would not become most vulnerable to dispossession and/or enclosure."

Thus, common village lands that were used for pastoralism and that were essentially untaxable, were deemed wastelands. India, in its 75th year of independence, gloriously holds on to this relic of colonialism. Every few years, the government commissions the *Wasteland Atlas of India*, to map areas that are currently not productive and can be 'developed' and made 'productive'. The *Atlas* has some logic-defying categories: waterlogged areas and marshes, which are essential for groundwater recharge; mountains under permanent snow, the source of our greatest rivers; savannah grasslands and pasturelands, on which depend the livelihoods of millions of pastoralists; deserts, sand dunes, ravines, rocky outcrops, inselbergs, and plateaus, rich geological features that are also home to unique fauna and flora.

Mislabelled

The largest category of 'wastelands' in India fall under the ONEs. Most of these are savanna ecosystems that have been mislabelled as degraded scrub forest or degraded grazing lands. And these are the very same lands that are now being targeted for large-scale solar expansion.

Just as the ecological and cultural values of ONEs are downplayed, the public benefit of India's renewable energy projects too are often heavily overstated. Figures from the Central Electricity Authority's General Review 2020 are revealing. While comprising nearly 19% of the installed capacity, renewable sources (excluding hydroelectricity) account for just 8% of the power generated. In contrast, hydro accounts for 11% of capacity and 9% of generation, while thermal power accounts for 69% of capacity, but 80% of generation. Capable of producing power only for parts of a day, solar and wind projects require additional power generation capability — or worse, grid-scale storage — built to buffer the cyclic or seasonal nature of power generation.

The political economy of power generation makes this anomaly even more interesting. With the traditional lynchpin in the renewables sector, hydroelectricity, the public sector has controlled over 90% of both installed capacity and power generation. With the new entrants — solar, wind, biomass and waste — however, 95% of installed capacity and power generation is in the hands of the private sector. And so, nearly the entire gap between capacity and generation — or in other words, the gap between ambition and reality — is accounted for by private sector projects. Given that their promoters rack up sizable gains from incentives or concessions related to land, infrastructure and finance (while making rather modest contributions to energy) these projects deserve far higher standards of ecological, social, and even energy audits.

Such calls for scrutiny often perplex the public, who support renewable energy unconditionally in the belief that they are 'green' technologies, and therefore always good. It bears repeating that it is not the technology of an energy option, but the scale and nature of its implementation that decides its ecological footprint. The photovoltaic panel, which might be downright benign at the rooftop scale, can be significantly less so when implemented at the gigawatt scale. With plans to generate hundreds of gigawatts of power at the grid-scale, we end up with ecological and social footprints of energy production — even with wind and solar technologies — that are just as massive and devastating as any large hydroelectric dam.

As both ecology and society are overlooked, murmurs of discontent have spiralled into overt conflict. As one of India's most charismatic birds, the great Indian bustard, is being displaced by these projects and killed in collisions with overhead power lines, the Supreme Court has had to intervene, much to the chagrin of governments and energy companies. Elsewhere, in Kutch for instance, communities displaced from their traditional grazing lands by renewable energy projects have been protesting these projects.

Roof-top alternative

An alternative solution to grid-scale solar on ONEs lies in the government's own policy on roof-top solar installations. Although there may be challenges in implementing grid-scale solar on residential roof-tops, there are enough large-scale 'grey' areas — places that have already been built-up or designated for industrial purposes — where largescale production of solar is possible. For example, the Maharashtra Industrial Development Corporation has a land bank of over 2.5 lakh acres. If even 20% of this area was used for solar power generation, it would generate nearly 16 gigawatt hour/year. Given that these industrial zones are major consumers of power, such localised generation and utilisation will cut transmission losses. Rooftops of public buildings can also offer a superb opportunity for solar installations, as has been done with railway stations in some cities.

Another alternate scenario involves the use of agrivoltaics on degraded agricultural lands. Deploying solar panels in a manner that allows for cultivation below them has dual benefits. The shade from the solar panels reduces evapo-transpiration and saves water, and the panels themselves benefit from increased efficiency due to the cooling effect from the plants growing below them. The Alliance for Reversal of Ecosystem Service Threats has identified 11 million hectares of degraded agricultural lands in the semi-arid and sub-humid regions of India. If such areas were used for agrovoltaics, it could potentially transform the rural economy of these regions.

While it is true that renewable energy projects are well-meaning and seek to reduce our reliance on an energy economy pivoted on fossil fuels, more attention needs to be paid to how and where these projects are established. Sadly, so far they have remained ill-conceived and poorly implemented efforts, paying little heed both to the ecological riches and diversity in the ONEs, and to the human livelihood and cultures that these lands support.

Madhusudan is a conservation scientist with the National Centre for Biological Sciences, Bengaluru, and Vanak is an ecologist and Senior Fellow at ATREE, Bengaluru.

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We are in the middle of an unprecedented expansion in renewable energy. But it comes at a huge ecological and human cost

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KAZIRANGA ELEVATED ROAD PLAN AWAITS NOD

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

An elephant and a calf waiting to cross a road at the Kaziranga parkfile photo-

The Assam government is awaiting the Centre's clearance for an elevated road over nine corridors used by the animals of the Kaziranga National Park and Tiger Reserve usually during high floods.

The 35-km elevated road will run along an existing arterial highway.

Assam Chief Minister Himanta Biswa Sarma on Saturday said the Centre had virtually cleared the 35-km project worth Rs. 6,000 crore. But officials of the Public Works Department said they were awaiting clearance from the Ministry of Road Transport and Highways (MoRTH). "But we expect the clearance in a fortnight or so," a senior official said.

One of the reasons why the MoRTH took longer to process the project was the State government's alignment report for a two-lane road that was deemed to be short-sighted. The Ministry sought a revised report, advising the State authorities to think "100 years ahead" and go for a four-lane project.

"We will have to prepare a detailed project report to the Ministry after receiving its go-ahead. The next stage entails obtaining clearance from the Environment Ministry and the National Board for Wildlife," the official said.

According to the blueprint, the "Kaziranga project" will have two tunnels — one with an estimated length of 1.5 km and the other of 600 metres.

"The alignment was fixed in coordination with the Wildlife Institute of India. Apart from the engineering aspect, the designing was done to ensure minimum harm to the wildlife and human settlements along the highway," the official said.

'Clear encroachments'

Kaziranga's field director P. Sivakumar said the project would not benefit the park known as the best address of the one-horned rhino if the settlements and encroachment on the animal corridors were not cleared. "People settled on or near the corridors need to be relocated and compensated," he said.

The highway along the southern edge of Kaziranga has often proved fatal for animals fleeing the park during floods for the safety of the hills of the Karbi Anglong district further south. Speed restrictions during the monsoon often fail to prevent the animals from being run over.

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LOOK UP: OUR ECONOMY WILL, BUT AIR NEEDS ACTION

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Adam McKay's Netflix comedy *Don't Look Up* offered more than a laugh to cap a chaotic year. An American send-up of politics at its rabble-rousing worst and a TV-news culture addled by social-media flooze, its fictional scenario of a comet headed for Earth to wipe us all out also served as an allegory on the world's response to an all-too-real climate threat. Outright denial of it by Donald Trump's America has been replaced by refreshing realism in Joe Biden's White House, but progress on a global agenda to tackle it has been modest, at best. Last year's CoP-26 huddle in Glasgow left us staring at a huge gap in globally pledged reductions of heat-trapping emissions. Even if enlarged targets were to choke off another 20 billion tonnes by 2030, we would still have only half a chance of capping global warming at 1.5° Celsius above pre-industrial levels, as we must to avert disaster. More than 1.1° Celsius of man-made heat is upon us already, and, as of now, scientists warn we are on track for a likely overshoot of at least 0.5° Celsius by 2100. The good news is that ears have been turning to science. The bad news is that climate action's trade-off with economic expansion implies a burden that's proving hard to share.

As the advanced world industrialized itself well ahead of us, causing the bulk of this crisis, emerging economies face emission bars that will raise our cost of emergence just as we begin our own industrial build-up. Much of today's toxic gas being spewed into the air by developing countries is for goods and services aimed at markets in the West, but, for practical reasons of policing, it's producers who must control pollution, not consumers. This backdrop explains why India cannot be expected to chip in equally, at least not on the small sums of aid assured so far by rich countries. While coalitions of the willing are all very good, India's insistence at CoP-26 on a "phase down" rather than "phase out" of unabated coal power, no matter how self-serving, is arguably justified by the fact that broad emission targets tend to be more achievable than fuel-specific aims. Thanks to extra space for strategic flexibility, New Delhi's pledge to go carbon-neutral by 2070 looks realistic—if late. About 40% of our 390GW electric capacity is clean already.

Yet, as with oil and gas, coal is an 'addiction' among energy users. And for all the avowals of investors going green, we can't quell their quest for profits on price booms brought about by supply squeezes. Last October's coal spike has whetted the global appetite for mines, as visible in a recent churn of assets. Valuations signal a bet that so long as China and India depend on it to keep their lights on, burning two-thirds of the world's haul together, its large-scale use cannot be choked in a hurry. Demand is not a force to be taken lightly. A lesson on this lurks in America's failed war on drugs (which can literally be addictive): Supply got battered but still found its way to demand. While bad exhaust is both easier to police and less cost-inelastic, climate action must focus on demand for all fossil fuels by using market tools to squeeze it. Emission levies coupled with a platform for trading carbon credits and ever-fewer permits are the way ahead. How fairly global trade flows will adjust, we'll have to watch, but this is the year that India must get up to speed on emission-market plans. Our economy will look up in 2022, hopefully, but so must our prospects of climate clarity.

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GOVT OKAYS 12,031 CRORE IN GREEN ENERGY PUSH

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

NEW DELHI : The government on Thursday cleared a 12,031 crore plan to set up infrastructure to transmit electricity from renewable energy projects as it seeks to boost the output from green sources and meet half of the nation's energy requirement from them by 2030.

The investment approval by the Cabinet Committee on Economic Affairs (CCEA) is for the second phase of the green energy corridor, which will help supply 20 gigawatts (GW) of renewable energy to the national grid from Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh.

The project is expected to help India meet the climate commitments it made at the COP-26 summit in Glasgow.

At the November summit, Prime Minister Narendra Modi pledged to increase the country's non-fossil fuel power generation capacity to 500GW and meet 50% of its energy requirements from renewable sources by the end of this decade.

The Central Electricity Authority estimates India's power requirement will rise to 817GW by 2030.

The second phase of the green energy corridor project will involve adding approximately 10,750 circuit km (ckm) of transmission lines and 27,500 mega volt-amperes (MVA) transformation capacity of substations, the ministry of new and renewable energy said in a statement.

"This will promote ecologically sustainable growth and contribute to the long term energy security of the country," Union power and new and renewable energy minister Raj Kumar Singh said in a tweet.

"Today's CCEA decision adds strength to India's efforts of achieving the target of 450GW in the renewable energy sector. Other benefits include a boost to energy security and environment friendly growth," Modi said in a tweet.

The corridor is expected to help ensure that the huge injection of electricity into the national grid from intermittent energy sources such as solar and wind doesn't threaten the grid.

The corridor forms an important component of the plan to maintain the grid frequency within the 49.90-50.05 Hz (hertz) band. An automatic generation control recently made operational sends signals to power plants every four seconds to maintain frequency, ensuring the power grid's reliability.

The project will receive central financial assistance of 3,970.34 crore, or a third of the project cost. The transmission systems will be created over a period of five years through 31 March 2026, the government said.

The first phase of the green energy corridor is under implementation in Andhra, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu. It will help supply around 24GW of renewable energy by 2022.

The first phase will add 9,700ckm of transmission lines and 22,600MVA capacity of substations

at an estimated cost of 10,141.68 crore, the statement said. Recently, Union ministries of power and new and renewable energy approved 23 inter-state transmission system projects at an estimated cost of 15,893 crore. India has achieved its nationally determined contributions target with a total non-fossil based installed energy capacity of 157.32GW, which is 40.1% of the total installed electricity capacity. Of this, solar, wind and hydropower account for 48.55GW, 40.03GW and 51.34GW, respectively. India's nuclear energy-based installed electricity capacity stands at 6.78GW. The government on Thursday cleared a 12,031 crore plan to set up infrastructure to transmit electricity from renewable energy projects as it seeks to boost the output from green sources and meet half of the nation's energy requirement from them by 2030.

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The project will receive central financial assistance of 3,970.34 crore, or a third of the project cost. The transmission systems will be created over a period of five years through 31 March 2026, the government said.

The first phase of the green energy corridor is under implementation in Andhra, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu. It will help supply around 24GW of renewable energy by 2022.

The first phase will add 9,700ckm of transmission lines and 22,600MVA capacity of substations at an estimated cost of 10,141.68 crore, the statement said. Recently, Union ministries of power and new and renewable energy approved 23 inter-state transmission system projects at an estimated cost of 15,893 crore. India has achieved its nationally determined contributions target with a total non-fossil based installed energy capacity of 157.32GW, which is 40.1% of the total installed electricity capacity. Of this, solar, wind and hydropower account for 48.55GW, 40.03GW and 51.34GW, respectively. India's nuclear energy-based installed electricity capacity stands at 6.78GW.

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GHARIALS TO RETURN TO ORANG NATIONAL PARK

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Gharials were locally extinct for over six decades. The govt. is planning to rehabilitate them with better protection.

The gharial, wiped out from the Brahmaputra River system in the 1950s, could be the prime beneficiary of a process to expand an Assam tiger reserve that shed its “Congress connection” five months ago.

The Assam government had on January 3 issued a preliminary notification for adding 200.32 sq. km to the 78.82 sq. km Orang National Park, the State’s oldest game reserve about 110 km northeast of Guwahati.

Much of the area to be added comprises the Brahmaputra river and the sandbars or islands in it, some cultivated by locals or used as sheds for livestock. Forest officials said the administrative heads of the Darrang and Sonitpur districts have been asked to determine the “existence, nature and the right of any person in or over the proposed schedule of land”.

Orang, on the northern bank of the river, is strategic to the Kaziranga Orang Riverine Landscape. Tigers and rhinos are known to use the islands in this riverine landscape, about 180 km long, to hop between Orang and Kaziranga.

But what has enthused wildlife experts is the prospect of reintroducing the gharial (*Gavialis gangeticus*) in the area to be added to Orang. “The government is pursuing a policy for the reintroduction of the gharial that became locally extinct more than six decades ago. With better protection, the stretch of Kaziranga-Orang landscape is ideal for sustaining the gharial,” Pradipta Baruah, divisional forest officer of the Mangaldoi Wildlife Division, told *The Hindu* on Saturday.

The Gangetic dolphin is also expected to be a beneficiary of the final notification of the addition to Orang, expected to take at least three months after the rights and claims are settled.

16 species of turtles

“There are a few points within the riverine landscape where the endangered dolphin thrives. The landscape has 16 species of turtles that need more conservation too,” Mr. Baruah said.

One of the four major rhino habitats in Assam, Orang was recognised as a tiger reserve in 2016. The Himanta Biswa Sarma government had in September 21 dropped the ‘Rajiv Gandhi’ prefix to Orang given by the Congress government in 1992.

Other national parks in Assam are Kaziranga, Manas, Nameri, Dibru-Saikhowa, Raimona and Dehing Patkai.

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FOREST, TREE COVER IN INDIA UP BY 2,261 SQ KM IN TWO YEARS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Green cover: Total forest, tree cover is 80.9 million hectares, accounting for 24.62% of geographical area.

Forest and tree cover in the country has increased by 2,261 square kilometres since the last assessment in 2019, according to the India State of Forest Report-2021 released on Thursday.

Releasing the report, Environment and Forest Minister Bhupender Yadav said the total forest and tree cover was 80.9 million hectares, which accounted for 24.62% of the geographical area of the country. The report said 17 States and Union Territories had more than 33% of their area under forest cover. Mr. Yadav said the Narendra Modi government's focus was to enrich the forests qualitatively.

The report found that there had been a 1,540 sq. km increase in forest cover and 721 sq. km increase in tree cover since the last report in 2019.

Top 3 States

"Increase in forest cover has been observed in open forest followed by very dense forest. Top three States showing increase in forest cover are Andhra Pradesh (647 sq. km) followed by Telangana (632 sq. km) and Odisha (537 sq. km)," a Ministry statement said.

Madhya Pradesh had the largest forest cover, followed by Arunachal Pradesh, Chhattisgarh, Odisha and Maharashtra. The top five States in terms of forest cover as a percentage of their total geographical area were Mizoram (84.53%), Arunachal Pradesh (79.33%), Meghalaya (76%), Manipur (74.34%) and Nagaland (73.90%).

Mangrove cover

The total mangrove cover in the country had increased by 17 sq. km, to reach 4,992 sq. km. The total carbon stock in forests was estimated to be 7,204 million tonnes, an increase of 79.4 million tonnes from 2019.

The Ministry said the survey used mid-resolution satellite data, followed by "rigorous ground truthing" and information from other sources.

"The accuracy level achieved in the current assessment is significantly high. The accuracy of forest cover classification has been assessed 92.99%. The accuracy of classification between forest and non-forest classes has been assessed 95.79% against internationally accepted accuracy of classification of more than 85%," the Ministry said.

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NEW SPECIES OF WOOD-BORING, DEEP-SEA MOLLUSC FOUND IN ARABIAN SEA

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Xylophaga nandani

A team of researchers from Kerala and Brazil have identified a new species of a rare, deep-sea mollusc belonging to the family Xylophagidae from the eastern Arabian Sea.

The wood-boring, tiny mollusc species has been named *Xylophaga nandani* after Prof. Bijoy Nandan, dean, faculty of Marine Sciences, Cochin University of Science and Technology (CUSAT).

The discovery is also significant in that this is the first time that a member of the genus *Xylophaga* is being recorded from the Arabian Sea, according to the researchers.

A paper on the findings by Jayachandran P. R. and Jima M. from the Department of Marine Biology, Microbiology and Biochemistry, CUSAT, and Marcel Velasquez from the University of Sao Paulo, Brazil, has been published in the scientific journal *Marine Biodiversity*.

The mollusc was spotted off the Karwar coast. Specimens of *Xylophaga nandani* analysed by the team are tiny - with shell valve length of around 2.2 mm. It is quite possible that they are juveniles, Dr. Jayachandran said.

Members of the family Xylophagidae are deep-sea dwellers, their presence recorded even at depths of 7,000 metres. Commonly found on wood that plunge to great depths, rarely they are also found on wood drifting on the ocean.

As such, much of their lifestyle habits remain a mystery. However, what is known is that they use their shells to cut wood into tiny grains and use it as a source of energy. "The word 'xylophaga' itself denotes 'wood eating'," said Dr. Jayachandran.

They are also close relatives to members of the family Teredinidae, a common species of wood-boring clams (shipworms) found in coastal waters.

Specimens of the newly identified species are kept at the Marine Biology Museum at CUSAT.

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A video explainer on the large variations in the country's monsoon cycle and how it is related to global warming.

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INVEST IN NATURE AND REAP CASH BENEFITS, WORLD ECONOMIC FORUM URGES CITIES

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

After a landslide in 2017 killed 1,141 people and left more than 3,000 homeless in Sierra Leone's capital Freetown, the recovery plan included training residents to plant 21,000 native trees to reduce the [risk of future disasters](#) on bare hillsides.

Amid erratic and unusually heavy rains, as well as urban expansion, the city's mayor has also run a "Freetown the Treetown" campaign to increase green cover 50% by the end of 2022, with locals tracking tree growth via a smartphone app.

In South Korea's Seoul, meanwhile, the city government worked with residents to restore the Cheonggyecheon Stream, a river covered by a highway overpass for decades.

The nature revival project, carried out in the early 2000s, has lowered traffic, flooding and temperatures, stimulated nearly \$2 billion in urban redevelopment and attracts 64,000 visitors a day.

Such examples suggest why cities worldwide should invest more in expanding green spaces and nurturing natural systems that provide water, food and clean air - not just to keep residents healthy and tackle climate-change risks but to boost their economies, researchers said on Monday.

Yet despite the benefits of green urban improvements, little money is spent on them, they said in a report released by the BiodiverCities by 2030 initiative.

That effort to green cities is led by the World Economic Forum (WEF), the Alexander von Humboldt Biological Resources Research Institute in Bogota and the Colombian government.

Cities invest no more than 0.3% of their infrastructure spending in so-called "nature-based solutions" - or only about \$28 billion in 2021, researchers said, calling for that to rise.

GDP at risk

Akanksha Khatri, WEF's head of nature and biodiversity, said the conventional view that urban development and a healthy environment are at odds no longer holds.

"Nature can be the backbone of urban development," she said in a statement. "By recognising cities as living systems, we can support conditions for the health of people, planet and economy in urban areas."

The report warned that if cities fail to protect their natural habitats, 44% of their gross domestic product - or \$31 trillion globally - is at risk.

That could be from floods - identified as the most common natural risk across more than 1,600 cities with over 300,000 inhabitants - due to problems such as loss of coastal mangroves that keep storm surges at bay or waste-clogged rivers, it said.

Other major threats from climate and nature damage include drought - with one in four cities

already water-stressed - fiercer heatwaves, and water and air pollution which take a toll on human health.

The resulting economic losses could be averted by investing a larger slice of stretched municipal budgets in "green infrastructure" like parks, street trees, lakes, wetland areas and roofs with gardens.

Spending \$583 billion a year by 2030 on such solutions and projects that free up city land for nature could create more than 59 million jobs, including 21 million dedicated to restoring and protecting natural ecosystems, the report noted.

Nature-based solutions are on average 50% more cost-effective than man-made, concrete-heavy options such as roads, buildings and paved areas, it found.

Breaking down barriers

Robert McDonald, a scientist with The Nature Conservancy and a member of the BiodiverCities global commission, said just doubling spending on green infrastructure - which would still account for only a tiny share of municipal projects - would be "transformative for how a lot of cities feel to live in".

Yet the traditional option of building concrete infrastructure still tends to win out, partly due to silos between city departments, he told the Thomson Reuters Foundation.

Reaping the full benefits of expanding urban nature will require working across municipal governments, as well as with companies and citizens, he added.

The advantages of nature-based solutions, like planting trees to shade and cool streets, are starting to become evident as climate change bites in the form of threats such as worsening heatwaves that hit city dwellers hardest, McDonald noted.

That is driving broader recognition of the value of investing in nature, he said.

"Even folks who really want to think about dollars and cents are realising that link," he said.

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RIISING SEA LEVELS PROMPT INDONESIA TO RELOCATE CAPITAL

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

An illustration of Indonesia's future presidential palace in jungle-clad island of Borneo.

Indonesia's parliament on Tuesday passed a law approving the relocation of its capital from slowly sinking Jakarta to a site 2,000 kilometres away on the jungle-clad Borneo island that will be named "Nusantara".

The House of Representatives vote provides the legal framework for the move, which was first tipped by President Joko Widodo in April 2019, citing rising sea levels and severe congestion on densely populated Java island.

Home to more than 30 million people in its greater metro area, Jakarta has long been plagued by serious infrastructure problems and flooding exacerbated by climate change.

The new capital will cover about 56,180 hectares in East Kalimantan province on the Indonesian part of Borneo.

Early plans for the new capital depict a utopian design aimed at creating an environmentally friendly "smart" city, but few details have been confirmed.

Environmentalists critics of the capital's move have warned it could damage ecosystems in the region.

Budget details have not yet been revealed in a presidential decree, though previous reports have pegged the project's costs at \$33 billion.

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DIP IN EASTERN SWAMP DEER NUMBERS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Species at risk: The eastern swamp deer is now distributed to areas beyond the Kaziranga National Park. [File Photo](#)

The population of the vulnerable eastern swamp deer, extinct elsewhere in South Asia, has dipped in the Kaziranga National Park and Tiger Reserve.

Officials attributed the decrease from 907 individuals in 2018 to 868 during the Eastern Swamp Deer Estimation on January 10 and 11 to two high floods in 2019 and 2020. On the brighter side, they said the animal is now distributed to areas beyond the park known as the world's best address of the one-horned rhinoceros.

"The eastern swamp deer is endemic to Kaziranga and is not the primary prey of the park's carnivores, primarily the tiger. But its population is crucial for the ecological health of the tiger reserve and the encouraging sign is the animal has now moved to other areas such as Orang National Park and Laokhowa-Burachapori wildlife sanctuaries," Kaziranga's field director P. Sivakumar told *The Hindu*.

The eastern swamp deer was once concentrated in the central Kohora and Bagori ranges of Kaziranga. The animal had numbered 1,161 in 2011 while the lowest of 213 individuals was recorded in 1966. In the last survey, the female eastern swamp deer outnumbered the males by more than three times. The female of the species recorded 557 individuals compared to 173 males.

The 1,302 sq. km Kaziranga had an uptick in the number of waterfowl species from 112 counted a year ago to 126 during the fourth Wetland Bird Estimation carried out from December 21-27.

The birds were counted in 211 different points in 157 waterbodies involving 35 enumeration teams, including volunteers from local educational institutes, NGOs and officers and frontline staff of the Forest Department.

"The bar-headed goose topped the list with 16,552 birds followed by the northern pintail at 9,493 and the common teal at 5,631. Ferruginous duck, an important species with a count of 2,236, may be regarded as a highlight of this estimation," Mr. Sivakumar said.

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RARE TURTLES REINTRODUCED IN THE WILD

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Rare species: Batagur baska fitted with GPS transmitter being released into the Sundarbans. Special Arrangement

Less than two decades ago, experts and forest officials were not sure if the once plentiful Northern River Terrapin (*Batagur baska*) had survived in the wetlands of Sundarbans. Widespread in the coastal mangrove swamps, rivers, and estuaries of Odisha and West Bengal in the early 1900s, unsustainable harvesting had resulted in sharp decline in the population.

In 2008, a joint exploration of the mangroves and tidal creeks by the Turtle Survival Alliance (TSA) and Sundarban Tiger Reserve (STR) located a cohort of eight males, three females and one juvenile at in a pond at the Sajnekhali Interpretation Center. Since then, the conservation breeding of the species, categorised as critically endangered by IUCN Red List, has been a success with around 12 adults and close to 370 juveniles of the species having been bred in captivity so far. Marking a milestone in the conservation efforts, on January 19, ten sub-adult *Batagur baska*, reared for over nine years, were reintroduced in the wild by the experts of TSA and STR officials. "These animals were tagged with GPS transmitters the battery of which can last 18 months. These transmitters will help to understand survival and dispersal patterns of the turtles and adjust future large scale release programs," Director of TSA India Shailendra Singh said.

Sundarbans is the largest contiguous mangrove forest in the world and the release of the turtles is an attempt to understand the habitat and behaviour of these freshwater turtles whose population in the wild are difficult to track.

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ENVIRONMENT MINISTRY PLAN TO RANK STATES DRAWS IRE

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Projects have to receive approval from the Environment Ministry if forest land is used for construction. File Photo

A proposal by the Union Environment Ministry to “rank” and “incentivise” States on how quickly they could give environmental clearances to proposed infrastructure projects has drawn fire from environmentalists on the grounds that it contravenes basic principles of environmental regulation.

A note to States by the Union Environment Ministry on January 17 spells out seven criteria to rate State Environmental Impact Assessment Agencies (SEIAA) on “transparency, efficiency and accountability”. On a scale of seven, a SEIAA, for instance, gets two marks for granting a clearance in less than 80 days, one mark for within 105 days and no marks for more. If less than 10% of the projects for scrutiny prompted a site visit by committee members, to examine ground conditions, a SEIAA would get one mark. More than 20%, on the other hand, would be a demerit or zero marks. SEIAA with a score of seven or more would be rated ‘five star.’

‘Violative proposal’

The Legal Initiative for Forest on Environment (LIFE), a prominent environment organisation, described the proposal as “violative” of the Environment (Protection) Act. “A perusal of the criteria reveals that greater weightage is given for projects where due diligence is less....SEIAA members should sit in the confines of conference rooms and take decisions and earn high marks.... The process ensures that the aim will be to clear projects at the shortest possible time. The task of the SEIAA is undertake a ‘detailed scrutiny’ whereas this notification makes them rubber stamp authorities,” a statement noted.

Ministry officials told *The Hindu* that the ranking criteria was not intended to accelerate the speed with which clearances were accorded but to encourage the SEIAA to take quicker decisions on approving or rejecting a project, and adhere to timelines already specified by the provisions of the Act. “This system isn’t to reduce the time taken to decide on a project. If a SEIAA demands clarification, the time taken to respond won’t be deducted,” Leena Nandan, Secretary, Ministry of Environment and Forests, told *The Hindu*, “But SEIAA have been told earlier too that whatever clarifications they need must be compiled rather than repeatedly demanding them.”

Sujit Bajpayee, Joint Secretary, Environment Ministry, wrote in responses to *The Hindu*’s queries that the SEIAA “had complete freedom” to complete all the necessary due diligence “without worrying about the time line” and that States would not be negatively marked for not meeting ranking criteria.

All proposed infrastructure projects above a certain size with a potential to significantly alter the natural environment must be first approved by an SEIAA, that consists of State officers and independent experts. Projects that are even bigger or involve forest land — called category A — must be cleared by a committee of experts constituted by the Centre. SEIAA projects are category B and relatively smaller though they make up the bulk of projects that are presented for approval. ‘B’ category projects include the bulk of building and construction, small mining, and

small industry projects and are considered to be 'less polluting.'

Online process

The project appraisal process is an online process where aspirant companies must upload documents on a portal called Parivesh.

Kanchi Kohli, an expert on environment law and governance matters noted that the rating system "seriously limited SEIAA members from exercising their scientific, legal and administrative knowledge." By stressing "quick and efficient clearance" the process undermined scientific rigour in the decision making process.

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CONSERVATIONISTS CAUTIOUSLY OPTIMISTIC AFTER RELEASE OF RARE TERRAPINS INTO SUNDARBANS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Rare species: *Batagur baska* fitted with GPS transmitter being released into the Sundarbans.

Less than two decades ago, experts and forest officials were not sure if the once plentiful Northern River Terrapin (*Batagur baska*) had survived in the wetlands of Sundarbans. Widespread in the coastal mangrove swamps, rivers, and estuaries of Odisha and West Bengal in the early 1900s, unsustainable harvesting had resulted in sharp decline in the population.

In 2008, a joint exploration of the mangroves and tidal creeks by the Turtle Survival Alliance (TSA) and Sundarban Tiger Reserve (STR) located a cohort of eight males, three females and one juvenile at in a pond at the Sajnekhali Interpretation Center. Since then, the conservation breeding of the species, categorised as critically endangered by IUCN Red List, has been a success with around 12 adults and close to 370 juveniles of the species having been bred in captivity so far.

Marking a milestone in the conservation efforts, on January 19, ten sub-adult *Batagur baska*, reared for over nine years, were reintroduced in the wild by the experts of TSA and STR officials.

“These animals were tagged with GPS transmitters the battery of which can last 18 months. These transmitters will help to understand survival and dispersal patterns of the turtles and adjust future large scale release programs. This will help to generate the basic ecological data on the conservation requirements of released animals,” Director of TSA India Shailendra Singh said.

Dr. Singh said this will be the first ever GPS tagging and tracking of any freshwater turtle in India, providing hope to replicate it in rewilding of other threatened turtles in India. The GPS based tracking will allow field researchers to track the *Batagur baska* across the vast expanse of mangrove swamps and generate extensive data to better inform future releases. Conservation breeding of the terrapins is jointly being carried out at seven places in the Sundarban Tiger Reserve.

Sundarbans is the largest contiguous mangrove forest in the world and the release of the turtles is an attempt to understand the habitat and behaviour of these freshwater turtles whose population in the wild are difficult to track.

“We have no data on the habitat of *Batagur baska*, their breeding grounds, their travel paths or the best age to release them. The rewilding will give us crucial data on the species. We have 300 odd individuals and in future the number will rise and with this information we can release more animals in the wild,” Deputy Field Director, STR, Justin Jones said.

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ON THE TRAIL OF INDIA'S DISAPPEARING VULTURES

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Bharathidasan Subbiah has spent the past 10 years on the ground in various parts of Tamil Nadu, studying vultures — their habits, habitations, patterns and problems. There was a lot to document and understand, it was seven years into the process that he felt he knew enough to write on the subject. “I started writing my book three years ago,” says the conservationist over phone from Coimbatore, “And only now is it finally ready.”

Titled *In Search of Vultures*, the book is published by Kalamkriya, the social interest publication wing of Chennai-based Sanmar Group. It is bilingual and heavy not only on information, but also in images. Every page — and sometimes every column — written by Bharathidasan in Tamil, sits beside its counterpart translated into English. It lists facts as simple as the number of vulture species in existence on the planet, in the country, and in the State, as well as explaining issues as complex as the biochemical hazards endangering these birds. In between, it also weaves in instances of vultures being included in various cultures, mythologies and rituals, establishing them as an inherent part of human existence.

As the book's name suggests, Bharathidasan's focus is on the fact that the creature, once a common sight across the State, is becoming rarer and rarer to come by. The reasons for this are many, and human activity is more to blame than other phenomenon. This is not a claim made lightly, as the book relies not only on Bharathidasan's own research, but also on the works of other conservationists and filmmakers. The book lists out numerous cases in which man-made chemicals, be it pesticide in plants or medicine administered to cattle, have lingered in the food chain even after creatures that consumed them passed away, and stayed potent long enough to affect scavengers like vultures who only consume the corpse. These cases aside, another common reason for the vulture's disappearance is plain indifference. “As critical as the vulture is to our ecosystem, it is sad to see that even today, the bird is seen in a negative light,” he rues, highlighting the need for simple, accessible information that can turn this tide.

The author-conservationist believes that there is enough information out there to change public perception of the bird. The most stark example, featured in the book, is a town called Thirukazhukundram. Located near Chengalpattu, the town (named after the bird) has a temple whose priests had been feeding *prasadam* to vultures till well into the late 1900s. “I was a very young child when the late ornithologist Salim Ali wrote about witnessing these birds partake of temple *prasadam*. I remember being fascinated by the idea, of members of a purely scavenger species eating *sakkara pongal*. But it did happen, and it was documented, though the ritual had stopped long before I could eventually visit the place,” he says.

In his book, Bharathidasan mentions not only the writings of naturalists and ornithologists who have either witnessed or tried to explain these incidents (and their gradual dwindling), but also Buddhist, Hindu and other scriptures that mention something similar. The intention here is not to create fervour, but to try and understand why this deviation from the norm occurred and why it stopped. “We tell this story on field when we want people to feel interested in vultures,” says Bharathidasan, signing off with, “It helps create a bit of intrigue.”

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TWO SPECIES OF FUNGI ASSOCIATED WITH BASAL STEM ROT FOUND

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Signs of infection: Shelf-like basidiomata, the fruiting or reproductive structures of the fungus, grow on the tree trunks. | Photo Credit: [ARUN KUMAR](#)

Researchers from Kerala have identified two new species of fungi from the genus *Ganoderma* that are associated with coconut stem rot. They have also genotyped the two fungi species, named *Ganoderma keralense* and *G. pseudoapplanatum* and identified genetic biomarkers. The DNA barcodes have been made publicly available in DNA sequence repositories so that future studies can use it for early detection of the pathogen. The research was published in the journal *Mycologia*.

The butt rot or basal stem rot of coconut is known by several names in different parts of India: *Ganoderma* wilt (Andhra Pradesh), *Anaberoga* (Karnataka) and Thanjavur wilt (Tamil Nadu), to mention a few.

The infection begins at the roots, but symptoms include discolouration and rotting of stem and leaves. In the later stages, flowering and nut set decreases and finally the coconut palm (*Cocos nucifera*) dies.

A reddish brown oozing is seen. This oozing has been reported only in India. Once infected, recovery of the plants is not likely. Not surprising then, that this causes a huge loss: By some estimates made in 2017, in India, around 12 million people are said to depend on coconut farming.

Another sign of infection is presence of shelf-like “basidiomata,” which are the fruiting or reproductive structures of the fungus, on the tree trunks. “Although microscopic, many fungi... produce macroscopic fruiting structures on the substrates where they grow [for example, *Ganoderma*],” says T.K. Arun Kumar of Zamorin’s Guruvayurappan College, Kohikode, who led this research, in an email. He further explains that the basidiomata of *Ganoderma* bear reproductive propagules (called spores) which are dispersed through wind and sometimes with the help of insects. “That is how the pathogen spreads from one host to the other,” he adds.

Since the fungus is microscopic, it is only detected after the symptoms start manifesting or when the reproductive structures are borne, which can be too late.

Surprisingly, before this study, the disease was commonly attributed to the genus *Ganoderma* and the specific species involved were not identified correctly. One reason for this could be the lack of studies focusing on taxonomy. “Plant pathologists may be very good at identifying diseases based on disease symptoms, devising strategies to prevent disease occurrence and even in developing disease resistant plants. However, there is a dearth of fungal taxonomists among plant pathologists who are able to identify fungal pathogens with accuracy,” says Dr Arun Kumar.

The two-member team collected the material for their research during the years 2015 to 2019. “There was a large-scale outbreak of the disease in Kozhikode district, Kerala, a few years back and our examination of the collected fungal specimens along with collections [over many years] from plantations throughout Kerala revealed that the identity of pathogenic species was hitherto

unrecognised,” says Dr Arun Kumar. This led him and PhD student N. Vinjusha to study the specimens further, first morphologically and then through genome sequencing. The two species seemed to be new to science. “This discovery was based on morphological characters, DNA sequences of the Kerala collections and phylogenetic analyses by comparing DNA of all *Ganoderma* species known worldwide,” says Dr Arun Kumar. The research has revealed the identity of the pathogenic species associated with butt rot. Hence, species-specific disease prevention strategies can now be developed.

As Dr Arun Kumar says: “So far, scientists and farmers had to solely rely on the visible symptoms of the disease [which appear only at a later stage, after complete colonization], but now they can easily detect the presence of the pathogen much earlier by analysing plant extracts which can be easily obtained at any stage of growth.”

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PERU DECLARES ENVIRONMENTAL EMERGENCY FOLLOWING OIL SPILL

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

Peru declared an environmental emergency Saturday to battle an oil spill caused by freak waves from a volcanic eruption in the South Pacific.

The stunningly powerful eruption on last Saturday of an undersea volcano near Tonga unleashed tsunami waves around the Pacific and as far away as the United States.

In Peru, the oil spill near Lima has fouled beaches, killed birds and harmed the fishing and tourism industries.

With its 90-day decree, the government said it plans “sustainable management” of 21 beaches tarred by 6,000 barrels of oil that spilled from a tanker ship unloading at a refinery last Saturday.

One aim of the decree is to better organise the various agencies and teams working in the aftermath of the disaster, the Environment Ministry said.

\$50 million losses

Foreign Trade and Tourism Minister Roberto Sanchez estimated on Saturday that economic losses total more than \$50 million, all sectors combined.

The government is demanding payment of damages from the Spanish energy giant Repsol which owns the refinery.

The environment ministry said 174 hectares — equivalent to 270 football fields — of sea, beaches and natural reserves were affected by the spill. Crews have been working for days to clean up the spill.

But the Ministry said it issued the emergency decree because the crude still in the water was still spreading, reaching 40 kilometers from the spot of the original spill.

The Environment Ministry said “the spill amounts to a sudden event of significant impact on the coastal marine ecosystem.”

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FALSE DICHOTOMY: THE HINDU EDITORIAL ON THE 'MERIT VERSUS RESERVATION' DEBATE

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

The [Supreme Court has once again addressed the 'merit versus reservation' debate](#), a misleading binary that has engaged public and judicial discourse for years. While ruling in favour of extending reservation to OBCs in the all-India quota (AIQ) of seats in admission to undergraduate and post-graduate medical and dental courses, the Court has concluded that the binary has become superfluous. The courts have now come to recognise the idea of 'substantive equality', which sees affirmative action not as an exception to the equality rule, but as a facet of the equality norm. 'Formal equality', or the principle that everyone competes on an equal footing, is inadequate to address social inequalities and the inherent disadvantages of the less advanced sections, necessitating provisions that help them compete with the advanced classes. The competitive examination may be necessary for distribution of educational opportunities, but it does not enable equal opportunity for those competing without the aid of social and cultural capital, inherited skills and early access to quality schooling. Good performance in an examination does reflect hard work, but does not always reflect "merit" solely of one's own making. "The rhetoric surrounding merit obscures the way in which family, schooling, fortune and a gift of talents that the society currently values aids in one's advancement," writes Justice D.Y. Chandrachud, and raises the relevant question whether marks are the best gauge of individual merit. Seen in this light, reservation ensures that backward classes are able to avail of opportunities that "typically evade them because of structural barriers".

The provision of 27% reservation for OBCs within the AIQ was introduced only in July 2021. Implemented from 1986, the AIQ was envisaged as a domicile-free quota to access medical education in all colleges in the country. It comprises 15% of undergraduate medical and dental seats and 50% of post-graduate seats surrendered by the States for admission through a central pool. For two decades, there was no reservation in this segment. In 2007, the Court allowed the introduction of 15% reservation for SCs and 7.5% for STs. Even when the OBC quota was introduced in Central government institutions alone, there was none in State colleges. The decision to end this discrimination now has judicial imprimatur. The Court has also rejected the argument that there was no need for reservation in post-graduate medical education. The impact of backwardness, it has said, does not simply disappear because a candidate has a graduate qualification and does not create parity between advanced classes and backward classes. The latest judgment marks another notable addition to the body of affirmative action jurisprudence.

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U.S. President Biden should not buckle to pressure from irate anti-vaccine campaigners

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KNOW YOUR SHRIKES: LOOK OUT FOR THE LONG-TAILED ONE

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Long-tailed shrike. Photo: V Santharam

The brown shrike (*Lanius cristatus cristatus*) is ironically the shrike that seems to be most at home in and around Chennai, though it hardly has its hearth in these parts. A winter visitor, the brown shrike regularly crosses the spotting scope during the migratory season. “There is the sub-species of the brown shrike called the Philippine shrike. That is also a winter visitor in this region, putting in an appearance in different parts. I have seen it in the Adyar estuary. It is not as common as the nominate brown shrike species though. It looks just like the brown shrike, except that the head is grey and the flanks are orangish,” reveals V Santharam, ornithologist.

In glaring contrast, the resident shrike in this region, the long-tailed shrike (*Lanius schach caniceps*) plays the will-o'-the-wisp — for no fault of its own, but largely ours.

“Grassland and scrub jungles are the main habitat of shrikes and they may tend to inhabit agricultural lands that border on a scrub jungle or a grassland. Now, we have the problem of converting these areas into something else by planting trees and ‘improving’ them. That way, the long-tailed shrike around Chennai is facing a problem. Though a resident, the species is not common around Chennai. For it to thrive, the long-tailed shrike needs a good scrub jungle, a thorny scrub jungle,” explains Santharam.

On how to spot a long-tailed shrike when there is one staring you in the face, Santharam lists a few diagnostic features. “Though it is called rufous-backed, the long-tailed shrike has only a grey back. On the flanks, there is a reddish-orangish wash. The tail is blackish and is longer than that of the brown shrike.”

As a mimic, the long-tailed shrike can probably give the drongo a run for its money, being capable of vocally impersonating quite a number of other species.

“I have found the long-tailed mimicking the pied cuckoo and the red-wattled lapwing. The pied cuckoo call really had me thinking that the pied cuckoo was really where I was. When I looked around and saw where the call was coming from, it was the long-tailed shrike sitting there and making one noise after the other,” laughs Santharam.

The ornithologist recalls how many decades ago “we would see the long-tailed shrike in Vandalur — in the scrub jungle which is where the Vandalur zoo stands now — and adjacent hills where there are thorny scrub jungles. But even in those days, the long-tailed shrike was not very common.”

Santharam believes shrikes are a subject waiting to be studied in detail, particularly for the odds arrayed against them.

“The shrikes are a little higher up in the food chain. By the time the food that they eat comes to them, there would be some residues of chemicals and things that have built up and may be harming them. Grasslands and scrub areas being a casualties of development, it is a double whammy for the shrikes.”

Another shrike, namely the southern grey shrike, draws a blank in the Chennai region. Santharam notes: "It is probably no longer to be found in these places. There are however historical records. I have myself seen it in a scrub jungle off the Bangalore highway, in the vicinity of Chembarambakkam lake."

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'INACCURACIES, PROCEDURAL VIOLATIONS' IN GREAT NICOBAR EIA REPORT

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Ecologists have been raising concerns about the Great Nicobar Island project for over a year. [File photo](#)

The details of the recently released draft environment impact assessment (EIA) report for the mega development project in the Great Nicobar Island have raised serious questions related to submission of incorrect or incomplete information, scientific inaccuracy and failure to follow appropriate procedure. A public hearing to discuss the report has been scheduled for Thursday at Campbell Bay, the administrative headquarters.

The matter is related to the NITI Aayog-piloted Rs. 72,000-crore integrated project in Great Nicobar that includes construction of a mega port, an airport complex, a township spread over 130 sq. km of pristine forest and a solar and gas-based power plant. Andaman and Nicobar Islands Integrated Development Corporation Ltd. (ANIIDCO) is the project proponent.

The pre-feasibility report for the project was prepared in March 2021 by the Gurugram-based consultant AECOM India Pvt. Ltd. A committee of the Ministry of Environment Forest and Climate Change (MoEFCC) issued terms of reference (ToR) to prepare the EIA report in May 2021.

Concerns raised

Ecologists and researchers have been raising concerns about this project for over a year ("NITI Aayog vision for Great Nicobar ignores tribal, ecological concerns", *The Hindu*, March 21, 2021), and the recent draft EIA has not been able to allay those fears. Concerns begin with the role of the Hyderabad-based Vimta Labs Ltd. hired for conducting the EIA.

While the ToR for preparing the EIA was finalised only in May 2021, the report itself lists many instances of Vimta staff being in the field and conducting studies as early as December 2020.

How is it possible that Vimta knew the details of the projects and the needs of the EIA months before the contract was awarded and even the project details were finalised? This could have only been through the project proponent or the DPR consultant and appears a violation of the ToR, which had stated that the DPR consultant should be independent of the EIA consultant.

"The consultants appointed to carry out the draft EIA have only one empanelled expert on ecology and biodiversity in its team — and it is not clear what his area of expertise is. It is also clear that several of the ToRs have not been complied with, as admitted in the draft EIA Report itself," says Debi Goenka, veteran environmental campaigner and executive trustee of the Conservation Action Trust. He also points out that the rapid assessment study carried out by the Wildlife Institute of India and the baseline survey by the Zoological Survey of India (ZSI), both appended as annexures, too were commissioned before the issue of the ToR.

'Incomplete data'

There are also serious issues of scientific accuracy and integrity where the data presented is concerned. Large parts of Section 3.9, which is on ecology and biodiversity, have in-text

citations but no references. Tables with lists of plants and animals found in the island are incomplete and with no sources provided. The information in other places is internally inconsistent and/or incorrect. The area of the island is mentioned in one place as 1,045 sq. km, while it is 910 sq. km (the current official figure) in another.

The executive summary mentions that the Galathea port area does not record any coral reefs, whereas the ZSI study appended to the EIA, reports a coral reef spread over 116 hectares in Galathea Bay.

Chapter 3 similarly says 330 species of fauna are recorded in the island, while the same ZSI study puts the number at more than double at 695.

Institutional callousness

The EIA says in another place no migratory birds have been reported from Great Nicobar, whereas it is well known that these islands are located along two globally significant bird flyways and more than 40 species of migratory birds have been recorded from Great Nicobar

The callousness continues in the approach of the statutory authorities. The EIA report was expected to have details of the project proponent's environment policy such as its standard operating process, procedures for highlighting violation of environmental and forest norms and for ensuring compliance with environmental clearance conditions.

All that the project proponent, ANIIDCO, has said in response is that no such policy exists and that they undertake to comply with all laws of the country related to the environment, forests and coastal regulation zone. A statutorily mandated set of requirements is being given the go-by, raising further questions on the validity of the EIA. Equally illustrative is the undertaking issued by the Directorate of Tribal Welfare, the agency tasked with the primary job of securing the rights of the indigenous people on the islands.

It first assures that "the right of the tribal shall be well protected and taken care of" and then goes on to conclude that "whenever any exemption from the existing regulations/policies/law of the land are required to be provided for the execution of the project, this Directorate will seek required exemptions(s) from the competent authority to that effect".

'Tick box exercise'

"Can there be bigger evidence that this EIA has been approached less as a document to ask important questions and more as an exercise in merely facilitating clearances and ensuring that the project goes ahead," asks a senior tribal researcher who did not wish to be named. Environmental lawyer Sreeja Chakraborty says, "It is evident that there are serious procedural lapses, lack of transparency and a lack of any seriousness in this EIA process. The EIA has been reduced to a mere 'tick box' exercise and inspires no confidence at all."

(Pankaj Sekhsaria has been researching issues of the Andaman and Nicobar Islands for over two decades. He is also author of five books on the islands)

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ACTIVISTS FLAG POLLUTION THREAT OF JSW PROJECT IN ODISHA

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Women of Dhinkia village are seen in their village meeting, protesting against the police forces and other government officials to not enter their village for the land acquisition to settle JSW plant. | Photo Credit: [Biswaranjan Rout](#)

At a time when villagers of Dhinkia — the epicentre of [resistance against the](#) proposed mega steel plant near the port town of Paradip — are up in arms over land acquisition, activists termed the environmental impact assessment (EIA) report prepared for the project fraudulent.

Environmentalists and members of the Sanyukt Kisan Morcha, Odisha on Thursday urged the Environmental Appraisal Committee (EAC) not to appraise JSW Utkal Steel Limited's proposed integrated steel plant (ISP) near Paradip.

[Explained | Why land for another steel plant in Odisha is making new](#)

They also appealed them to conduct comprehensive studies to understand the existing pollution load and the carrying capacity of the region around the Paradip Port and Dhinkia village.

The JSW Utkal Steel Limited rejected the allegations saying all efforts are being made to minimise pollution and the project will be operated as per guidelines of the Union Ministry of Environment, Forest and Climate Change (MoEFCC).

Addressing a press conference here on Thursday, Prafulla Samantara, recipient of Goldman Environmental Award, said he had written to members of the EAC explaining the findings of the New Delhi-based Centre for Research on Energy and Clean Air (CREA) on potential pollution and health hazards to be caused by the project.

“The EIA report has made deliberate attempts not to acknowledge the impacts of any further pollution load on the environment of the area. The EIA consultant, in a duty bound fashion, has toiled to justify the proposed project, rather than scientifically assessing the impacts on the environment,” Mr. Samantara pointed out.

“The total emission load was at 12,700 kg/day for PM; and 43,600 kg/day for SO₂ for the entire industrial cluster of 15 Red category industries in the area at Paradip. On the other hand, the emission load from the proposed ISP is estimated at ~25,800 for PM and ~31,900 kg/Day for SO₂, respectively, making the project a highly polluting source within the same district,” says the letter addressed to EAC members.

Quoting the CREA study in his letter, Mr. Samantara said, “the air pollutant emissions would be responsible for an estimated 94 deaths per year. Air pollution would also lead to a projected 180 emergency room visits due to asthma, 160 preterm births and 75,000 days of work absence per year.”

[Villagers of Dhinkia](#) and other human habitations would bear the brunt of dangerous cumulative emissions of greenhouse gases along with scarcity of clean drinking water, said Suresh Panigrahi, member of the Sanyukt Kisan Morcha, Odisha. They demanded the withdrawal of the proposed project near the Paradip port.

“A coast-based steel plant like this at Paradip offers several advantages in seamless movement of large volume of raw materials and finished products by sea. The iron ore for the steel plant is being transported in slurry form from mines head to steel plant over nearly 300 km distance. These measures will ensure that only 10% of material transport is by road, a major source of air pollution with commensurate reduction in dust and carbon emissions,” said a JSW Utkal spokesperson in response to criticism.

She said the EIA report for the proposed project had been prepared based on the guidelines issued by the MoEFCC for environment appraisal. The CREA opinion that EIA should be prepared based on one year data was not aligned with the guidelines issued by the MoEFCC for EIA reports.

The JSW Group has come up with proposal to set up 13.2 mtpa capacity steel plant on the land acquired previously for POSCO. Apart from the steel project, a 900 MW captive power plant and a 10 MPTA cement grinding and mixing unit are part of the project.

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COIMBATORE'S VELLALORE LAKE IS NOW A BUTTERFLY HOTSPOT

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Aerial view of Vellalore wetland | Photo Credit: [Special Arrangement](#)

A miyawaki forest canopy with towering native trees and a dense belt of flowering plants has turned the city's Vellalore Lake into a butterfly hotspot. Blue Mormons, the fourth largest butterfly of India and State butterfly of Maharashtra, have been sighted in great numbers. A beautiful bluish-green butterfly called the common banded peacock, as like medus brown, chocolate albatross, and bamboo tree brown buzzed around the nectaring plants at the lake much to the excitement of butterfly enthusiasts.

"All these species can be sighted in forest covers and wooded-areas, but we were surprised to see them in good numbers in the plains," says Pavendhan A of the Tamil Nadu Butterfly Society (TNBS), adding that so far 83 species have been recorded. "This indicates that 25% of species from Tamil Nadu's checklist (of 327 species) are available in this single location. This criteria qualifies the wetland as a butterfly hotspot."

At one time, Vellalore tank spread across an expanse of 90-acres, was home to rosy starlings, a winter migratory bird that flocked here in thousands to roost. Many old timers recall it as an unforgettable sight. While cormorants used the many trees around the lake as their nesting ground, ducks paddled in the waters. What was once a hub of migratory birds, ran dry and became a dumping ground for garbage and debris. This blocked the inlet channels that fed the lake with water from the Noyyal, the lifeline of Coimbatore.

A team of eco-warriors including R Manikandan, founder of Kovai Kulangal Paadukaappu Amaippu (KKPA), a water conservation NGO started in 2017, along with Coimbatore Corporation and other public works departments, de-silted the Rajavaaikaal channel, which connects the lake with the Noyyal, removed encroachments, and cleared the debris.

"After a gap of over 15 years, the lake filled up during the monsoons in 2018," says Manikandan. A miyawaki forest sprung to life along the bund as a part of restoration. "We planted 10,000 trees in batches. This includes over 300 varieties of native species like neem, banyan, pungai, and poovarasu. We added hundreds of herbal plants, and flowering plants like *thael kodukku*, *nari kilikiluppai*, castor, hibiscus, *arali* and *naatu* rose. It created a conducive ecosystem for butterflies to thrive," says Manikandan.

Kamala Kannan Y, a volunteer with KKPA says a team of bird watchers accompanied by school students have recorded 156 species of birds at the green zone. "We ensure that the green cover is nurtured and well-maintained and supports the many life forms including insects, birds, and butterflies."

A six-member team from TNBS along with KKPA has been conducting regular monitoring of butterflies at the Vellalore wetland as part of a one-year study that started in October last year. They also take students on Nature walks along the bund and explain the life cycle of butterflies and their significance within the ecosystem. Pavendhan explains that it is important to develop the greenery without altering the vegetation that already exists in the area.

He says, "The purpose is to impart Nature education to students. As we continue to lose green

cover in cities, such green zones are important to attract butterflies. For example, the common three ring is dependant on grass, its host plant. But, lawns in the city are cleared up to pave way for buildings. For the grass diamond butterfly, the host plant is turmeric, which is grown in farmlands around the lake.” He adds, “The spotlight has to be back on the conservation of wetlands.”

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TIDEPooling AT VISAKHAPATNAM UNCOVERS A WORLD OF STRANGE, COLOURFUL CREATURES

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

A curtain of haze covered the sky during the evening low tide, casting Rushikonda Beach in a pall of gray. Along the coast, the rocks rose out of the golden sand, as the receding water lapped gently against the shore. Shaded in monochrome, the landscape almost looked empty; but tucked into the nooks and crannies of the rocky shore was a colourful world bustling with life. Low tide on the Visakhapatnam coast offers a chance to see the hidden secrets of the marine world. The intertidal zones — areas that are uncovered and covered back up during low and high tides — are entirely different ecosystems, where a multitude of organisms living on the shore survive changes in a world that is constantly oscillating between land and sea.

At Rushikonda Beach in Visakhapatnam intertidal life thrives on the many rocks that are spread across the coast. Walking the beach during low tide will bring to light this alien landscape. Visakhapatnam-based East Coast Conservation Team (ECCT), a non-profit organisation working on the conservation of wildlife, in collaboration with Green Paw is leading a citizen science project to document the marine biodiversity of the region.

“Marine biodiversity is very less documented in Andhra Pradesh and even less explored in intertidal areas,” says Sri Chakra Pranav Tamarapalli, founder and project manager, ECCT. The organisation along with Green Paw is working towards highlighting marine life and intertidal biodiversity in Andhra Pradesh. They have planned tidepooling walks to engage with people as well as document the species under projects called Intertidal Biodiversity of Andhra Pradesh and Marine Life of Andhra Pradesh in the citizen science portal iNaturalist. Anyone with a mobile phone and Internet connection can document marine organisms in intertidal areas and add the observations to the above mentioned projects on iNaturalist mobile applications available for Android and iPhone.

The project has so far recorded more than 230 observations and 90 species in intertidal areas of Visakhapatnam. More than 15 shore walks have been conducted so far with about 200 participants. “It’s a crash course in marine biology and a revelation for all of us. We are completely oblivious about the blooming marine life near our coast. The best part was watching my seven-year-old daughter lap up every piece of information with excitement and discover a new world of marine creatures,” says Neha Sarwate, who participated in her first tide pooling walk last week. “These experiences not only make a person aware of marine biodiversity but also inspire them towards conservation of our planet,” she adds.

The tidepooling event (intertidal biodiversity walk) was held last Sunday at Rushikonda by ECCT and Green Paw. Poking around the rocks and pools, a group of people discovered fascinating creatures last week almost everywhere they looked.

“During new moon and full moon weeks, the low tide is much lower, exposing a lot of the rocky shore from the water and leaving pools of water behind along with a lot of marine life,” explains Honey Seles of ECCT. The process of looking for these organisms is called tide pooling. About 15 people participated and learnt about marine biodiversity and came across species like blennies, hermit crabs, moray eel, stone crabs, sea anemones, sea urchins, zoanths, star fishes and much more. The event also documented the Polyclad flatworm, which happens to be the first record of the entire order of Polyclad flatworms on the east coast of mainland India. “We found two specimens of the same species on the same day,” Pranav adds. Polyclad actually

means 'numerous branches' In Greek. The intestines of this flatworm are branched. During a tidepooling walk last year, Anita Rao and her sister Sunita scrambled across some of the rocks in Rushikonda to find tide pools with crabs, urchins, anemones and many sea stars in different sizes. "Rushikonda is full of miracles," Anita says. "We will undoubtedly return again."

Invertebrate and primitive organisms and also vertebrates like fishes can be seen in tidal pools. The producers of the ecosystem are algae and phytoplankton that produce food for the intertidal diversity. The rocks are filled with various species of green and brown algae. Most commonly seen algae are Sargassum, sea grapes, feather caulerpa and fan algae. "You usually have a good two hours of tide pooling if you time it well," says Pranav.

"It's also important to keep track of time so you don't get caught on the beach with the tide coming in." There are dozens of creatures found in Visakhapatnam's tide pools, varying from place to place. But the most accessible tide pools are found near the Rushikonda coast. If you are lucky, you may get to spot the shy moray eels that are ambush predators lurking in holes of rocks. Whether you are enjoying sunny summer days or balmy, gray winter evenings, poking around in rocks, peeking in at the homes of these strange tiny neighbours on the beach can be a fascinating experience.

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PARASITIC PLANT FOUND IN NICOBAR ECO HOTSPOT

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Flower buds of *Septemeranthus* .Special Arrangement

A new genus of a parasitic flowering plant has recently been discovered from the Nicobar group of islands. The genus *Septemeranthus* grows on the plant species *Horsfieldia glabra* (Blume) Warb. The parasitic flowering plants have a modified root structure spread on the stem of the tree and are anchored inside the bark of the host tree.

The plant was found on the periphery of the tropical forest in one of the biodiversity hotspots referred to as the Nicobar group of islands separated from the Andaman group of Islands by a wide gap of 160 km with heavy tidal flows.

Heart-shaped leaves

The genus *Septemeranthus* has a distinct vegetative morphology, inflorescence architecture and floral characters. The leaves of the plant are heart-shaped with a very long tip and the ovary, fruit and seeds are 'urceolate' (earthen pot-shaped). The flowers have five persistent bracts having conspicuous margins. The name *Septemeranthus* is derived from the Latin word 'septem' meaning 'seven', referring to the arrangement of flowers. The details of the discovery were published in the *Journal of Botanical Taxonomy and Geobotany Feddes Repertorium*. The genus belongs to the family Loranthaceae, a hemi-parasite under the sandalwood order Santalales and is of widespread importance. Plants which are hemi-parasites are partially dependent on their host plants for nutrition. For instance, the newly discovered plant that derives nutrients from its hosts has green leaves capable of photosynthesis.

Feeds birds

Loranthaceae is currently represented by nine genera and are found all across the country. What makes the new genus unique is that it is endemic only to the Nicobar group of islands. Lal Ji Singh, Joint Director, Botanical Survey of India, who has discovered the genus, said, " During field studies, I found the birds consume viscous seeds of this new genus and seeds have potential of pseudo viviparous germination that deposit on the leaves and branches of their same plant which is already attached to host plants. After germination, the life cycle of the genus starts all over again."

Hemi-parasites include are commonly referred to as mistletoes that contain 18 families, 160 genera and over 2,200 species. They need a host tree or shrub in order to thrive and exhibit a worldwide distribution in tropical as well as temperate habitats that evolved approximately five times in the order and are important in forest ecology, pathology and medicine. They play an important role as they provide food for frugivorous birds. In addition to *Septemeranthus*, four other genera on non-parasitic plants, *Nicobariodendron* (Hippocrateaceae), *Pseudodiplospora* (Rubiaceae), *Pubistylis* (Rubiaceae), *Sphyranthera*, (Euphorbiaceae) have also been discovered earlier from Nicobar group of islands, highlighting the ecological significance of the region. Recently a new species in the hemiparasitic family Loranthaceae, *Dendrophthoe lalji* have also been discovered from the Nicobar group of islands.

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