West Bengal News Articles compilation
by ICSF
A sudden demand-supply mismatch has resulted in fish prices going through the roof, with even the daily staple of rohu and katla selling at double their usual cost and festive-season favourites like hilsa at four-digit prices. Fish delicacies such as Ilish Bhopa, Paturi and Sorshe Chingri, which are some of the inseparable elements of the Poila Baishakh platter, will no doubt have to quietly make way for the more prosaic Doi-Rui, Katla Kalia or Tel Koi to strike a subtle balance between taste and purse. The market in Kolkata has a daily demand of around 550 tonnes. But, over the last few weeks, the supply from the Andhra Pradesh-Telangana-Odisha route has dipped from 150 tonnes to 100 tonnes. Adding to the problem is the dip in local supply, which has come down from a daily average of 400 tonnes to 150 tonnes. Prices usually head north around Poila Baishakh, but this year has been very different, say market insiders.

“Forget Hilsa and King Prawn (Galda chingri), which may have become dearer because of the Poila Baishakh demand,” said Syed Anwar Maqsoo, secretary, Howrah Wholesale Fish Market Association. “Even daily staples like rohu, katla and soal have now become unaffordable.” Despite being the second-largest fish producer after Andhra Pradesh, Bengal (17.4 lakh tonnes, annually) has a deficit of 60,000 tonnes of fish in the Kolkata market, which is being met by Andhra Pradesh, along with Telangana and Odisha. In Bengal, rohu and katla that weigh less than 2kg are sourced from within the state, but larger ones come from Andhra Pradesh, said a fisheries department official. While hilsa weighing a kilo and more was selling at Rs 1,200, king prawn at Rs 1,000-Rs 1,200 and topse at Rs 1,000- Rs 1,400 on the eve of Poila Baishakh, common varieties like rohu, katla, betki and pabda rose above the Rs 400 range, pinching pockets.

“I am paying through my nose to buy fish, as no meal in our family is complete without it,” said Behala resident Gourav Sandhukhan. The slump in supply has not been overnight. Supply — both domestic and imports — have been showing signs of slowing down since February. There are multiple factors behind the slump, notably vagaries of weather, which are playing havoc with fish. “The sharp and drastic change in weather causes mortality, and young lifeless fish start floating up to the surface of water bodies,” said Shankar Basak, who runs a medium-size aquaculture in Hooghly.

“Since 53% of the total fish production comes from aquaculture, the mortality is measurable nowadays. Captured fish comprises 43% of the market. Secondy, Bengal’s export of fish has increased, shrinking the production line to the domestic market,” Basak added. “One of the biggest reasons of a shortage in supply and resultant fish price hike is the high transportation cost. Traders often end up losing heavily because of the transport costs. Thus, Andhra Pradesh
traders often get afraid to export fish to Bengal,” said Sandip Agarwal, a fish importer. There is hardly any hope of a better supply before monsoon, when domestic production also improves, said Satinath Patra, secretary of the Fishermen’s Association of Bengal.

**West Bengal: Historic Pichaboni Witness Success of the Struggle for Rehabilitation of Fish Vendors**

At historic Pichaboni, where at the time of the 'Quit India' movement in 1942 the local people blocked the road to stop the British police and firmly announced 'pichaboni' - a Bengali word meaning 'we will not get back', the small fish vendors staged a small but significant struggle for their right to livelihood and won it. The Pichaboni fish market lies just beside the Kanthi-Digha highway. Around 100 to 150 small fish vendors earn their livelihood by selling fish in this market. People from about 12-14 villages visit this market for their daily requirement of fish. This makes it an important sea fish market of the area. Without a proper market both fish vendors and buyers had been suffering since 20-22 years from grossly unhygienic conditions and inclement weather, not to mention the high risk of doing business just beside a very busy highway. No toilet, no supply of water, no platform for fish selling, no shed, no drainage no cleaning system - none of the basic civic requirements for a fish market was available. Many memorandums were submitted to the Fisheries Department requesting for a modern fish market with necessary amenities. But there has been absolutely no positive development. On top of this, in August 2017, an eviction notice was suddenly served on the small fish vendors of Pichaboni market under the plea of expansion of the highway. Immediately the market committee and the fish vendor union moved the BDO, District Fisheries Officer, Sub-Divisional Officer, local MLA and MP against the eviction notice. Following this the fish vendors' union raised the issue of eviction of Pichabony fish market to different government authorities at different levels. Unfortunately no move to rehabilitate the poor fish vendors was noticed. But the work for expansion of the highway continued. There have been continuous threats from the administration on the fish vendors to vacate the area. The local Panchayet also requested the administrative authorities for proper rehabilitation of the fish vendors and the fish market. But there was no assurance. Even the Panchayet asked the vendors to quit immediately. In February this year PWD announced that the area should be vacated within 24 hours. Though the fish vendors were trying to vacate a part of the area squeezing into the other, they were continuously asking for rehabilitation. Finding no way out the fish vendors and the union prepared for a last fight. They planned to block the highway to make the government listen to their legitimate demand. At the same time they kept continuously in touch with the authorities. The fisheries department and other administrative authorities were again moved by the union. Pintu Das, leader of the fish vendor union of Pichabony, had a talk with the BDO and requested him to do something to avoid the imminent showdown. BDO Manoj Kanjilal assured emergency rehabilitation and inspected the market. In presence of the local Panchayet and Market Committee he assured construction of the fish market at a nearby vacant site that belongs to the Irrigation Department. He also assured
of developing the land and arrange for legal sanction. The road side fish market at Pichabony is continuing. It is hoped that the construction work for new fish market will start immediately after the parliamentary elections. The union is having continuous vigil on the developments.

**West Bengal: Mission Statement of Small Scale Fish Workers’ Consolidation**

We stand and advocate for a fisheries policy that protects the fish resources and the small and marginalised fishing communities' right to use the fish resources in harmony with nature. We dedicate ourselves to establish an alternative paradigm for sustainable development with peoples' power and involve ourselves in transformative politics to bring in the same. India is gifted with incredible water resources. Great seas on three sides, large number of rivers, lakes, wetlands, reservoirs and ponds not only provide us with water bodies of huge number and bewildering diversity, but also produce large quantity of fish to make India stand second in the world. Total annual fish produced by both capture and culture fisheries in our country has been nearly 11 million tonnes, of which inland fisheries account for more than 66%. About 6 million workers including fishers, fish farmers, fish processing workers, fish sellers alongwith net and boat makers or repairers earn their livelihood from fisheries. Hence there is a fisheries dependent population of no less than 3 crores (30 million).

Inland fisheries account for more than two third of the employment in fisheries. Fish provides high quality and cheap animal protein together with many beneficial minerals and vitamins. Around 80 crores (800 million) people eat fish in India. Since 1961 per capita consumption of fish has more than trebled. More than 13% of all animal protein consumed by our countrymen comes from fish and fish provides the next largest supply of animal protein after milk. Thus the fisheries sector plays a very important role in the food security, nutritional status and employment in our country. Also, with more than 50% of the sector's workforce being women, suffice it to mention that it plays a salient role in maintaining gender balance in employment.

Fisheries resources are under tremendous pressure. Indiscriminate encroachments, pollution and consumptive use of water are killing our coastal and inland waters and with that the fish resources they harbour. Over and destructive fishing by mechanised boats and trawlers have made the near shore waters of India's 8,000 kilometre long coastline barren of fish. The small and traditional fishers and fish farmers are by far the largest non-consumptive primary stakeholders and natural custodians of our water bodies. Good fish needs good water. The small and traditional fishing communities, always and everywhere, strive to protect water bodies and fish resources. It is important to note, in this light, that traditional fishing is nature-friendly and suitable for the ecology of the water body. It may be remembered that traditional fishers let a new born fish mature and produce progeny so that there is natural stock replacement.

The port led development project christened as Sagarmala is designed to push up the destruction of coastal natural resources. Linked up with River Linking projects and newly announced 110
National Waterways, the tide of destruction is going to sweep through the great rivers like the Ganges, Brahmaputra, Brahmani, Godavari, Krishna, Kaveri, Mandavi and Zuari killing whatever fish resources have been left in them. Investment driven enhancement of productivity that cares little for environmental or ecological balance and edges out small fishers and fish farmers promoting their replacement by entrepreneurs from outside the sector, or sustainable production with protection and promotion of livelihood of small fishers and fish farmers – the fisheries sector is witnessing a policy conflict.

The small and traditional fishing communities are losing ground and with it pressure is building up against sustainability in fisheries. Blue Revolution promoted by the Government of India aims to encourage this very process. Most ironically thousands of these small fisher people, who have been struggling to protect their livelihood and the water bodies, are being driven out of the aquatic areas falling within protected areas like wildlife sanctuaries and reserves. We stand and advocate for protection and development of small scale fisheries. Small scale fisheries are fisheries where fishers and allied workers are directly engaged in work mainly for subsistence as against for commercial purpose exploiting others' labour. We stand and advocate for small scale Fishers' and Fish Farmers' right over water bodies. This means Fishers and Fish Farmers' inalienable right to access and use water bodies including seas, rivers, lakes, wetlands, reservoirs, tanks and ponds for sustainable fishing or fish farming. Fundamental Policy Directions We stand and advocate for the following fundamental policy directions – I.

Sustainable development: Protection, maintenance and promotion of fisheries should be in consonance with the ecological principles and aim at building up on ecological services of water and water bodies. II. Socio-economic upliftment of small scale fish workers: This should be one of the chief policy concerns. Ample caution should be exercised against pushing out of fishers and fish workers traditionally engaged in work in fishing by a new class of entrepreneurs from outside of the sector and against usurpation of government assistance by the latter. III. Principle of Subsidiarity: Small scale and poor fish workers constitute the bulk of the work force engaged in fisheries. Their wellbeing is inseparably linked with the wellbeing of the fisheries sector. It is to be ensured that access to fish resources together with protection, support and assistance programmes, services and schemes should start from bottom top wards, whereas the regulations and penalties for non-compliance should start from top downwards. This means that the access to fish resources together with assistance programmes, services and schemes for fisheries should be provided for the smaller and poorer fishers by preference, and conversely the regulations and penalties for non-compliance should be harsher for the larger and richer players in the sector. IV.

Participatory Governance: Governance issues in fisheries involve water policy, policy for protection and upkeep of water bodies including rivers, canals, reservoirs, lakes, wetlands and ponds as well as policy for watershed management. The small scale fishers are by far the largest non-consumptive primary stakeholders of our surface water resources. More importantly, they are the natural custodians of our water bodies as good fish needs good water. As such, the small
scale fishing communities and their representatives should be provided with mandatory participation right in determining water, water body and watershed management policies and their implementation. V. Inter-generational Equity: Natural resource bases have to be preserved not only for the present generation but also for future ones. As such resource preservation with continued inter-generational involvement of fishing communities in fisheries should be made one of the chief concerns of the national policy on fisheries.

VI. Gender Justice: Women fish workers constitute more than half of the total workforce in fisheries. In fisheries sector women workers are more marginalised than their male counterparts and are in less favourable condition to address their problems. This calls for gender sensitive policies in resource allocation and access. VII. Community Based Resilience to Climate Change Impact: Fisheries, in both marine and inland sectors are largely impacted by climate change. Efficient monitoring of climate change impacts and effective measures to address the impacts are urgently called for. This can be done only through participation of fishing communities and containing anthropogenic impacts on environment and ecology that enhance climate hazards.

VIII. Precautionary Approach: Fisheries being largely based on natural resource and ecological service, utmost caution has to be exercised in introduction of new social groups, technologies, species, feed etc. in its domain. This requires strict adherence to the precautionary principle which calls for abstention from doing anything whose impact is not fully or sufficiently known.

Administrative Measures We stand and advocate for the following important administrative measures at the central and state governments – a. Separate Fisheries Ministry in Central and State Governments with the mandate to protect and promote sustainable fisheries and the livelihood of small scale fish workers including fishers, fish farmers, fish vendors and other ancillary fish workers; and b. National Commission for Fisheries to look after policy implementation, inter-state disputes, protection and promotion of the rights and entitlements of small scale fishing communities.

Specific Rights and Entitlements We stand and advocate for the following rights and entitlements of small scale fishing communities – A. Recognition of the occupational dignity of small scale fishing communities: Each and every fish worker, including fishers, fish farmers and fish vendors, irrespective of caste, creed, gender and religion, should be given government identity card as recognition of their occupational dignity, rights and entitlements. B. Tenure Rights: Small scale fishers should have the right to fish in all water bodies like the seas, rivers, lakes, wetlands, reservoirs including in water bodies under protected areas with preferential access to fish resources over large scale fishers. Small scale fish farmers should have user right on the land areas they use for pre and post harvest activities. Small scale fish farmers should have the right to security of tenure (protection against eviction) in water bodies taken on lease; Small scale fish farmers should enjoy the right of regulation of terms and conditions of lease including fixation and increment of lease rent;
Small scale fish farmers should have farming rights in Government owned water bodies and reservoirs on preferential basis (over non-fish farmer investors) and easy terms (lease rent should be fixed on the basis of present yield and not on the basis of standard yield) with at least 5 years moratorium on increase of lease rent. Small fish vendors should have the right of protection against eviction from any designated or undesignated market place without his or her consent and adequate rehabilitation; Small fish vendors selling fish in a market or area must have the right to full accommodation in the event of reconstruction or new construction of fish market.

C. Governance Rights: Small scale fishing communities should have the right to protect water and fish in all water bodies including the seas, rivers, canals, lakes, wetlands, reservoirs and ponds; Small scale fishing communities should have the right to participate in and determine marine, river, wetland, reservoir, other water bodies and watershed (catchment and drainage) management including the use of the available water resources.

Small scale fishing communities should have the right to control and stop all activities that impact fisheries including destructive fishing and fish farming practices, pollution and encroachment. Small fish vendors should have the right of participation in the management of fish depots and fish retailing markets; Small fish vendors should also have the right of participation in the management of collection and transportation of fish from the fish depots and collection points.

D. Right to Economic Empowerment & Finance: Small scale fishers, fish farmers and fish vendors should be encouraged and provided with incentives to form and run organisations for economic selfempowerment like Cooperatives, Fish Production Groups, SHGs etc. The terms and conditions for their formation and running should be made easy and transparent.

Small scale fishers, fish farmers and fish vendors should be protected from exploitation by usurers money lenders and micro-finance companies and should enjoy priority in government finance including bank linking and bank loans (Kisan Credit facilities are to be extended to small fishers and fish farmers).

E. Right to information, quality inputs and technology: Due importance and respect should be given to document traditional knowledge and expertise in fisheries with their appropriate utilisation; Small scale fishers, fish farmers and fish vendors should be provided with technology, information, training and assistance regarding development of boats, nets, maintenance of cold chain, weather, tides, release of water from reservoirs, upgradation of pond preparation techniques, hatchery, quality seeds and fingerlings, farming techniques, quality feed and market;

Small scale fishers, fish farmers and fish vendors should also be provided with technology, information, training and assistance to enhance value addition through procedures like crab fattening and rearing of wild fish as well as manufacturing of different value added products like dry fish, fish pickles, papads etc. with market access; Small scale fish farmers should be provided with technology, information, training and assistance to diversify into gainful enterprises like ornamental fish breeding and rearing.

There should be public notice regarding
government schemes for fish workers and absolute transparency with procedural regularity in selection of beneficiaries and disbursement of benefits. F.

Right to Infrastructure: Small scale fishers should enjoy the right to have infrastructure support that includes – - Boats and nets with boat and net making facilities; - Jetties / constructed landing stages for landing the catch; - Fish drying platforms and solar driers; - Light, drinking water, resting place and toilet at the landing centre; - Roads and means of transport to and from the landing centres. - Cold storage, fish drying and processing facilities, ice factories. Small scale fish farmers should be provided with support for – - Boats, nets and other implements; - Fish collection, auction and marketing facilities; - Access to hatcheries and quality seed, fish feed and disease management.

Small fish vendors should be provided with – - Transport facilities (individual, collective or public) to and from fish collection points, fish depots and retail markets; - Fish depots and retail markets should have basic amenities like drinking water, toilet and resting place; - Markets should have proper approach roads, built up platforms, adequate storage and selling space with cleaning facilities. G. Right to Social Security & Livelihood Support: Small scale fish workers should have comprehensive social security cover that includes – - Housing for all fish workers;; - Food security cover; - Life and health insurance cover; - Insurance cover for boats and nets, fish farming and vehicles employed for fish vending; - Old age and in.r.m pension; - Livelihood support during lean season and / or fishing ban period; - Educational assistance for children. H. Women Fish Workers' Rights: . The government should have a gender policy in fisheries which should be based on gender segregated data on women fish workers' contribution to the work in fisheries.

Women fish workers should have women fish worker specific schemes and allotments – - To make good for the relative exclusion of women fish workers; - To access financial, business and technological support; . Women fish workers should have preferential right to access – - Social security schemes meant for fish workers that include housing, life and health cover, old and in.r.m pension, widow pension, educational support for children; - Welfare and benefit schemes meant for fish workers; - Organise and run women fish workers' cooperatives, fish production groups, SHGs; . Special development measures in sectors dominated by women fish workers like fish vending, canoe based fishing, crab and mussel collection etc. . Provide for basic amenities like toilet, resting place and crèche for women fish workers at fish markets, fish depots and places where women fish workers gather for work.

**West Bengal: Better co-ordination between agencies discussed at coastal s ..**

Expeditious implementation of coastal security schemes such as coastal mapping, introduction of a common communication network, distribution of biometric identity cards and monitoring of fishing landing points were some of the issues discussed at the 7th Apex-level Committee Review Meeting on Coastal Security for West Bengal on Friday. Special emphasis was laid on effective utilisation of the fishing community as ‘eyes and ears’ for early warning of sea-ward threat. The meeting, convened at INS Netaji Subhas in Kolkata, was co-chaired by Vice Admiral Karambir Singh, FOC-in-C, Eastern Naval Command (who is slated to take over as the naval chief later this year) and Malay De, chief secretary, West Bengal.

Among the others present were senior police officers from the state, Rajan Bargotra, IG, Coast Guard and Commodore Suprobho K De, naval officer-in-charge (West Bengal). “The meeting took stock of coastal security mechanisms in the state and reviewed critical areas and processes, including inter-agency coordination and information sharing. In addition, various action points of National Committee for Strengthening Maritime and Coastal Security (NCSMCS) towards augmentation of Coastal Security were also reviewed and deliberated,” a senior officer said. National Maritime Day was also observed on Friday to commemorate the maiden voyage into international waters of the SS Loyalty, India’s first merchant vessel from Mumbai to London on April 5, 1919. It marked a red-letter day in the maritime and navigation history of India. Senior officers of the navy and state government paid tribute to the sailors who sacrificed their lives at sea, by placing wreaths at the Lascar War Memorial in the presence of all ranks of INS Netaji Subhas.

**West Bengal: More dead fish found in Santragachhi Jheel**

https://m.timesofindia.com/city/kolkata/more-dead-fish-found-in-santragachhi-jheel/amp_articleshow/68695475.cms

The Howrah Municipal Corporation (HMC) launched a clean-up of the water hyacinth that has covered large swathes of the 33-acre Santragachhi Jheel even as fisheries department collected samples of dead fish found floating again on Tuesday to conduct autopsy and determine the reason behind such large scale mortality at the lake. Locals gathered around the jheel on Tuesday amid heavy police deployment said the number of dead fish, including rohu, katla, telapiya and silver carp, was higher than that of Monday. Police, though, refused to specify the number of buckets of dead fish lifted from the jheel. On Monday, 80 buckets of dead fish were lifted from the lake. Jiban Saha, a local residing opposite the jheel, said: “We can’t stay here. The smell of dead fish has filled the sir. Nothing is being cleaned.”

A day after coming under flak for failing to clear hyacinth, HMC conservancy department deployed staff to remove green cover smothering the lake. While some hyacinth was retained for the benefit of birds, 10 truckloads of hyacinth were taken to Howrah Belgachhia dumping yard. Officials and researchers of state fisheries department visited Santragachhi and collected samples
of water, earth lifted from the bed of the jheel and dead fish. HMC commissioner-cum-administrator Bijin Krishna said, “We will await reports of tests the fisheries department will conduct on samples collected, particularly the autopsy reports of the dead fish. This will indicate the cause of fish mortality.”

HMC added area development advisor Masud Alam Khan said, “The water has also turned blackish. While lifting earth from the jheel’s bed, our workers also found plastic and domestic waste.” Environmentalist Subhash Datta said, “Both HMC and the railways are responsible for such large-scale fish mortality and water contamination. In 2017, the National Green Tribunal (NGT) had directed both the organisations to jointly set up a treatment plant to ensure that the lake remains clean. This directive has not been implemented by the two organisations that only hold discussions. The aquatic life cycle in the jheel has been severely damaged because of reluctance of both railways and HMC. I will move NGT on fish mortality at Santragachhi Jheel.”

**West Bengal: Multimedia: Sorry state of Ganga downstream of Farakka**

https://indiaclimatedialogue.net/2019/03/25/multimedia-sorry-state-of-ganga-beyond-farakka/

The Ganga, which has nourished Indian civilisation for millennia, is fighting its biggest battle for survival. Increasing pollution coupled with the failure of cleanliness drives has turned the river and its banks into a dump. The World Wide Fund for Nature (WWF) has listed the 2,520 km long river as among the world’s most endangered. One of the worst stretches is in Murshidabad district of West Bengal, where the Ganga’s biodiversity is being affected by constant human intervention. Many blame the Farakka barrage for the pathetic condition of the river. Sourced from a partly snow-bound catchment area of 1,008,500 sq. km, the Ganga has an average annual discharge of 11,811 cumecs at Farakka. Since 1975, the Farakka barrage diverts an average discharge of 1,046 cumecs from the Ganga into the Hooghly River, towards Kolkata, through a 38 km feeder canal.

The discharge of hot water from Farakka Super Thermal Power Station of NTPC at Dhuliyan in Murshidabad has been causing fluctuations in the water level and temperature, posing a danger to the aquatic life surviving on it. Too hot to handle Locals claim that the water released from the thermal plant is too hot to be touched during the early morning hours. Arif Sheikh, who lives close to the plant, says that it not possible to touch the water in summers, while it is pleasantly warm in winters. “The water released from NTPC is very hot but still we come to take a bath during the winters. But it is difficult to touch the water during summers. We might be getting affected by diseases by taking a dip into the river as we have constant itching but absence of any medical check-up fails to identify the ailments,” he said. “The authorities should look into this and make alternative arrangements to stop the discharge of hot water into the river.” Fishers lament that the hot water discharge from NTPC is affecting aquatic life in the Ganga.
downstream. “I have been catching fish for the past 10-12 years. But the catch in the river has been dwindling each year.

Earlier, we used to get around 20 kg fish everyday, which has now come down to 1-2 kg. It is becoming difficult to run our families as we solely depend on fish for our livelihood. The river is turning dry, may be because of increasing pollution and chemical laced hot water released by NTPC. Our houses have already been swallowed by erosion. We request the government to look into the matter or else the fishing community would completely migrate to other areas for livelihood,” said Subroto Biswas, a fisherman. The small channels close to the plant, whose water gets mixed with the Ganga, are being used by the power plant as dumping ground for fly ash, contaminating the river. Farmers complain that fly ash has been destroying crops year after year, “The crops are getting affected because of the fly ash in the fields but the administration is taking no action despite being informed numerous times.

We have been facing severe losses and have also filed a case against the NTPC seeking compensation. But nothing has been done,” rued Akbar Ali, 66, a farmer at Japukuria village at Dhuliyan, less than 20 km downstream of Farakka. NTPC was forced to shut down five units of its power plant in 2016 due to the abysmally low level of water in the Farakka Feeder Canal. The Farakka barrage has also worsened land erosion downstream by driving more water into the Hooghly. Various reports have suggested that the barrage was constructed without regard to the natural behaviour of the river in the Gangetic delta. According to reports, the Ganga annually carries more than 700 million tonnes of sediment at Farakka, of which about 300 million tonnes get trapped in a barrage pond. The water erodes the banks; the lack of silt means banks cannot be built naturally again. The process is leading to the sinking of the entire delta.

Mahbub Alam, an environment activist, says that sediment deposits have been creating small islands right in the middle of the river while blocking its natural flow, “People of Malda and Murshidabad are living in distress due to the land erosion. The sediments are responsible for it as they have blocked the natural course of the river and have led to the increase in depth of channels on both sides of the river. Subsequently, the water is entering the villages and hundreds of people are losing their land and houses. The situation is very alarming and I request everybody to save the river.” Erosion havoc Erosion has wreaked havoc in Malda and Murshidabad and has devoured hundreds of houses forcing people to migrate to other areas. Anjuma Bibi, who lives in Muskinagar village of Murshidabad district, shudders to think of the moments when she along with her family had a miraculous escape after erosion devoured their house in the dead of a night, “The wooden bed on which I was sleeping suddenly started to slip away. I realised that our house was going into the river.

I managed to pull my husband and my granddaughter out of the room and within seconds my house got cracked and plunged into the river. We lost all our belongings to the erosion. It has been three years since but we have received no help from the administration. The villagers
helped us and gave us shelter in their house,” she said. Over 400 children who study at Muskinagar Primary School come with prayers on their lips and pounding hearts every day. The boundary wall of the school located close to the river has been swallowed by the river thrice in the past one year. School authorities claim they have informed the administration several times about the looming danger to the lives of the children but nothing has been done. “We live in perpetual fear during the monsoon. I have already written to the state irrigation minister and other officials but have received no reply for the past two years.

The administration has only thrown some stone bags as a stopgap measure but it is not enough. Hundreds of children in my school might lose their lives if nothing is done to resist the erosion,” said Obaidur Rahman, the school headmaster while pointing to the heap of bricks in the river that was once a school but was lost to erosion.

West Bengal: Marine Women Fish Workersâ€™ Cooperative Society of Sagar Island: Plans for Economic Empowerment of Women Fish Workers

Sagar Samudrik Mahila Matsyajibi Samabay Samity Ltd. drew up plans for economic empowerment of women fish workers of the Island on 22nd March 2019. In a meeting attended by Pradip Chatterjee, President of Dakshinbanga Matsyajibi Forum (DMF), Milan Das, General Secretary of DMF and Abdar Mallick, Secretary of Sagar Matsyajibi Forum detailed discussions were held on the problems faced by the women fish workers and the ways and means to address those. The meeting was attended by around 30 women fish workers. It was presided and coordinated by respectively Mumtaj Begum, President of the Society and Manasi Bera, Secretary of the Society.

At the beginning Mumtaj Begum welcomed the participants. Then Manasi Bera gave a brief history of the cooperative and requested the participants to come out with a concrete plan of activities. It may be mentioned that Sagar Samudrik Mahila Matsyajibi Samabay Samity Ltd. has been the first and only women fish workers’ cooperative society on the island. Registered in November 2018, the Cooperative Society was organised through relentless efforts of DMF leadership. DMF President Pradip Chatterjee asked all participants to come together to discuss and decide on issues that are important for the women fish workers’ economic empowerment and refrain from formal speech giving.

The first issue raised by the women fish workers was the low wages they receive for sorting and drying job at the fish landing centres. It was stated that the women fish sorters and dryers had to work from 6pm in the morning to 5pm in the afternoon. The wages for 11 hours of hard work have been Rs.200/- plus food. But in one fish landing centre only Rs.180/- was paid to the women fish workers and that too without food. The meeting resolved to demand uniform wages calculated on the basis of minimum wage for 8 hours plus overtime. As a first step it was decided to demand an increase from Rs. 180/- to Rs. 200/ for women workers who are paid Rs. 180/-.
The Society would write a letter to the Sagar Matsyajibi Forum in this regard. In addition, the women fish workers also resolved to develop a fish sorting and drying centre of its own.

The women’s society will buy wet fish from the fishers, process it and then sell the dry fish to traders. For this they will approach the existing fish landing centres for land and the government for assistance in infrastructure. Further, they resolved to establish a fish meal production unit that would run all around the year and a fish pickle production unit. They resolved to approach the Fisheries Department for necessary training and assistance. Small loans for member women fish workers and additional income generation through goatery, duckery, poultry etc. were also discussed. It was decided that Society members will sit together shortly to discuss and decide on concrete steps. The marginalised women fish workers concluded their meeting with renewed hope and resolve to stride forward.

**West Bengal: Workshop on Preferential Access for Small Scale Fish Workers to Marine Fish Resources & Coastal Regulation Zone Notification-2019 Organised by Sagar Matsyajibi Forum**

Sagar Matsyajibi Forum, the branch of Dakshinbanga Matsyajibi Fotum (DMF) in Sagar Island (Block) had been keen to organise workshops on Preferential Access for Small Scale Fish Workers to Marine Fish Resources & Coastal Regulation Zone Notification-2019 to develop a common and in depth understanding of the issues related with these. 25 representatives from eight fish landing centres of the island alongwith two representatives from the women fish workers' unit attended the workshop. President of Sagar Matsyajibi Forum, Himangshu Mondal presided over and Abdar Mallick, Secretary of Sagar Matsyajibi Forum coordinated the workshop. Pradip Chatterjee, President of DMF and Convener of the National Platform for Small Scale Fish Workers (Inland) was the main speaker while Milan Das, General Secretary of DMF elucidated some points raised in the workshop.

Sri Himangshu Mondal, President, Sagar Matsyajibi Forum welcomed everybody and requested active participation. Pradip Chatterjee, the main speaker, said that he is sorry that he could not manage time to translate the presentations in Bengali. He promised to prepare and distribute a Bengali version within one month. The presentation on preferential access for small scale fishers to marine fish resources stressed on the following points - First, it defined the small scale fish workers as those who directly take part in the work in fishing, who work mainly for subsistence and not mainly for commercial purpose and who do not exploit other peoples' labour. Second, it advocated for preferential access for small scale fishing because small scale fishing is more sustainable, more traditional and more equitable.

Third, it described how the mechanised sector has increased its share of the total marine fish catch from less than 15% in 1961 to more than 80% in 2018 and, conversely, how the small scale fishing sector's share has fallen from more than 85% in 1961 to less than 20% in 2018. Fourth, it
showed that most of the catch taken by the mechanised fishing sector was from the near shore (0 to 100 mtrs. depth) area where the small scale fishers fish. Thus, the mechanised sector has been directly responsible for over fishing in the near shore areas and for shortage of fish for the small scale sector. Fifth, it showed that the number and capacity of the mechanised fishing boats has been more than double the optimum and those of the small fishing boats have been much less than the optimum as recommended by fisheries expert committee.

Then it recommended following steps to ensure preferential access of small scale fishing communities to marine fish resources applying the principle of subsidiarity - - Fishing effort should match with maximum sustainable yield; - Moratorium on registration of new mechanised boats; - Stoppage of subsidy and assistance on fuel, boats and nets for mechanised sector; - To ensure that fishing effort matches sustainable yield - reduction of number and effort of the existing mechanised fleet; - Extension of the exclusive fishing zone of the small scale fishers upto 12 nautical miles in general and even more as required in specific areas; - 6 months fishing ban on mechanised sector, 3 months ban on motorised sector with livelihood support for small fishers and no ban on manual fishing; - Right of first catch should be with the small scale sector, mechanised sector to have the residue; - Ban on destructive fishing methods like bottom trawling, purse seining, fishing with LED lights and fish finders. - Protection of livelihood rights of small scale fishing communities in the marine or coastal protected areas. - The National Policy for Marine Fisheries (NPMF) has accepted principle of subsidiarity as its basic policy direction; - NPMF has admitted the need for extension of exclusive fishing area for small scale fishers; - NPMF has also accepted protection of livelihood rights of small scale fishing communities in the marine or coastal protected areas. - The Government of India has banned Bull Trawling and LED Light Fishing in the sea beyond territorial waters. - He suggested continuous struggle for preferential access to marine fish resources as this has been the lifeline of the small scale fisheries. Next subject was Coastal Regulation Zone Notification 2019 (CRZ-2019). The presentation made by Pradip Chatterjee comprised of - - History of CRZ Notification including the effort of Prime Minister Indira Gandhi and the struggle of fishing communities with the historic Kanyakumari March (1989) and Macchimar Rastriyo Adhikar Yatra (2008) as well as the background of three CRZ Notifications of 1991, 2011 and 2019; - Fundamental weaknesses in the successive CRZ Notifications; - Clause by clause analysis of CRZ-2019 Notification to show how it has further opened up the coast to the loot of the corporate and business houses. Milan Das suggested that DMF should work to build up nation wide rejection of CRZ-2019. The participants resolved to organise meetings at fish landing centres to aware the fishing communities on these very important issues and build up strong resistance. They demanded awareness materials in Bengali. DMF leaders assured them that the materials will be made available in the earliest.
West Bengal: Migration in Bengal delta driven by livelihood issues, gender disparity


Economic reasons are the precipitating factor for migration in the Indian Bengal Delta that comprises the Sunderbans reveals an international study titled Deltas, Vulnerability and Climate Change: Migration and Adaptation (DECMA). The study also points out that there is huge gender disparity when it comes to those migrating from the region. The study which covers 51 blocks of districts of South and North 24 Parganas reveals that 64% people migrate because of economic reasons, unsustainable agriculture, lack of economic opportunities and debt; 28% of the migration from the region is for social reasons and about 7% for environmental reasons like cyclones and flooding.

The study, held between 2014 and 2018 focusing on three deltas Ganga Brahmaputra Meghna Delta (India and Bangladesh) Volta (Ghana) and Mahanadi (India) looks into the aspect of climate change, adaptation and migration in these deltas. Professor Tuhin Ghosh, the India country head for DECMA says people surveyed during the study could not relate to reduced agricultural productivity, increased salinity and change in rainfall pattern as environmental reason for their migration. Only in cases of extreme events like flooding and cyclones resulting in loss of livelihood, did the locals say their migration was due to environmental reasons, he points out. When it comes to migration in the Indian Bengal Delta, the study finds a huge gender disparity, with men outnumbering women by almost five times.

It shows that of the people migrating 83% are men and only 17% are women. While most of the men migrate due to economic reasons, women do so, driven by mostly social factors. The DECMA report also finds that most migrants both in case of men and women are young, in the age group of 20-30 years. Professor Ghosh, who is associated with the School of Oceanographic Studies, Jadavpur University says that in the Sunderbans there are villages where most of the men have migrated for work and the responsibility of the family and agriculture falls on the women. “Even though the women are doing all the work back home, they have little freedom to take decisions on their own and have to consult their men over telephone for any major decision,” he says. In terms of the destination of migrations, the study finds that 51% of migration from the Indian Bengal Delta is to other areas of the State particularly to the city of Kolkata, 10% to Maharashtra, 9% to Tamil Nadu, 7% Kerala and 6% to Gujarat. It shows that 57% of migration is seasonal, where people move once or twice a year; 19% is circular where those migrating move thrice a year irrespective of reasons and 24% permanent where people intend to stay for at least six months in the place they are migrating to.

According to experts behind the study, one of the reasons for migration is failed adaptation in the areas which are under stress due to climate change. Vulnerable areas In the study, experts also
map the climate change hot spots and highest risk areas of Sunderbans based on an analysis of climate change hazards. The areas of Gosaba, Basanti, Kultali, Sagar, Kakdwip, Namkhana, Canning and Mathurapur (all in South 24 Parganas) have high levels of agriculture dependency and so are sensitive to climate hazards such as flood and salinity.

**West Bengal: Sinking island in the Sundarbans Delta**


Thousands of people still live on the Indian island of Ghoramora, which has shrunk in size to just 4.5 sq km. It's one of scores of low-lying islands in the Sundarbans Delta that are rapidly disappearing. Scientists say global warming has caused melting snow and ice to swell the rivers, and the sea level has risen. Tens of thousands have fled Ghoramora in recent decades. Full video is available at: [https://www.bbc.com/news/av/world-asia-india-47560991/sinking-island-in-the-sundarbans-delta](https://www.bbc.com/news/av/world-asia-india-47560991/sinking-island-in-the-sundarbans-delta)

**West Bengal: State Panchayats dept draws up measures to increase production and sale of fish**


In a significant stride to ensure a better livelihood for the fish farmers in the state, the Panchayats and Rural Development department is taking a slew of measures to develop infrastructure for cultivation, storage and quality control of fish, the most favourite delicacy of the Bengalis. Come Saturday and the department is kickstarting a new project 'Meen Mitra' at Tamluk in East Midnapore to provide the fish farmers knowledge and technical knowhow on augmentation of production and handling problems associated with the cultivation of the species. "There will be a 15 days' hands-on training for 34 members of the Self-Help Groups who are associated with fish cultivation in the area. They will be reaching out to other fish farmers in the state and will impart knowledge and technical knowhow on the nature of cultivation depending upon the quality of water and how to address problems associated with cultivation.

They will be acting as a catalyst for the fish producers at the block level," a senior official of the department said. 164 people from nine places in North and South 24-Parganas, Hooghly, Howrah, South Dinajpur, Cooch Behar, Siliguri and Darjeeling and of course East Midnapore will come under the project in the first phase. The department will also provide equipment needed for soil testing, water testing and other requisites. According to the official, there are broadly four types of water — fresh, brackish, marine and cold water . The training will be imparted on the nature of the waterbodies available in a particular area for scientific breeding of fishes.
The department for the first time in the state is also boosting the infrastructure for better storage and quality control. "We will come up with solar dehydrated units in certain earmarked areas so that fishermen do not dry fish under the sun beside the sea or the river. The funds for five such units priced at around Rs 2 lakh per unit have already been placed," the official said. The department is also coming up with mini ice plants for storage of fish and funds for five such units have already been placed. "We are also procuring 20 cool boxes which will retain the freshness of fish for a longer period. The equipment are being procured from the National Institute of Rural Development and Panchayati Raj (NIRDPR) in Hyderabad through the West Bengal Comprehensive Area Development Corporation that comes under the aegis of our department," the official maintained.

West Bengal: Forums write to Agri and Farmers Welfare ministry to regulate number of trawlers at sea


Various fishermen' organisations in the state have voiced their protest against indiscriminate approval of marine fishing boat registration leading to destruction of the ecological balance in the sea and the livelihoods of the small-scale fishermen in the state. Dakshinbanga Matsyajibi Forum and the National Fishworkers' Forum have written to the ministry of Agriculture and Farmers Welfare to safeguard the interests of the small-scale and traditional fishermen in the state. A letter has been sent with an aim to regulate marine fishing trawlers at sea. The organisations also urged the Centre to reduce the number of trawlers in the sea both for the sustainability of fisheries and also to check destruction caused to the seabed by trawling gear. It may be mentioned here that since the introduction of trawlers in the 1960s, small-scale fishermen having motorised and non-motorised boats had been opposed to the operation of the trawlers because these boats directly impacted the ecological balance and the livelihood of small scale fishermen.

Debasis Shyamal, vice-president, Dakshinbanga Matsyajibi said: "In line with the National Policy on Marine Fisheries, 2017 we would like to highlight the importance of sustainable development, socio-economic upliftment of fishers, partnership, inter-generational equity, gender justice and precautionary approach. We urge the Centre to take into consideration these factors and look into the long-standing principles demanded by the traditional and small-scale fish workers communities. The fishermen community also stressed the importance of livelihood of the traditional fishing communities and also the rights to access fish resources in all the maritime zones of India. They demanded equity and sustainability by giving preferential access to small scale fishermen. The capacity of the fishing fleet and the fishing effort has to be matched with
that of the fish resources available in the maritime zones of India to ensure that the resource exploitation is sustainable and fishing is a viable activity, Shyamal added.

**West Bengal: Protecting the Sundarban wetlands**


On January 30, the Indian Sundarban was accorded the status of ‘Wetland of International Importance’ under the Ramsar Convention. The Sundarbans comprises hundreds of islands and a network of rivers, tributaries and creeks in the delta of the Ganga and the Brahmaputra at the mouth of the Bay of Bengal in India and Bangladesh. Located on the southwestern part of the delta, the Indian Sundarban constitutes over 60% of the country’s total mangrove forest area. It is the 27th Ramsar Site in India, and with an area of 4,23,000 hectares is now the largest protected wetland in the country. Why is this important? The Convention on Wetlands of International Importance, better known as the Ramsar Convention, is an international agreement promoting the conservation and wise use of wetlands. It is the only global treaty to focus on a single ecosystem.

The convention was adopted in the Iranian city of Ramsar in 1971 and came into force in 1975. Traditionally viewed as a wasteland or breeding ground of disease, wetlands actually provide freshwater and food, and serve as nature’s shock absorber. Wetlands, critical for biodiversity, are disappearing rapidly, with recent estimates showing that 64% or more of the world’s wetlands have vanished since 1900. Major changes in land use for agriculture and grazing, water diversion for dams and canals and infrastructure development are considered to be some of the main causes of loss and degradation of wetlands. How did it qualify? The Indian Sundarban met four of the nine criteria required for the status of ‘Wetland of International Importance’ — presence of rare species and threatened ecological communities, biological diversity, significant and representative fish and fish spawning ground and migration path.

The Indian Sundarban, also a UNESCO world heritage site, is home to the Royal Bengal Tiger. The Ramsar website points out that the Indian Sundarban is also home to a large number of “rare and globally threatened species, such as the critically endangered northern river terrapin (Batagur baska), the endangered Irrawaddy dolphin (Orcaella brevirostris), and the vulnerable fishing cat (Prionailurus viverrinus).” Two of the world’s four horseshoe crab species, and eight of India’s 12 species of kingfisher are also found here. Recent studies claim that the Indian Sundarban is home to 2,626 faunal species and 90% of the country’s mangrove varieties. Will the status help? Environmentalists and forest officials say the Ramsar status will help to highlight conservation issues of the Sundarbans at the international level. The part of the Sundarban delta, which lies in Bangladesh, was accorded the status of a Ramsar site in 1992, and with Indian Sundarban getting it too, international cooperation between the two countries for the protection of this unique
ecosystem will increase. This could lead to a better conservation strategy for flagship species such as the tiger and the northern river terrapin.

What are the threats? While the Indian Sundarban is a biodiverse preserve, over four million people live on its northern and northwestern periphery, putting pressure on the ecosystem. Concerns have been raised about natural ecosystems being changed for cultivation of shrimp, crab, molluscs and fish. The Ramsar Information Sheet lists fishing and harvesting of aquatic resources as a “high impact” actual threat to the wetland. The other threats are from dredging, oil and gas drilling, logging and wood harvesting, hunting and collecting terrestrial animals. Salinity has been categorised as a medium and tourism as a low impact actual threat in the region. Experts believe that while the Ramsar status may bring in international recognition to the Indian Sundarban, the wetland, which along with anthropogenic pressures, is also vulnerable to climate change and requires better management and conservation practices.

Andhra Pradesh: Coastline to be geomapped on the lines of West Bengal


The National Remote Sensing Centre (NRSC) will be geo-mapping the state’s coastline and the villages located along it, soon. The project will follow West Bengal’s example in which the fisheries department had taken the initiative. The government has already accepted the proposal of the coastal security police (CSP) or marine police to conduct the geo-mapping and has sanctioned around Rs 1 crore for the project. An initiative meeting with this regard was conducted three months ago and a second meet will be held soon in which Station House Officers (SHOs) of all the 21 coastal security police stations are expected to participate. The coastal security police DSP M Adinarayana told TOI that the fisheries department of West Bengal had taken the help of National Remote Sensing Centre to geo-map its entire coastline.

AP has a coastline of 974 km and 21 coastal security police stations in nine coastal districts. All the nine districts have more than 541 fishing villages and a few coastal towns. There are about 3.02 lakh active fishermen with more than 70,000 vessels, including 40,000 traditional fishing boats. “The NRSC will develop an application where information related to the coastal areas, its surroundings and available infrastructure will be uploaded. Such information will come handy for evacuation, rescue and relief operations during natural calamities and disasters,’ marine police DIG A Sattar Khan told TOI.

According to sources, a team of marine police of AP, led by Khan, had visited Kolkata to study about the geo-mapping of coastal areas by the NRSC Kolkata branch. They also visited the coastal police stations and the NRSC branch. Geo-mapping is a method of surveying land and
the sub surface using GPS that presents a detailed view of a site and the surrounding area. Khan said that the geo-mapping of the state coastline will allow data to be gathered about hospitals, schools, cyclone shelters, bus stands, railway stations, police stations, other facilities and infrastructure available in a particular area.

West Bengal: Six dead as rain, thunderstorm disrupt life in Bengal


Six persons were killed and normal life disrupted as rains accompanied by thunderstorm lashed Kolkata and other southern West Bengal districts on Monday, officials said. A 20-year-old youth died while trying to get down from a jetty at Jhorkhali in South 24 Parganas district, police said. Another casualty was a 16-year-old girl of Baruipur who was struck by lightning. She was declared dead on arrival at a hospital. In Purulia district, the sudden rainfall spoilt a family's celebration. Pradeep Tantubai, 45, died and two others were injured as a canopy collapsed over them. Three deaths were reported from West Midnapore district - two people struck by lightning, and another electrocuted.

The Regional Meteorological Centre, Kolkata said a squall followed by gusty northwesterly wind occurred for a minute at 3.55 a.m. with speed of 44 kmph, followed by highest gust of 56 kmph at 4.25 a.m. Various parts of Howrah, North and South 24 Parganas, East Midnapore and West Midnapore districts reported uprooted trees and electric poles, and damage to shops and other properties. In Kolkata, arterial roads like Eastern Metropolitan Bypass and Dufferin Road, as also the Maniktala area faced major traffic disruption due to uprooted trees. The rainfall recorded in the morning was 15.6 mm. Officials have predicted "thunderstorm with gusty winds and lightning at one or two places in West Bengal" for the next two days.

The state government on Monday asked fishermen not to venture into the deep sea off the Bengal and Odisha coasts and towards the Bangladesh coast due to likelihood of inclement weather on Tuesday and Wednesday. Fishermen in the deep seas have been asked to return to the coast by night. The maximum recorded temperature in Kolkata was 32.3 degrees Celsius and the minimum 19.4 degrees.

West Bengal: Downsides of development

http://www.millenniumpost.in/opinion/downsides-of-development-340550

West Bengal is set to develop a deep-sea port in Tajpur in East Midnapur district independent of the Centre. But some concerns persist. The local fishing community has not been apprised about the port project or told how their lives will be affected by it. Down To Earth visited a few of the areas the port would cover and found that not one official has visited these places up till now. "I
have heard of the project, but so far have not officially informed by the government about it. The fishermen there have not received any official intimation yet. The details of the port are still unknown and also how it will affect the 6,000 registered fishermen and labourers," says Apurba Kar, an assistant at Tajpur Jaladha Matsuya Khoiti, one of the two matsuya khotis in Tajpur where fishermen come and dry the fishes they catch before dispatching them to the market.

Since the fishing community has received no guidance on what they should do to sustain themselves, they have come to believe that for the sake of development they should abandon their traditional source of livelihood. "I have heard that a port will be built here but that will be in the deep sea and won't affect our work. In fact, our sons will get jobs," says Anil Kumar Borai, secretary of Jaladha Ma Bansholi Matsuya Khoiti, the other matsuya khoiti of the region. "We are concerned because we may have to leave our homes. Will we get the right price for that?" he adds. There are others who think the port will keep them afloat. "If the government builds a port, it will secure us from washing away in the sea. We have seen sand dams being washed away and mechanised trawlers also affect our business.

A port will affect affected fishing though, but we have to think of a better future," says Sukumar Bera, a fisherman in Tajpur. Moreover, the women of the region find the port project threatening them existentially. "What will we do if the fishing stops? We come from different places and are very poor. We earn whatever we can to support our husbands. The men can go for other jobs on to the port, but we can't. Our families will suffer a lot," says a group of fishing women in the region. Even if the fishing community manages to keep their work going, the port could give way to a technical issue. "The port can either increase the speed of waves or decrease it. We cast nets on wooden rods. If the waves increase, it will uproot the rods and the nets will be ripped apart and if it decreases, the fish will not reach the net. Both ways we'll suffer," says Pabitra Pradhan, member of Jaladha Ma Bansholi Matsuya Khoiti.

Haldia: An industrialised fishing town West Bengal already has one example of what rapid industrialisation does to ports — Haldia. The fishing community in the port city says their income has reduced by one-third since industrialisation started in the region two decades ago. Few people in the community have thought about that side of the story. Bhabani Barui, a fisherwoman in a Tajpur village, says, "I've heard that we may have to leave our homes and it can be true because Haldia villagers also had to. Near-port villages never remain intact. But, fishing is all we know. What else will we do if we are asked to leave and earn through different means? It will be very painful for us." And now that eight jetties are being planned under the ambitious Sagarmala programme, the fishing community is being threatened even more.

Angshuman Midya, president of Rupnarayan Chawk Matsya Obotaran Kendra, says, "A waterway between Haldia and Varanasi may be made under this project. This will massively impact small-scale fishing business. And, setting up jetties is definitely a threat to us." Already the youngsters there are migrating to other states and countries. The matsuya kothi members say
while earlier 80 per cent of fishing labourers were from the village, the number has come down to just 10 per cent now. Saibul Ali, a fisherman busy repairing a boat on the banks of Rupnarayan river, says, "We have to pay at least Rs 3 lakh to get a job. Plus, there hasn't been any development in the area at all." Although Tajpur's port story is just about to begin, it's not much different from what's still happening to Haldia's fishing community.

They, too, haven't been visited by a single official yet to inform them about the jetties. Manju Dolui, a fisherwoman in Haldia, says, "We don't know about jetties but if it affects our livelihood we don't want it. But no higher official has ever come to visit us and heard our problems. If this continues, we will be forced to leave our profession" The fishing communities in both coastal regions are suffering from the effects of industrialisation without proper planning, pollution control methods, or the government offering them any way out to a sustainable livelihood.

**West Bengal: IIT start-up invents technology to enhance fish size and taste**


A bioactive product invented by a start-up incubated at IIT Kharagpur's Science and Technology Entrepreneurs' Park is silently changing the face of aquaculture in parts of eastern India. Mr Fish, produced with the latest technology, is one-of-a-kind of product that not only increases the size of the fish in the least possible time but, and more importantly, enhances its taste and nutritional quality. Mr Fish, produced by the IIT Kharagpur start up Zelence, the product has proved to be a boon for the fish farmers. Pijush Kanti Bhanja, a fish farmer from Moyna in Midnapore , who used Mr Fish for a month, saw drastic improvement in the yield. He said: "All the varieties of carp, particularly the Roopchand, in my farm have undergone a healthy increase in size. My neighbours told me that fish from my farm taste much better than those available in the market."

"Most of the products in the market deal with disease control in fish farming but no product ensures fish taste and quality. That is why Mr Fish is such a novelty," said Prof. Jayanta Bhattacharya of the Department of Mining Engineering and School of Environmental Science and Engineering. Prof. Bhattacharya is also one of the directors of Zelence. Mr Fish is produced from natural bioactive molecules and some isolated and innovated probiotics. Of liquid consistency, Mr Fish improves the feed conversion ratio, enhances particular amino acids, and regulates the control of uniform distribution of fats and proteins in fish cells that results in improved shine, storability and taste of fish.

**West Bengal: Tajpur and Haldia: How coastal development is impacting fishing**

West Bengal Chief Minister Mamata Banerjee recently took back control of the proposed deep-sea port in Tajpur in East Midnapur district, saying the state will develop the project without the Centre. But, what about the livelihood of the stakeholders? The local fishing community has not been apprised about the port project or told how their lives will be affected by it. Down To Earth visited a few of the areas the port would cover and found that not one official has visited these places up till now. “I have heard of the project, but so far have not officially informed by the government about it. The fishermen there have not received any official intimation yet. The details of the port are still unknown and also how it will affect the 6,000 registered fishermen and labourers,” says Apurba Kar, an assistant at Tajpur Jaladha Matsya Khoti, one of the two matsya khotis in Tajpur where fishermen come and dry the fishes they catch before dispatching them to the market.

Since the fishing community has received no guidance on what they should do to sustain themselves, they have come to believe that for the sake of development they should abandon their traditional source of livelihood. “I have heard that a port will be built here but that will be in the deep sea and won’t affect our work. In fact, our sons will get jobs,” says Anil Kumar Borai, secretary of Jaladha Ma Bansholi Matsya Khoti, the other matsya khoti of the region. “We are concerned because we may have to leave our homes. Will we get the right price for that?” he adds. There are others who think the port will keep them afloat. “If the government builds a port, it will secure us from washing away in the sea. We have seen sand dams being washed away and mechanised trawlers also affect our business. A port will affect our fishing though, but we have to think of a better future,” says Sukumar Bera, a fisherman in Tajpur. Moreover, the women of the region find the port project threatening their existence. “What will we do if the fishing stops?

We come from different places and are very poor. We earn whatever we can to support our husbands. The men can go for other jobs on to the port, but we can’t. Our families will suffer a lot,” says a group of fishing women in the region. Even if the fishing community manages to keep their work going, the port could give way to a technical issue. “The port can either increase the speed of waves or decrease it. We cast nets on wooden rods. If the waves increase, it will uproot the rods and the nets will be ripped apart and if it decreases, the fish will not reach the net. Both ways we’ll suffer,” says Pabitra Pradhan, member of Jaladha Ma Bansholi Matsya Khoti. Haldia: An industrialised fishing town West Bengal already has one example of what rapid industrialisation does to ports — Haldia. The fishing community in the port city says their income has reduced by one-third since industrialisation started in the region two decades ago.

Few people in the community have thought about that side of the story. Bhabani Barui, a fisherwoman in a Tajpur village, says, “I’ve heard that we may have to leave our homes and it can be true because Haldia villagers also had to. Near-port villages never remain intact. But, fishing is all we know. What else will we do if we are asked to leave and earn through different means? It will be very painful for us.” And now that eight jetties are being planned under the
ambitious Sagarmala programme, the fishing community is being threatened even more. Angshuman Midya, president of Rupnarayan Chawk Matsya Obotaran Kendra, says, “A water way between Haldia and Varanasi may be made under this project. This will massively impact small-scale fishing business. And, setting up jetties is definitely a threat to us.” Already the youngsters there are migrating to other states and countries. The matsya kothi members say while earlier 80 per cent of fishing labourers were from the village, the number has come down to just 10 per cent now.

Saibul Ali, a fisherman busy repairing a boat on the banks of Rupnarayan river, says, “We have to pay at least Rs 3 lakh to get a job. Plus, there hasn’t been any development in the area at all.” Although Tajpur’s port story is just about to begin, it’s not much different from what’s still happening to Haldia’s fishing community. They too haven’t been visited by a single official yet to inform them about the jetties. Manju Dolui, a fisherwoman in Haldia, says, “We don’t know about jetties but if it affects our livelihood we don’t want it. But no higher official has ever come to visit us and heard our problems. If this continues, we will be forced to leave our profession.” The fishing communities in both coastal regions are suffering from the effects of industrialisation without proper planning, pollution control methods, or the government offering them any way out to a sustainable livelihood.

**West Bengal: Sundarbans vulnerable to storm surges**

[https://indiaclimatedialogue.net/2019/01/28/sundarbans-vulnerable-to-storm-surges/](https://indiaclimatedialogue.net/2019/01/28/sundarbans-vulnerable-to-storm-surges/)

Villages located near river creeks and low-lying areas of the Sundarbans are more vulnerable to storm surges, whose frequency is projected to increase due to global warming, a study by scientists from Jamia Milia University in New Delhi says. The scientists assessed people’s vulnerability as a function of exposure, sensitivity and resilience capacity, and developed a composite vulnerability index (CVI) based on the three factors. Villages located in the lower and southern parts of the study area were found to be the most vulnerable to storm surges. Most of these villages are near rivers and creeks, while others are located in low-lying areas. Conversely, villages located at higher places faced fewer storm surges. But some villages in the northern part of the study area were highly vulnerable due to presence of low-lying and waterlogged wetlands.

The findings of the study, reported in Remote Sensing Applications: Society and Environment Journal, may have implications for developing resilience capacity in response to storm surge flooding, the scientists say. It can help the local policymakers integrate local multi-hazards knowledge and provide information in a form that can help take action to both mitigate and adapt to storm surge floods, they say. Identifying vulnerable villages The study has identified vulnerable villages, and “nascent efforts will now be made to assess vulnerable populations” within these villages, says Haroon Sajjad, lead author of the study. “Poor coastal zone management, limited livelihood facilities, low level of infrastructural development and
insufficient institutional management have all made Sundarbans coast more vulnerable to climate-induced disasters,” he said. “It is hoped that the government would take necessary steps towards policy recommendations.” Sajjad added.

These include location-specific poverty reduction measures to reduce overall vulnerability; exploring tourism as an alternative source of income; community infrastructural development; and improved early warning systems and cyclone and flood centres that serve as shelters during extreme events. However, Tuhin Ghosh, assistant professor at the department of oceanographic studies at Jadavpur University in Kolkata, who has worked extensively on the Sundarbans and analysed the impacts of the storm surge due to the 2009 cyclone Aila on more than 3,500 km of the old earthen embankments, disagrees with some of research findings. Ghosh says that the maximum surge height, over a 120-year period of 15.6?m in the study area, as reported in the new study, “is a gross overestimation, and more than twice than the storm surge height during the super cyclone in Odisha in 1999.”

Ghosh cites a previous study published in Environmental Fluid Mechanics journal, which shows that the estimated peak storm surge was about 4 m in the Sundarbans region that propagated into all major rivers, inundating the riverbanks as well inland areas. Ghosh cites this report to point out that the funnelling effect of the Bay of Bengal and intricate network of rivers and tidal creeks in the Sundarbans delta construct a more complex system that may dissipate the propagation of a storm surge to a large extent. “The proximity of the coastline must be considered as a reduction factor, and an important variable in the vulnerability analysis,” he says.

Bangladesh and India share the Sundarbans, an area of about 25,500?sq. km that is home to the world’s largest mangrove forest. Of this, roughly one-third — nearly 9,630?sq. km — lies in India. In India, the Sundarbans is bound by water on three sides — Hooghly River to the west, Ichamati-Raimangal River to the east and the Bay of Bengal to the south. Only 54 of its 102 islands are inhabited. Most of the people are below the poverty line — earning less than USD 1.5 a day — with limited access to resources, and are, hence, unable to cope. Salty waters As storm surges are expected to increase in the Bay of Bengal due to climate change, the flood inundation that they bring in their wake “will have far reaching socio-economic and ecological implications on the study area,” the report by Sajjad cautions.

With the incursion of more seawater due to storm surges, croplands and settlements will become more saline, making agriculture more unproductive. Meanwhile, the mixing of seawater with swamps in the area will also “have deleterious impact on the biodiversity of the region,” it says. Scientists and policy analysts are already reporting some long-term impacts of storm surges in the study area that has undergone major economic and social changes during the last 15 years and witnessed the displacement of an estimated 70,000 people. For example, agriculture was heavily affected after the 2009 cyclone Aila that devastated the Sundarbans deltaic area, with most of the agricultural land lying fallow till date. Similarly, fish production has declined
significantly. Sajjad’s research findings are in line with a 2017 report of the World Bank, which says that the southwest coastal region of Bangladesh is already becoming increasingly saline, especially between October and May.

Laboratory analyses of water and soil samples show an increase of salinity over time in the region. “Climate change induced sea-level rise will further intensify the problem of river and soil salinisation,” the report says. World Bank studies also predict that the progressive salinisation of water and soil in a changing climate will significantly impact the fragile ecosystem of the Sundarbans, a UNESCO World Heritage Site, and affect the people living in and around the forest. The report says, “Increased water salinity will alter the aquatic ecosystem and the mangrove forest, along with significant shortages of water for drinking and irrigation in the south-west coastal area, while soil salinisation is likely to lead to a significant decline in the output of high-yielding rice.” Contentious embankments Some scientists and policy analysts also say that the tendency of governments to build embankments to protect the Sundarbans residents from flooding end up compounding the problem due to sea level rise and tidal waves.

John Pethik, retired professor and coastal science expert at Newcastle University, Britain, who has worked extensively on the Sundarbans coast, says that his research “has demonstrated that the construction of flood defences in the Sundarbans has acted to increase the rate of sea level rise and thus the vulnerability of its inhabitants. Such constructions amplify the tidal wave as it passes into the channels constricted by embankments.” Pethik’s studies have also shown that while deltaic subsidence, amplify the effect of sea level rise in the Sundarbans, the main culprit is the increased tidal waves in the channels constricted by embankments. Yet there are signs of hope.

A February 2018 paper of Social, Technological and Environmental Pathways to Sustainability (STEPS) Centre says that despite the predominantly top-down, out-of-context policies that “can often hamper efforts to support locally appropriate and socially just adaptation” in the Sundarbans, there are some signs of hope for emerging alternate pathways. Experiments are on by agricultural scientists, non-government organisations and local people to revive salinity-resistant traditional paddy crops, which could usher in changes in agricultural practices, which can help farmers, build climate-resilient crop systems. There are similar experiments on culturing fish and prawn species that can tolerate salinity. “While these alternative pathways can help build local resilience it is important that they are accessible and affordable to the poorest of the poor, especially in a region where most of the people are below the poverty line,” the working paper says.

**West Bengal: Fish release scheme by Bengal Govt**

The office of the Fisheries Department in North 24 Parganas district has taken up a major scheme of releasing fish hatchlings. This would help the hundreds of fishermen who earn their livelihoods by fishing on the River Hooghly. As part of this scheme, in December, thousands of hatchlings of the commercially profitable fishes of rohu, catla and mrigel were released from six ghats between Dunlop Ghat in Halisahar and Gandhi Ghat in Barrackpore, all on the bank of the Hooghly River.

West Bengal: Fishers' association demands restoration of Bhandardaha Bil

About 400 to 500 years ago Bhagirathi River flowed through Bhandardaha. In course of time with shifting of the course of river large water bodies like Bhandardaha were created in the Bhagirathi-Padma-Jalangi basin. Bhandardaha has been a very important water body of Murshidabad. Its contributions to natural environment and historical sites of the district are undeniable. Thousands of fishers earn their livelihood from this water body. Once a source of large amounts of fish, Bhandardaha played a very important role in the food security and nutritional status of local population. The farmlands around are watered from this water body. Now water inflow from Padma and adjoining areas has almost stopped. Silt, water hyacinth and pollution have devastating effects on the water and fish resources of the bil.

Without getting fish the fishers are incessantly roaming around in search of livelihood. There are reports that a fund of Rupees 400 crores had been been sanctioned for restoration of Bhandardaha, but nothing happened on the ground. Most of the fishermen's cooperatives that had come up around Bhandardaha have been usurped by people with vested interest. The water areas under these cooperatives are illegally sub-leased and general fishermen members are deprived of livelihood opportunities. Administrative indifference and delay-dallying make the situation worse.

West Bengal: Demands policy changes for gender equity and dignified compensation for Tiger widows, DMF Women delegation

A nine member delegation from the women wing of Dakshinbanga Matsyajibi Forum (DMF) met the Hon'ble Fisheries Minister of West Bengal Sri Chandranath Sinha on 20th December 2018. Led by the Convener of women wing of DMF Jharna Acharya, DMF Vice-President Tapasi Dolui and Adviser Shilpa Nandy, the delegation demanded a special comprehensive package of assistance for women fish workers that would include financial, infrastructure and social security support for different categories of women fish workers like fishers, fish farmers, fish sorters and dryers, fish vendors, net makers etc. The delegation also demanded that women fish workers should get priority in all general schemes provided for the benefit of fish workers since women constitute a substantial but weaker part of fish workers.

The delegation also submitted in writing that the demands that had been put forward by their first deputation to the Hon'ble Minister on 21.09.2018 are yet to be met. Though the Hon'ble Minister
had assured the earlier delegation that at least 20% of their demands would be made, precious little has been done on the ground. Only a very small number (7) of women fish workers were given some assistance through the fisheries department office at Diamond Harbour. The Hon'ble Minister was briefed of the miserable condition of 'Tiger Widows' by DMF organiser Koushalya Mondal, herself a tiger widow. Speedy compensation, respectable widow pension and proper rehabilitation were the demands put forward by the delegation.

The delegation also told the Hon'ble Minister that though he had asked the members of the first women delegation to meet him again in two months, they could not get any appointment in spite of repeatedly seeking the same over phone or in writing. The Hon'ble Minister was non-committal on the demands for policy changes. Instead, he asked for lists of women fish workers with their requirements from every district where DMF works and promised to provide the same within April 2019. He did not commit any assistance to the tiger widows either and advised the delegation to approach the Chief Minister for the same. Dakshinbanga Matsyajibi Forum welcomes the offer of assistance to the women fish workers made by the Hon'ble Minister and will definitely furnish the Fisheries Department with a district wise list of women fish workers along with their specific needs for assistance.

But, at the same time, DMF resents the insensitivity of the government to gender justice (a principle incorporated in the National Policy for Marine Fisheries) shown in its failure to provide a comprehensive scheme of assistance meant specifically for women fish workers as well as in its reluctance to provide priority to women fish workers in all general benefit schemes for fish workers. DMF also implores the Government of West Bengal’s Department of Fisheries to accept it as its responsibility to see that the widows of tiger victim fishermen of Sundarban lead a decent life with dignity, which is their basic human right.

West Bengal: Migration aiding Sundarbans youth, women adapt to climate uncertainties


As dawn breaks, 26-year-old Onimal Raptan spreads his net as far as it can stretch in the sparkling blue-grey waters of the Indian Bengal delta (IBD) in south Asia. He prepares to haul prawns, but only for the upcoming winter months. When the rains begin six months later, he will move south, to Andhra Pradesh, to work as an agricultural labourer. Raptan, is a resident of Annepur village in Gosaba community block of Sundarbans, world’s largest mangrove forests, at the confluence of Ganga, Brahmaputra and Meghna rivers in the Bay of Bengal. Precariously perched at the edge of his wooden boat, Raptan cites the devastating cyclone Aila in 2009 and the barrage of impacts in its aftermath, as his trigger to venture out and look for better income options. “Aila washed our fields with salt water that stagnated for months. It became too salty to grow anything for the next five years. We only grow paddy and potatoes which is just enough for
consumption for our family of four,” Raptan told this visiting Mongabay-India correspondent. Natural resource-based livelihoods such as agriculture and fishing predominate in the Sundarbans that is home to 4.3 million people.

Due to paucity of fresh ground water resources, mono-cropping is common, which exposes them more to climate hazards such as floods and cyclones. For many migration is a way out. Men like Raptan make up the largest proportion of migrants, males aged between 21-30 years, according to a 2018 study by researchers associated with the Deltas, vulnerability & Climate Change: Migration & Adaptation (DECCMA) project. “As an agricultural labourer in Andhra, I make Rs. 40,000 to Rs. 50,000 in two months, more than three times of what I would have earned had I stayed back and worked as a daily labourer,” Raptan says with belligerence. “Our two bigha plot yields nine sacks of rice per year. There is no arrangement for irrigation to acquire sweet water. There is no political will to start irrigation,” Raptan said. In India’s Sundarbans region where 54 of the 102 islands support human settlements, one in five households now has at least one family member who has migrated, said Tuhin Ghosh, a scientist at Jadavpur University’s School of Oceanographic Studies and DECCMA India, principal investigator.

“Almost two thirds of migrants are moving to seek better employment opportunities, followed by family obligations while 10 percent of respondents mentioned that the migrant left to pursue a degree or obtain training in a new skill,” said Ghosh discussing the results of their four-year long study in the Bengal delta. Like Onimal Raptan, only a very small percentage of the respondents (three percent) in the Indian Bengal delta singled out environmental stresses as the direct cause of migration. But environmental stresses indirectly disrupt livelihood security and can contribute to economic circumstances that necessitate migration, pointed out Ghosh. People are shifting from a traditional farm based economy to a labour based one. Sea level rise in Sundarbans higher than global average. The 2018 State of Food and Agriculture: Migration, Agriculture and Rural Development report by the Food and Agriculture Organisation of the UN notes that under slow-onset environmental stressors, rural out-migration can be a risk-management or adaptation strategy, albeit one that is not generally available to the poorest.

“Water regulates everything here in the Sundarbans. Water from upland and water from the delta is creating problems and benefiting people at the same time. And climate change (temperature changes in the last 100 years and rainfall patterns) is stressing people because agriculture is no longer profitable. Honey and crab collection, and fishing have been affected,” Ghosh explained. At least three Sundarbans islands have gone to their watery grave and villages in neighbouring islands are being claimed by rising sea levels and creeping tides that routinely engulf the remote mangrove ecosystem. Sugata Hazra, DECCMA Country Lead and Director, School of Oceanographic Sciences at Jadavpur University, had earlier shown that the sea level rise in Sundarbans (3.14 mm per year) is higher than the average global sea level rise. Sea level rise also has significant impact on erosion-deposition process that shape the islands and subsequent land use changes.
The researchers emphasised that people do not have any other option other than migrating, which can be one of these options – daily commute within the state or seasonal and opportunistic visits to other states and within Bengal itself. For returnee Pradip Mandal of Bali island, picking up work in the southern state of Kerala has become a way to cope with the effects of river bank erosion linked to sea-level rise. The basin like islands, till date are protected by about 3500 km long earthen embankments which are mostly 150 years old. They are being weakened everyday by the swirling currents that scour at their bases and by tidal surges coupled with strong winds, points out Pradip, the only earning member in his family. “Our homestead is at the edge of the river on the island and is being constantly eroded.”

His domestic woes are compounded by the fact that local administration has asked his family to evacuate their present property so as to make way for road construction. Remittance has saved them for the time being. Pradip escaped the devastation of the Kerala floods this year as he was in the Sundarbans. “But there are limited options for work here and agriculture is no longer feasible with the available facilities. If I don’t work (outside) then my family will not get food,” Pradip asserts. Female migrants are increasing Remittance money sent by her mother-in-law working in the western state of Maharashtra staved off poverty for thirty-year old Mamata Mandal, a resident of Dulki in Gosaba, who was widowed eight years ago when her husband was dragged away by a tiger on a fishing trip. With three school-going children to take care of, Mamata, who quit her education in primary school itself, solely depends on her mother-in-law who works as a house help in Pune city of Maharashtra and visits her village only twice a year. For her future, Mamata plans to move to the nearest city, Kolkata, once her children finish school, to support her finances. “I will try to do some work. I will have to work as a domestic help since I do not have much of an education. No work is menial whether you are educated or not.” When Mamata does take the leap of faith, she will contribute to growing numbers of female migrants, a trend mapped by researchers. Although both men and women tend to migrate seasonally, their patterns differ. Both men and women migrate to Kolkata, although men typically to the areas where they work in construction, with women mainly to the peri-urban areas for employment as domestic workers,” pointed out Sumana Banerjee, DECCMA coordinator. But unlike men, seven out of 10 migrating women stay within their home state of West Bengal, often working in or near Kolkata, caring for children or the elderly, Banerjee observed. Female migrants with higher levels of education mostly move with their family members.

Male migrants also venture further afield, including to Maharashtra, Tamil Nadu, Kerala and Gujarat, the study found. Human animal conflicts in the mangrove habitats are also driving migration. Sushama Das, doubles up as an agricultural labourer in paddy fields and in the fisheries sector in Odisha, twice a year. When she is back in her village in Gosaba’s Dulki island, she supplements her savings by operating an ice cream cart in the block’s market place. The 30-year-old switched gears from prawn collection to being a migrant worker following crocodile attacks. “This was more than five years ago. One person was killed by a crocodile. After that
incident my husband never let me go to catch prawns. He said that ‘you die on land but I will not let you go for fishing’,” Das said. Researcher Hazra said working outside their village is the most practised adaptation option for women but is not accepted by the community as a successful adaptation due to inherent gender bias.

Problems versus aspirations But there are trade-offs to contend with for migrants. For Sushama Das it is the toilets. “In Odisha work is good but the toilets and bathrooms are in an extremely bad shape. Plus the region is very salty, there is no sweet water and so I don’t like it much,” she said. Water-associated problems and irregular food habits due to workload plague Bali island’s Abhijit Mali and friends who are dependant on Tamil Nadu which accommodates 10.67 lakh migrant workers, largely in the manufacturing sector. “We do not like to depend on forests so my father and I have never been into fishery or honey collection. We do not own land so we do not have inclination for agriculture. If youth like us get opportunities to work here in other sectors then I would prefer to have stayed back,” Mali said. But Kaushik Mandal in Satjelia island staunchly differs. He would have wanted to purchase land and cultivate paddy but is wary of the climatic hazards. “After Aila, crop yields have declined.

And there is not enough of land available, so what can we do. I don’t see any future here. I don’t foresee anything good, only the bad. Even if you are educated then also jobs are far and few,” Kaushik said. Kaushik is a second generation migrant but he returns once a year instead of his father’s seasonal approach. “The company I work in Karnataka employs 3000 to 4000 youth from the islands here. Youth prefer to go out and some even have taken their families. This is the way things are now,” Kaushik says with indifference. Policy focus needed on adaptation measures Climate change and development researcher Anurag Danda who has worked extensively in the archipelago says displacement from the Sundarbans is inevitable in our lifetime even if high intensity weather events do not become more frequent or intense. “However, it may not be en mass and dramatic.

Global warming will continue despite all the mitigation action, the delta will continue to sink and terrestrial space will become less. Migration can be avoided only if people can manage to live and thrive on lesser amount of land,” Danda told Mongabay-India. But this will need a very different kind of thinking on the part of the political and governmental leadership as well as communities. “For example, if the people of the Sundarban can shift to high value crops on land and water, high-end tourism and can live on raised land or on stilts,” he said. According to Hazra adaptation measures that remain top priority for the community include picking up skills and rebuilding houses to make them flood tolerant. However, there are hurdles in practising them because the government does not invest in the options that communities demand.“Practised adaptation options are the ones that are popularised by the government but people want different kinds of options which are not often offered by the government,” Hazra elaborated.
DECCMA outcomes stress that climate change impacts are reflected in a number of relevant policies and plans, for example the National Action Plan on Climate Change (NAPCC) and the West Bengal State Action Plan on Climate Change (WBSAPCC), which specially refers to the Sundarbans as extremely vulnerable. “However, various barriers exist to effective implementation of these policies. Despite a recommended budget allocation from 2012 to 2022, there is no information on release of it, nor any progress report on the activities carried out under the WBSAPCC,” the study said. At present migration is 18 percent but 23 percent of the current non-migrant households have the intention to migrate in the future, which would lead to migration rates of 37 percent in the IBD, said DECCMA’s Sumana Banerjee. Hazra underscored the need to include gender in policy-making. “There is no gender perspective in databases, in policy formulation or in implementation of disaster management plans and policies (the state) so that must be incorporated,” he said.

Governments must act on the fact that migration is increasingly thought of a livelihood option and help make mass movements successful. “They can have records of migrants, their skill sets and ensuring security in the receiving areas,” he said. For example, if the human capital in the Sundarban region can be improved through concerted investment, the trained manpower will move to distant places to take advantage of opportunities that can be made use of with their new skills, said Danda. “As of now, it is the movement of human labour but not skills and therefore it does not cause the economy of the host location to expand the way it should,” Danda added. Migration has had a negative connotation for long. It has been associated with failure at source locations and compounded problems at host locations. In this part of the world, migration brings back memories of famine and partition. This negative construct is due to unplanned movement of people in large numbers. “It’s the same narrative in many parts of the world,” he said, adding there are a few positive examples from across the world of planned movement, and a school of thought that sees migration as adaptation.

The examples are from Australia, Alaska, and even Odisha. - In India’s Bengal delta, encompassing the Sundarbans mangrove forests, one in five households now has at least one family member who has migrated, a study has said. - Environmental stresses indirectly disrupt livelihood security and can contribute to economic circumstances that necessitate migration. - More women from the Sundarbans are picking up work in other parts of the country. - Skill development can aid migrant workers to find the right opportunities.

**West Bengal: Fish worth Tk 1 cr damaged in Sundarban chars as Fethai weakens**


Rain and fog in the last couple days have taken a serious toll on the fish-drying process in different fishing colonies across the coastal area adjacent to the Sundarbans resulting in fish
worth over Taka 1 crore going bad. Torrential rain and ghastly winds have disrupted the loading-unloading of several national and international commercial ships alongside their transportation as a depression looms over the Northwest Bay leading the Met Office to issue a directive to hoist signal number three. Dubla Fishermen Group General Secretary Md Kamal Uddin Ahmed said already money lenders of Dubla fishing colonies have suffered losses of a huge sum as the fishes could not be dried up. He further said, “As there has been no sunshine lately, fishermen are failing to dry up fishes resulting tainting and loss of money.

Moreover, disastrous weather is hampering fishing process in deep sea since the high waves and incessant rain is forcing fishing trawlers and ships to drift away.” Generally every year thousands of fishermen catch fish from October-November to February-March in coastal areas bordering to the Sundarbans. Later, these fishes are dried up under the sun in different chars of the area and also been prepared for export. Al Amin, a fisherman from Meher Ali Char, told this correspondent that they (fishermen) have invested over millions but still unable to dry up fishes for the foul the weather for last couple of days. This year some 10-15 thousands fishermen have flocked to Dublar Char, Meher Ali Char, Alorkol, Ofiskilla, Majherkilla, Shelar Char and Narkelbaria Char to run their drying up process. Mahmudul Hasan, Divisional Forest Officer (DFO) of East Sundarban Division, said, “If this situation continues to exist for more days, the target revenue from this sector might decrease this year.” Light drizzles have been frequent for the past few days in the area as ‘Cyclone Fethai’ in the Bay of Bengal grows weaker. Met Office said the cyclone has turned into a depression upon weakening.

**West Bengal: Fish population declining in the Sundarbans**


A change in human behaviour is critical to save the adversely affected fish population of the Sundarbans, the world’s largest mangrove forest, according to a team of scientists. The range of advisable human activities need to be incorporated into government policy, and the best place to do so is the state action plan for climate change, the researchers said. Suman Bhushan Chakraborty, a fish endocrinologist and Assistant Professor at Department of Zoology, University of Calcutta, has been working along with his team in collaboration with counterparts at Visva Bharati University in Santiniketan in West Bengal for three years to chart a how climate change is affecting the fish population.

The Indian Sundarbans boasts of around 172 species of fish, 20 species of prawn and 44 species of crabs, including two commercial species. They act as the nursery ground for nearly 90% of the aquatic species of eastern coast of India, according to earlier research. The availability of important commercial species of the continental shelf that are harvested in India and neighbouring countries is closely linked to the health of the Sundarbans. The Indian Sundarbans meet 15-20% of the requirement for fish in the eastern metropolis of Kolkata, the capital of the
Indian state of West Bengal. The Sundarban estuary originally contained vast areas of seasonal and permanent wetlands. The elimination of these wetlands reflected massive human-caused changes to the landscape resulting from alterations of hydrological patterns because of diversions and changes in use of the land surrounding the area.

As a result, today the Sundarban estuary is one of the most highly modified estuaries in the world. This estuarine ecosystem has lost much of its former variability and complexity, as indicated by major declines of the stock of some of its commonly found fishes. Field survey Chakraborty’s team has completed a 36-month survey for the development of an integrated measurement and conservation of fish species of the Indian Sundarbans. They have talked with local fishers and farmers to confirm their statement regarding the declining pattern of certain indigenous fish species. The study area is located in the reserved mangrove forest falling in the Kakdwip-Namkhana range of the Sundarbans within the 24 Parganas Forest Division. In this area, mangroves were lost due to encroachment, climate shift after Cyclone Aila (2009) and human intervention over a period of about 10 years.

“According to our survey and the statement of the farmers, the biggest threat to the fish and other aquatic animals is the invasion of salt water and sudden increase in salt concentration during last 15-20 years and other anthropogenic activities that are altering the physical factors of the aquatic system,” Chakraborty told indiaclimatedialogue.net. “I measured salinity in 52 points in Sundarbans villages just one week before Cyclone Aila, and even after nine years the worst effects are yet to be removed,” said Subir Ghosh, a veteran wetland scientist who has a research interest in the flora of the Indian Sundarbans. Chakraborty’s research team has been studying 8-10 species of fish by examining their biological aspects (sampling done every month) and scrutinising the endocrinological data every month. Out of this, attention has been focused on five edible varieties for local consumption and supply to Kolkata. These are bhetki (Lates calcarifer), nona tangra (Mystus gulio), sona tangra (Mystus tangra), chital (Notopterus chitala) and falui (Notopterus notopterus).

The physiological data for these fish are compared with production data from the fishermen. Reckless interventions In Bidyadhari delta near the Bali Island (around 70 km from Bakkhali), due to human encroachment and other anthropogenic activity, the surrounding land mass is increasing rapidly, shortening the inner aquatic habitat. Therefore, the depth of the water column remains low (average depth less than 1 ft / 30 cms) due to increased sedimentation for most of the time of a year (average 280-300 days). Due to low water depth and stagnancy of water, most species residing the place are on the verge of losing their natural habitat and are becoming vulnerable. Therefore, the water body is losing most of its aquatic biodiversity. Another noticeable issue is the change in pattern of tidal currents and the negative effect that this has had on the breeding patterns and on the lifecycle of the fish. Chakraborty and his team have identified four visible reasons for early death of the fish — Change in tidal pattern and movement of water that leads to change in tidal bed; birds consuming fish as water level abruptly
decreases; bigger fish consuming smaller fish as the water level goes down, increasing the predation pressure on the population of the smaller fish; and humans catching the fish that have come to breed, since change in tidal patterns exposes the fish.

“Due to indiscriminate fishing, there is a noticeable squeeze in biomass. People catch local fish varieties, juvenile prawn, crabs and other mollusces together, all in their eagerness to obtain the juvenile prawn, which they call meen. This has a very destructive effect because it abruptly terminates the lifecycle of the fish,” Mohammad Moniruzzaman, who is part of Chakraborty’s team, told indiaclimatedialogue.net. “Sadly, people are not even willing to throw back to the sea the live juveniles of the biomass that they incidentally haul up in their nets while scouring the waters for the meen. Any number of requests to these juvenile hunters falls on deaf ears.”

Harvesting juvenile prawn, though banned, has continued unabated and this has contributed to loss of fish diversity, said Ghosh.

Monofilament nets To add to indiscriminate fishing facilitated by tidal changes, excessive use of monofilament nets to catch surface feeders has also led to unnecessary netting of small-sized fish. Intensive misuse of trawl nets for bottom trawling results in change in turbidity and that in turn, adversely affects the fish habitat. Another problem is the steady change in the economic valuation of fish varieties. For example, Ailia coila — a near threatened fish in the IUCN Red List (2011) — did not fetch any economic returns earlier as it was seldom consumed. However, with the passage of time, the demand for this fish variety has gone up, and so the rush to catch it has been on the rise. Likewise, red shrimp (Solenocera melantho) is economically important for fish feed and poultry feed. “The change in economic valuation lends greater force to overexploitation,” Moniruzzaman pointed out. Re-negotiating ban periods Policy interventions are urgently needed, Chakraborty said.

“The alteration in tidal patterns has not been matched by corresponding correct information on the changes in reproductive patterns of fish,” he said. “So the ban periods that are enforced by the Department of Fisheries need to be reworked according to updated information.” His team has recommended a spectrum of ban periods to the fisheries department. Such bans can be facilitated only when the information obtained by researchers from the field and validated by fish farmers, is communicated to the policy maker. This has not been the case, as it appears from the field experience of the team. Corroborating this observation, Ghosh told indiaclimatedialogue.net: “Many researchers come to the Sundarbans, but do not communicate their findings to policymakers. The actual loser is the fish farmer, especially the small fish farmer, who stands to take the biggest hit due to the dwindling fish catch.”

Menace of trawlers Trawlers have emerged as the biggest menace in the list of anthropogenic disturbances in the Sundarbans.

A 370 horsepower engine guzzles 40 litres of oil in an hour. Besides polluting the aquatic environment, trawlers have, at least for the past two years, made it a practice to stay out at sea
during the danger period of the signalling system announced jointly by the Department of Fisheries and the Meteorological Office. The 4th signal signifies a complete ban. In fact, sea bound vessels are supposed to come back when the 3rd signal is announced. But, the trawlers stay on at their own risk and have stuck steadfastly to going out to sea at the announcement of the 4th signal, staying for 17 hours and coming back with an unhindered catch when the other conventional vessels are not going out to sea. This behaviour has its own risks. Recently, between July 16 and 31, four fishing trawlers capsized in the coastal waters of West Bengal, killing 27 fishermen. The trawlers ventured into the sea in spite of repeated warnings issued by the Department of Fisheries, it was reported.

The Dakshinbanga Matsyajibi Forum (DMF) — a non-political union representing fishermen in southern West Bengal — pointed out in a press release dated 10 August: “The owners of the trawlers… need fish to make a profit and the crew are paid by percentage of the sale proceeds of the catch. So the economic interest provokes them to go to sea defying warnings.” DMF has strongly called for the Department of Fisheries to close their fishing harbours to sea-bound vessels after issuing warnings. They have also demanded the putting in place of a system of checking sea-worthiness of the fishing vessels while issuing license for fishing. The West Bengal Action Plan for Climate Change, the document that is best suited to incorporate policy changes for tackling climate change in the Sundarbans, is due for its updated version being released. The current version, however, says little about any concrete plan to tackle climate change due to anthropogenic causes with reference to the Sundarbans.

**West Bengal: Favourite fish, the hilsa, could soon be extinct as fishing trawlers flout laws**


There are laws but no implementation. The West Bengal government has notified a definite time period banning the fishing of juvenile Hilsa (jatka) to save the state’s favourite fish from extinction. But fishers do not obey the prohibition either in rivers or the sea. As a result, the production of Hilsa (Tenualosa ilisha) in West Bengal is rapidly declining. Gourmands of West Bengal are now dependent on Bangladesh for large Hilsa. From the estuary of the Ganga to deep in the Bay of Bengal, an estimated 14,000 trawlers are hovering in the migratory path of the Hilsa as the fish approaches the river to spawn, and on its way out. In spite of the ban on nets with mesh holes less than 90 mm in diameter, such nets are used most of the time. Some nets are over a kilometre long.

A very large number of juvenile Hilsa are caught. The damage is twofold – the possibility of getting large Hilsa in the future is reduced, and it hampers the reproduction of the fish. However, in the near absence of government surveillance, juvenile Hilsa fishing goes on in full spate. In order to increase the yield and production of Hilsa and other fish, the State Fisheries Department
issues notifications every year to control fishing. According to these, from 15 April to 31 May, fishing is prohibited in the sea and adjoining areas. Moreover, a special ban is imposed specifically for the preservation of the Hilsa. From 15 September to 24 October, before and after five days of the full moon, catching any type of Hilsa is prohibited. This system was initiated for the undisturbed breeding of Hilsa. Besides fishing, selling, transporting and hoarding of Hilsa, less than 23 cm long Hilsa is prohibited. Bottom trawling is prohibited up to 12 nautical miles from the coastline.

Accepting that the ban is not obeyed by some fishers, State Fisheries Minister Chandranath Sinha told thethirdpole.net, “We try to teach about all kinds of fish under an awareness campaign for fishers. We hold seminars and open discussions with the marine and river fisher organisations. Most of the fishers obey the ban but some do not.” Sinha said the Panchayats of the villages on the banks of the Ganga have been helping implement the ban on catching juvenile Hilsa. But fisherman Dipankar Roy narrates a different story. He fishes with a small boat round the year in the Ganga near Barrackpore (25 km upstream of Kolkata). In his words, “I catch fish in the Ganga throughout the year. There are Hilsas also. Currently nets with very small mesh holes are used in large numbers. Some boats often hunt Hilsa weighing 8 to 10 grams, catching up to 6 kg in a day. Fishers know very well that the surveillance is inadequate. Some fishers use funnel-shaped nets (Binati Jal) to catch juvenile Hilsa and selling it in the name of Khoyra fish. In Digha estuary, this fishing of juvenile Hilsa is evident. If 500 kg of Hilsa is caught, 300 of that weighs 150 to 300 grams, all juvenile fish.

A mature Hilsa weighs between 700 grams and a kilogramme.” Unapologetic trawler owners In the Bay of Bengal, fishing goes on throughout the year, ignoring government restrictions. Almost admitting this, the secretary of the trawler owners’ organisation United Fishermen’s Association Shyamsundar Das told thethirdpole.net, “Fish weighing below 300 grams may be hunted, but that does not matter. One Hilsa gives birth to some hundred thousand babies. However, we try to observe the prohibition on juvenile Hilsa.” Further charges against the big trawlers are that they bring up all types of fish through bottom trawling. Catches of juvenile Hilsa weighing less than 10 grams are thrown back into the sea. The fish is being destroyed in this way. Das says, “We have got the modern instruments and how is it possible that those will not be used?” At the same time, he accepts the need for the ban, and even wants it extended to the coast off adjacent state Odisha as well as the markets there. “Otherwise, nothing can be done.

When sale of juvenile Hilsa is stopped at Digha market (in West Bengal), it goes to the Odisha markets. Then it reaches the markets of Kolkata.” Artisanal fishers suffer Artisanal fishers have a different take than the trawler owners. The joint secretary of small fishers’ organisation South Bengal Fishermen Forum, Debashish Shyamal, told thethirdpole.net, “Destructive fishing and trawl fishing hampers Hilsa in the state. Not only Hilsa, but all kinds of fish are declining due to uncontrolled fishing. We the small fishers try to obey the ban. But the big trawlers can break all the rules with the power of their political connections.” It has been a longstanding allegation in
all coastal states of India that trawlers are owned by politicians and their kin, directly or anonymously. Shyamal recommended that Bangladesh and India coordinate their Hilsa fishing ban periods and hold joint surveillance to ensure compliance.

Blocked path, dirty water Apart from overfishing, a big problem for the migrating Hilsa is siltation at the mouth of the Ganga. This sea fish needs a clean and deep channel so that it can move upriver and spawn. But now there is no deep channel in the mouth of the Ganga except the one kept open by constant dredging, for the shipping to and from Kolkata port. And not a single channel – deep or shallow – has any clean water. The pollution in the Lower Ganga is largely unchecked, and the bacterium E Coli (which causes diarrhoea or worse) has been counted at a million times the safe limit prescribed by the World Health Organisation. That, and an overall lack of fresh water due to dams and barrages upstream in the Ganga basin, has a highly adverse effect on the reproduction of the Hilsa. The increasing salinity of the estuary is an added cause. The Hilsa looks for fresh water to spawn, but does not find any.

Changed life Asimkumar Nath, a fisheries expert in Sidho Kanhu Birsa University of West Bengal, has found another effect of this forced change in the life cycle of the Hilsa.

Due to siltation, many fish find their way back to the sea blocked. Studies that include tagging some Hilsa have shown that some have remained in the Ganga and its tributaries for the last several years. He said some such “resident Hilsa” have been found as far upstream as Farakka, over 350 km from the mouth of the Ganga. Nath is confident that even if 20 percent of the Hilsa living and breeding in the rivers can be saved from overfishing, there will be no shortage of the fish in West Bengal. Protection plans Though its current plans to protect the Hilsa are yielding limited results, the West Bengal government has new plans to protect the fish. Fisheries Minister Sinha said his department has identified three spawning areas that will be declared sanctuaries. “Special monitoring will be arranged in Raichak-Godakhali, Tribeni-Balagarh and Lalbag-Farakka,” he told thethirdpole.net. “Hilsa lays eggs in those places.

Hilsa Research centres will also be built there.” The minister said scientists are trying to breed Hilsa in ponds. “The Hilsa Conservation and Research Centre (HCRC) in Diamond Harbour will move that work forward. Nofima, a Norwegian institute for food, fisheries and aquaculture research, will work with HCRC. Nofima has been working on salmon production for 45 years and they have expertise in aquaculture. Central Inland Fisheries Research Institute (CIFRI) is also a partner in this project. Six water bodies have been identified in Falta near Raichak and East Kolkata Wetland to conduct the research. Nath says, “There is no necessity to spend a huge amount of money to artificially breed Hilsa in ponds, if the juvenile [fish] are saved by increasing surveillance.”

**West Bengal: Another fisherman mauled by tiger in Sunderbans**
A tiger killed a fisherman in the Sunderbans on Wednesday evening. Nilanjal Mullick, Tiger Reserve Field Director said that they have not received any confirmation of the news yet. According to report in The Times of India, unidentified sources said that the victim has been identified as Ganga Mondal, a resident of Mollakhali aged 53. According to a source, the incident happened in the forests of Panchamukhali. In a similar incident, another fisherman was killed by a Royal Bengal Tiger in Benifeli forest of Sundarbans. Kanai Ghosh (45), the deceased, was a resident of Gurguria village in Kultali. Along with four fishermen, he had gone to the forest to catch some fish.

The other fishermen fled from the forest when the tiger jumped on Ghosh from behind. RP Saini, Director of Sundarban Biosphere Reserve earlier told Millenium Post that the authorities are helping villagers to take up apiculture or beekeeping right in the villages so that they do not need to go deep into the forests. The Forest Department will also help villagers in crab breeding. This will help reduce the number of human deaths due to tiger attack. The women who lose their husbands in tiger attacks are called as the 'tiger widows' of Bengal. They are often blamed for the deaths of their husbands. Researchers estimate that about 50 fishermen or honey collectors are killed in tiger attacks in the country every year. This year, at least 11 villages were killed and three injured in tiger attacks in the Sundarbans this year.

West Bengal: 1,700 Sunderbans fishermen to get boat licence certificates

The state government will issue as many as 1,700 boat licence certificates (BLCs) to fishermen in the Sunderbans, allowing them the privilege to venture into the rivers for catching fishes and crabs. A majority of the people inhabiting the mangrove forest are dependent on fishing and catching crabs for their livelihood. As per records of the state government, there are a total of 4,700 BLCs issued to the fishermen. Around 1,723 of them are lying inactive, with the licence holders hardly venturing out. The licences were issued over 8 years ago. "We want needy and poor fishermen to reap the benefits of BLC. I have instructed the committee responsible for dealing with the issues of fishermen to ensure this," state Forest minister Binay Krishna Burman said.

A high level meeting was held at Aranya Bhavan in Salt Lake on Monday in presence of ministers in charge and higher officials of the state Forest, Fisheries and Sunderban Affairs department and the Fishermen's Association in the area. Apart from Burman, state Fisheries minister Chandranath Sinha and Sunderban Affairs minister (Independent Charge) Manturam Pakhira were also present in the meeting. Chief Minister Mamata Banerjee had formed a
committee in 2017 that has representatives from the ground level to address the issues of fishermen and ensure that they can eke out a decent living. The committee will make a list of the 1,700 fishermen to whom the BLCs will be issued. Meanwhile, an association of fishermen demanded fishing rights in the entire area of Sunderbans Tiger Reserve and also allowance of mechanised boats for fishing. However, officials of the state government made it clear that fishing activities should be carried out in accordance to the rules earmarked for fishing.

West Bengal: Life-support boats for coastal fishermen


About four lakh people in Bengal are associated with fishery for their livelihoods. The State Government has decided to introduce life-support boats for the benefit of coastal fishermen, for rescuing them during storms, accidents or any other incidents. This was recently announced by the State Fisheries Minister. He also said a new set of rules would be brought into force to enable the setting up of the system. Along with purchase of the specialised boats, space would be made at various ports to store them. These boats are built in a way to quickly reach people stuck at sea.

West Bengal: Fishermen call for national policy on Inland Fisheries & Aquaculture

http://www.millenniumpost.in/kolkata/fishermen-call-for-national-policy-on-inland-fisheries-aquaculture-330682

Various fish workers' forums in the state have written to the Union Agriculture minister, urging him to immediately prepare a national policy on Inland Fisheries and Aquaculture. As the fishermen from Bengal have seen an unprecedented growth in Inland fisheries in the state, the demand for a national policy has been strengthened. Pradip Chatterjee, convener, National Platform for Small Scale Fish Workers (Inland), said that fishermen in the state are disappointed at the inordinate delay in publication of the draft of the National Inland Fisheries and Aquaculture Policy. The National Platform for Small Scale Fish Workers (Inland) has submitted a memorandum to the minister of Agriculture and Farmers' Welfare at the Centre and the Secretary of the department of Animal Husbandry, Dairying and Fisheries, to expedite the process.

The department of Animal Husbandry, Dairying and Fisheries in the Ministry of Agriculture and Farmers' Welfare had formed an expert committee on October 21, 2016, under chairperson Dr Dilip Kumar, former V-C of CIFE, Mumbai, to collect stakeholders' responses towards developing a National Policy on Inland Fisheries. The committee collected stakeholders' responses through two sets of questionnaire and held 4 regional consultations with stakeholders at different places of the country. A national level consultation was organised on April 26-27, 2018, at ICAR-CIFE, Mumbai, to finalise the recommendations towards a draft National Policy for Inland Fisheries and Aquaculture.
The expert committee also submitted its recommendations on the draft policy to the department of Animal Husbandry, Dairying and Fisheries in the Ministry of Agriculture and Farmers' Welfare. But the draft policy is yet to be published by the Centre. "Almost 2 years have passed, but the draft policy has not come out. The inland fisheries sector of our country is yet to get a comprehensive policy document to guide its management and protection. By contrast, the marine fisheries sector of India had its National Policy way back in 2004, which has been revised in 2017. It may be worth mentioning here that the inland fisheries sector of our country is almost twice as large as the marine sector, in both production and employment," Chatterjee maintained.

**West Bengal: 'Eco-fish tourism' project coming up in Chandanpiri**


The State Fisheries Development Corporation (SFDC) is setting up a tourism project in Chandanpiri, about 12 km from Namkhana in South 24 Parganas district. The place is located in the UNESCO-recognised natural heritage site of the Sundarbans. The ‘eco fish tourism’ project, as it has been termed, is located at the estuary of the river Saptamukhi with the Bay of Bengal. It would be completed at the beginning of 2020. These information were provided by the Fisheries Minister. This project has been taken up after the success of the recently-developed resorts at Henry’s Island and Fraserganj, according to the minister. There would be four cottages for tourists at the 5-hectare site.

The 600 sq ft structures would be located above the water surface. Each would be able to accommodate two people. The mangrove forests would provide for a wonderful experience for tourists. A jetty and roads to the site are being constructed. Cultivation of prawn, rohu, catla and mrigel would take place at the site, where tourists would be able to catch them free of cost. The site will also have a 50-ft watchtower, from where beautiful unimpeded views of the Sundarbans and the Bay of Bengal can be had. Along with these there will be a cafeteria, restaurant and children’s park. From the resort, tourists would be taken to see tigers and, aboard launches, to the Bhagbatipur Crocodile Project.

**West Bengal: 70 per cent boats in West Bengal fitted with automated trackers: Navy officer**


Around 70 per cent boats in West Bengal have been fitted with automated trackers, mandated for all vessels in the country to prevent terror attacks from the sea, Navy Officer in-Charge, Bengal area, Commodore Suprobho De said Monday. Union Home Ministry has mandated that all boats
or vessels registered in the country will have to be fitted with an Automatic Identification System (AIS) for getting information on their location and details of the vessels, including ownership, De told newsmen here. “All vessels, including fishing boats, are required to be fitted with Automatic Identification System (AIS) so that we can identify a friend from a foe,” he said.

Lessons learnt from the 26/11 attack in Mumbai, in which the terrorists had taken the sea route to reach the country’s shores, has led to mandating the fitting of AIS trackers in all boats, he added. Admitting that there were issues with regard to all fishermen not having biometric cards and of unregistered boats, apart from the cost involved in fitting the trackers, De said “these problems are being taken care of, we are definitely moving forward”. The Indian Space Research Organisation (ISRO) has developed a cost-effective transponder, De told the media ahead of Navy Day celebrations to be held on Tuesday. Stating that all agencies were in sync, De said the fisheries department were responsible for checking the license, equipment and life saving material on the boats. The Indian Coast Guard has been asked to check and inform the state government of any shortcoming on these issues, he said.

West Bengal: Hilsa Fishers in West Bengal Driven to the Edge by Overfishing


Uttam Das, 32, and his two younger brothers of Chauliya village are hilsa (Tenualosa Ilisha) fishermen. In their village under Nakole panchayat in Shyampur II CD administrative block of Howrah district, there are three motorised boats, and 40 country boats engaged in hilsa fishing. Das has been fishing in the Rupnarayan River since he was 12 years old. In the past 10 years, he has seen the catch decline steadily. “Now getting a good hilsa catch is like winning a lottery,” Das told VillageSquare.in. Their fishing territory stretches from Kolaghat in Purba Medinipur district to Haldia Township, also in the same district. Fish population in Rupnarayan River that was famous for its high quality hilsa catch has been declining steadily, and riverine fishermen have been at the receiving end. Riverine fishing Hilsa belongs to the Clupeidae family, migrating to freshwater habitats for breeding.

The juveniles migrate back to the estuary and sea. For about five months after hatching, the fish stay in the riverine stretch of about 523 km starting from Howrah and moving upstream up to Farakka barrage in Murshidabad district. The fish need 20 to 30 meter depth of freshwater for migration. The hilsa fishermen get about six months to fish hilsa, considered a delicacy in West Bengal and Bangladesh. Mid-July to mid-September is the season for larger hilsa that fetch high prices. Mid-September to mid-October is the spawning season and there’s a ban on hilsa fishing. They fish smaller-sized hilsa called khoka ilish from mid-January to mid-March. A typical hilsa fishing trip lasts between 10 and 20 days. During the peak hilsa fishing season, any two-cylinder motorised boat, accommodating up to eight men, or conventional country boat up to five men, will make about five trips to the river.
“The average fecundity of hilsa is 12 to 20 lakh, so conservation measures in the river would yield a good crop of mature fish,” Saptarshi Biswas, Deputy Director, Fisheries, Hilsa Conservation Research Center, West Bengal, told VillageSquare.in. Declining fish catch Members of the Rupnarayan Nad Matsyajibi Union (Rupnarayan River fishermen’s union) said that indiscriminate fishing by marine hilsa fishermen in high-powered mechanised boats with six or seven cylinder engines was the reason for the declining fish population. “There are also bottom trawlers in the sea with 1,000 feet nets that scour the sea bottom and amass enormous harvests of not just the hilsa, but also other fish including juveniles,” marine scientist Amalesh Chaudhuri told VillageSquare.in. “This is ecologically extremely destructive.”

The year 2010 saw a bumper hilsa catch in the foreshore seas, leading to a rush for marine hilsa in the years that followed. This also led to indiscriminate harvesting of hilsa downstream, affecting the upstream catch. Total catch figures over the years show a widening gap between inland and marine catch. Ban to check decline The West Bengal government announced a ban in 2013. This meant the need for planning for alternative livelihood for hilsa fishermen, especially those in the riverine stretch. This stretch includes the districts of Malda, Murshidabad, Nadia, Bardhaman, Hooghly, Howrah, Purba Medinipur, North 24 Parganas and South 24 Parganas districts. Other aspects of the ban include ban on catching, marketing, transportation and possessing juveniles less than 23 cm in length, ban on using monofilament gill nets having mesh size less than 90mm, ban on bottom trawling within 12 nautical miles of the continental shelf, ban on putting up bag nets, scoop nets and small meshed gill nets along the migratory route during February to April and complete ban on fishing within 5 sq. km of Farakka barrage.

In addition, the spawning areas have been declared as sanctuaries to facilitate spawning. “This enforcement has to be gradual because of the human aspect and the economic issues involved,” said Biswas. Ban period and beyond During a normal fishing season for full-sized hilsa, a motorised or a country boat will harvest about Rs 4 lakh worth of fish. Those fishing in Rupnarayan said that during a good season, this might go up by another Rs 2 lakh. Das and his fellow fishermen know about the coastal ban, but not about the spawning ban, though they are aware of the spawning season. They admit to fishing during the spawning period. “We do not fish much during the month of Ashwin, the spawning season for large-sized hilsa, since the fish size gets smaller,” said Das. “Since this stretch of the river does not have a sizeable hilsa population, police do not pay much attention to it,” Das told VillageSquare.in. “Their focus is on big landing centres such as Diamond Harbor.”

Even then, managing to get a good fish catch can be difficult. To minimise losses, most of the fishermen in Nakole — and the six villages under the panchayat — fish jointly. Uttam Das and his brothers fish together, pooling their resources, and dividing the profits. Non-fishing livelihoods After the fishing season, the fishers cultivate their own plots of land for their yearly quota of consumable rice, work as contractual agricultural labor in others’ rice fields or work in brick kilns bordering Rupnarayan. “The last one is hardly an alternative, because brick kilns
work on a 5-month labor contract and they do not want us, since our fishing activities would resume after two months,” Prahlad Das of Henre village in Nakole panchayat, told VillageSquare.in. “This impacts our overall economic condition.” Overcrowded fishing space If the catch is unsatisfactory, Uttam Das and his brothers go up to the Hooghly estuary. The strength of their engines, size of boats as well as compulsion to offload the catch within a stipulated time, limit their operating space and time, and hence the catch size.

Within the river stretch, competition is intense. Since hilsa is found over a wide river stretch and is not confined to any place, many fishermen are engaged in catching it. To supplement their income, fishermen catch other fish also during fishing season. Fishermen native to the Kolaghat region do not allow Uttam and other fishermen from Nakole to catch other fish varieties. Chaudhuri, who served as an advisor to a World Wildlife Fund – International Union for Conservation of Nature (WWF-IUCN) 2014 study on sustainable livelihood strategies for fishermen communities during hilsa fishing ban period in West Bengal, 2014, said that fishing space is occupied by those from other livelihood background. “Erstwhile cultivators have replaced artisanal fishermen in the rivers,” he said. Unviable alternative scheme With the fishing space so crowded and the catch uncertain, respecting restrictions on the size of the fishing net or the ban on catching small-sized hilsa becomes a real challenge.

The department of fisheries, West Bengal, started a livelihood scheme in 2013-14, there are several difficulties in implementation. It envisaged creating fish vending units for affected fishermen. The unit consisted of a cycle, an insulated fish box, a fish cutter, weighing scales and a one-time financial help of Rs 500-1000 to buy fish. “The livelihood scheme and its implementation are misdirected,” Milan Das of the Dakshinbanga Matsyajibi Forum, a non-party fishermen’s union with several hilsa fishermen members told VillageSquare.in. “The scheme is unsuitable for those fishing in the river.” Besides, the total number of hilsa fishermen has not been ascertained. The department has contractually engaged 30 data collectors to collect data about fish catch and the number of fishermen who depend on hilsa for a livelihood. But the data is not yet available in the public domain.

The fishermen charge that the vending units given to the panchayats were distributed to those who are not engaged in Hilsa fishing at all. “Fishermen’s associations should have been consulted to identify actual fishers and only then the units should have been distributed,” said Milan Das. “So today we have desperate fishermen venturing out to fish despite the ban, and getting caught by the authorities,” Milan Das told VillageSquare.in. “The scheme is of little benefit at present.”

**West Bengal: Fishermen take survival lessons**

Many of the nearly 49 fishermen from South 24 Parganas who lost their lives due to rough weather and high seas a few months ago may have been alive today had they carried basic life-saving equipment, it was revealed during a workshop on Maritime Search and Rescue (M-SAR) for the fishing community at the Kakdwip fishing harbour on Friday. Equipment such as Distress Alert Transmitters (DAT) and radio sets as well as life jackets and life buoys were displayed and demonstrations on their use given by officials from the Coast Guard headquarters at Haldia and unit at Frazerganj. “Not a single life jacket was found in any of the capsized trawlers. There were no DAT signals either, though the transmitters are distributed free of cost to boat owners. In fact, we have not received a single correct alert in the last two years. There have been alerts but they were bogus.

We mobilised our vessels only to realise that some signals got sent by children as the DATs were kept at home instead of the trawlers. In some cases, buttons got pressed when trawlers were being repaired at the harbour. Fishermen need to learn how to use DATs and protect them from harm. After all, it can save several lives. Even a basic item like a life jacket can keep a fisherman alive in the water for a day, however rough the sea,” said M A Warsi, DIG and commander, Coast Guard headquarters, Haldia. During the interaction, it also came to light that save for a few, none of the wireless sets on fishing trawlers in West Bengal have licences. This was admitted by Bijon Maity, secretary, Kakdwip Fishermen Welfare Association. According to Coast Guard records, there are nearly 3.4 lakh fishermen in the state and an estimated 3,000 fishing trawlers are out in the high seas every day. “I admit that except for 2-3 trawlers, none have licences for wireless sets. We did try for licences that cost a few hundred rupees each but touts at the monitoring station at Taratala demanded Rs 25,000-30,000 for every licence. Later, officials did apologise and took steps but the initiative had died down by then,” he said.

Ambarish Nag Biswas, secretary, West Bengal Radio Club, assured that all assistance will be provided for better wireless communication from trawlers once licences are obtained. “You are unknowingly getting involved in an anti-national activity by using radio sets without licences. We know that the VHF antennae on trawlers get corroded due to the salinity and have developed one that has no such problem. You will also have to stop encroaching on frequencies meant for others. We often notice you chatting over our frequency that is used for emergencies at times. You will also need HF sets very soon as the extent of your fishing limits has been extended. We shall also train you in the use of HF sets like in Andhra Pradesh but get your licenses first,” he said. Commandant Avijit Dasgupta, who heads the Coast Guard station at Frazerganj, warned fishermen against crossing the International Maritime Boundary Line (IMBL) into Bangladesh.

“A few days ago, some fishermen reported to the police that two of their trawlers were seized by Bangladeshi authorities. They were dropped off on an island to fend for themselves. Fortunately, they were picked up by other boats. Bangladeshi authorities have warned us repeatedly that you may face jail sentences if caught across the IMBL,” he said.
There are laws but no implementation. The West Bengal government has notified a definite time period banning the fishing of juvenile Hilsa (jatka) to save the state’s favourite fish from extinction. But fishers do not obey the prohibition either in rivers or the sea. As a result, the production of Hilsa (Tenualosa ilisha) in West Bengal is rapidly declining. Gourmands of West Bengal are now dependent on Bangladesh for large Hilsa. From the estuary of the Ganga to deep in the Bay of Bengal, an estimated 14,000 trawlers are hovering in the migratory path of the Hilsa as the fish approaches the river to spawn, and on its way out. In spite of the ban on nets with mesh holes less than 90 mm in diameter, such nets are used most of the time. Some nets are over a kilometre long. A very large number of juvenile Hilsa are caught. The damage is twofold – the possibility of getting large Hilsa in the future is reduced, and it hampers the reproduction of the fish.

However, in the near absence of government surveillance, juvenile Hilsa fishing is going on in full spate. In order to increase the yield and production of Hilsa and other fish, the State Fisheries Department issues notifications every year to control fishing. According to these, from April 15 to May 31, fishing is prohibited in the sea and adjoining areas. Moreover, a special ban is imposed specifically for the preservation of the Hilsa. From September 15 to October 24, before and after five days of the full moon, catching any type of Hilsa is prohibited. This system was initiated for the undisturbed breeding of Hilsa. Besides fishing, selling, transporting and hoarding of Hilsa less than 23 cm long Hilsa is prohibited. Bottom trawling is prohibited up to 12 nautical miles from the coastline. Accepting that the ban is not obeyed by some fishers, State Fisheries Minister Chandranath Sinha told thethirdpole.net, “We try to teach about all kinds of fish under an awareness campaign for fishers.

We hold seminars and open discussions with the marine and river fisher organisations. Most of the fishers obey the ban but some do not.” Sinha said the Panchayats of the villages on the banks of the Ganga have been helping implement the ban on catching juvenile Hilsa. But fisherman Dipankar Roy narrates a different story. He fishes with a small boat round the year in the Ganga near Barrackpore (25 km upstream of Kolkata). In his words, “I catch fish in the Ganga throughout the year. There are Hilsas also. Currently nets with very small mesh holes are used in large numbers. Some boats often hunt Hilsa weighing 8 to 10 grams, catching up to 6 kg in a day. Fishers know very well that the surveillance is inadequate. Some fishers use funnel-shaped nets (Binati Jal) to catch juvenile Hilsa and selling it in the name of Khoyra fish. In Digha estuary, this fishing of juvenile Hilsa is evident. If 500 kg of Hilsa is caught, 300 of that weighs 150 to 300 grams, all juvenile fish.
A mature Hilsa weighs between 700 grams and a kilogramme.” Unapologetic trawler owners In the Bay of Bengal, fishing goes on throughout the year, ignoring government restrictions. Almost admitting this, the secretary of the trawler owners’ organisation United Fishermen’s Association Shyamsundar Das told thethirdpole.net, “Fish weighing below 300 grams may be hunted, but that does not matter. One Hilsa gives birth to some hundred thousand babies. However, we try to observe the prohibition on juvenile Hilsa.” Further charges against the big trawlers are that they bring up all types of fish through bottom trawling. Catches of juvenile Hilsa weighing less than 10 grams are thrown back into the sea. The fish is being destroyed in this way. Das says, “We have got the modern instruments and how is it possible that those will not be used?”

At the same time, he accepts the need for the ban, and even wants it extended to the coast off adjacent state Odisha as well as the markets there. “Otherwise, nothing can be done. When sale of juvenile Hilsa is stopped at Digha market (in West Bengal), it goes to the Odisha markets. Then it reaches the markets of Kolkata.” Artisanal fishers suffer Artisanal fishers have a different take than the trawler owners. The joint secretary of small fishers’ organisation South Bengal Fishermen Forum, Debashis Shyamal, told thethirdpole.net, “Destructive fishing and trawl fishing hampers Hilsa in the state. Not only Hilsa, but all kinds of fish are declining due to uncontrolled fishing. We the small fishers try to obey the ban. But the big trawlers can break all the rules with the power of their political connections.”

It has been a longstanding allegation in all coastal states of India that trawlers are owned by politicians and their kin, directly or anonymously. Shyamal recommended that Bangladesh and India coordinate their Hilsa fishing ban periods and hold joint surveillance to ensure compliance. Blocked path, dirty water Apart from overfishing, a big problem for the migrating Hilsa is siltation at the mouth of the Ganga. This sea fish needs a clean and deep channel so that it can move upriver and spawn. But now there is no deep channel in the mouth of the Ganga except the one kept open by constant dredging, for the shipping to and from Kolkata port. And not a single channel – deep or shallow – has any clean water. The pollution in the Lower Ganga is largely unchecked, and the bacterium E Coli (which causes diarrhoea or worse) has been counted at a million times the safe limit prescribed by the World Health Organisation.

That, and an overall lack of fresh water due to dams and barrages upstream in the Ganga basin, has a highly adverse effect on the reproduction of the Hilsa. The increasing salinity of the estuary is an added cause. The Hilsa looks for fresh water to spawn, but does not find any. Changed life Asimkumar Nath, a fisheries expert in Sidho Kanhu Birsa University of West Bengal, has found another effect of this forced change in the life cycle of the Hilsa. Due to siltation, many fish find their way back to the sea blocked. Studies that include tagging some Hilsa have shown that some have remained in the Ganga and its tributaries for the last several years. He said some such “resident Hilsa” have been found as far upstream as Farakka, over 350 km from the mouth of the Ganga. Nath is confident that even if 20% of the Hilsa living and breeding in the rivers can be saved from overfishing, there will be no shortage of the fish in West Bengal.
Protection plans Though its current plans to protect the Hilsa are yielding limited results, the West Bengal government has new plans to protect the fish. Fisheries Minister Sinha said his department has identified three spawning areas that will be declared sanctuaries. “Special monitoring will be arranged in Raichak-Godakhali, Tribeni-Balagarh and Lalbag-Farakka,” he told thethirdpole.net. “Hilsa lays eggs in those places. Hilsa Research centres will also be built there.” The minister said scientists are trying to breed Hilsa in ponds.

“The Hilsa Conservation and Research Centre (HCRC) in Diamond Harbour will move that work forward. Nofima, a Norwegian institute for food, fisheries and aquaculture research, will work with HCRC. Nofima has been working on salmon production for 45 years and they have expertise in aquaculture. Central Inland Fisheries Research Institute (CIFRI) is also a partner in this project. Six water bodies have been identified in Falta near Raichak and East Kolkata Wetland to conduct the research. Nath says, “There is no necessity to spend a huge amount of money to artificially breed Hilsa in ponds, if the juvenile [fish] are saved by increasing surveillance.”

West Bengal: DMF Calls Upon the Small Scale Fishing Communities to Rise Up and Build Invincible Resistance Reclaim Right to Water and Fish Resources

Dakshinbanga Matsyajibi Forum (DMF) alongwith fish workers and their organisations all over the world is celebrating World Fisheries Day 2018 on 21st November 2018 with both enthusiasm and determination. This year the World Fisheries Day is being celebrated by DMF at more than 24 fishing community hubs across 10 districts of West Bengal. Every year November 21st has been celebrated all over the world as World Fisheries Day to commemorate the establishment of World Forum for Fisher People (WFFP) in 1997 by Father Thomas Kochery and Harekrishna Debnath, two legendary leaders of fishing communities. Every year on 21st November the fisher people celebrate their identity, unity and achievements as a community as well as proclaim their determination to Save Water, Save Fish and Save Fisher People.

This year the World Fisheries Day is going to be celebrated in India at a time when – - Due to the policies of the Government favouring large scale investment in fishing our seas are experiencing over and destructive fishing by mechanised fishing boats and small scale fishers are left with almost no fish; - Sagarmala Project by the Government of India is going to evict the traditional small scale fishing communities from the coast with establishment of large number of ports; - Proposed Coastal Regulation Zone Notification 2018 has been published by the Government of India with a view to further open up the coast to massive investment and utilisation destroying the habitats and livelihood options of indigenous coastal communities including fishing communities; - West Coast Shipping Corridor announced by the Government of India is going to prohibit fishing communities from 85,000 square kilometres of fishing area on the West Coast; - Deep sea port, marine drives and large scale tourism are threatening the small scale coastal fishing communities with eviction and loss of livelihood; - ‘Blue Revolution’
initiated by the Government of India promotes investment driven production increase in fisheries that is replacing the traditional fishing communities by a new breed of entrepreneurs.

The small and traditional fishing communities of Sundarban and other protected areas are deprived of their right to fish in the waters of the protected areas. Dakshinbanga Matsyajibi Forum (DMF) calls upon all small scale fishing communities to celebrate World Fisheries Day 2018 on 21st November to commemorate glorious movements of the community and vow to build up invincible collective resistance to – Save Water, Save Fish, Save Fisher People.

**West Bengal: Fishermen forum to protest against Centre's policies**

[http://www.millenniumpost.in/kolkata/fishermen-forum-to-protest-against-centres-policies-327913](http://www.millenniumpost.in/kolkata/fishermen-forum-to-protest-against-centres-policies-327913)

The National Fishworkers' Forum (NFF) along with other fish workers' organisations will organise a movement in the coastal areas of the state on November 21 on the occasion of World Fisheries Day to protest against various policies of the Centre. Debasis Shyamal, general secretary of National Fishworkers' Forum (NFF) said Center's various policies favour large-scale investors at the cost of traditional fishing community and mechanised fishing boats have been affecting small scale fishermen. He also voiced his protest by saying that the Sagarmala Project is going to evict the traditional small scale fishing communities from the coastal areas. The proposed Coastal Regulation Zone Notification 2018 has been published by the Government of India with a view to further open up the coast to massive investment.

The Centre has also announced about the West Coast Shipping Corridor that will prohibit fishing along the 85,000 square kilometre of sea waters in the West Coast, Shyamal maintained. Apart from Bengal, the NFF will also organise protest movement in 10 other coastal states across the country, besides celebrating the World Fisheries Day. November 21 is celebrated all over the world as World Fisheries Day to commemorate the establishment of World Forum for Fisher People (WFFP) in 1997. This year as well fishermen from various organisations will celebrate the day to commemorate glorious movements of the community and take a vow to build up invincible collective resistance against the implementation of various policies by the Centre. The theme of this year's celebration is "save water, save fish, save fishing people".

**India: Karnataka to West Bengal: How climate change is ravaging India's coastline**


First, in 2011, the sea took away some of their land. Three years later, the waves demolished a section of their home. That is when Budhwant Karvi, 40, knew it was time to move but his elderly parents refused. “They said we have lived here for generations and will continue to do
so,” said Karvi, a worker on a fishing trawler that sails the Arabian sea. Karvi’s home is in Pavinakurve, a village along the scenic Honnavar coast with blue waters reflecting the sky in Western Karnataka. The view from the home was once a narrow strip of sandy beach and the vast Arabian sea. On the right is the island of Basavaraj Durga, a popular tourist destination. The view from Pavinakurve and the island of Basavaraj Durga in northwestern Karnataka. The sandy beaches of Pavinarkurve are being steadily eroded. Seven years ago, the waves began to crash against the walls of Karvi’s home made of red, large bricks.

“At times the waves would completely wash over our home and leave behind plastic bottles that were discarded in the sea by people,” Karvi said, pointing to the waste bottles on the land. Soon the sandy strip of the beach went under water. Then one by one the sea swallowed six guntas (1/7th of an acre) of the land the family owned, roughly six times the size of an average two-bedroom flat. Millions living on India’s coasts are threatened as India has lost 33% of its coastline to erosion in 26 years between 1990 and 2006, according to a report released in July 2018 by the National Centre for Coastal Research (NCCR) in Chennai, which is mapping changes to India’s shoreline, and is affiliated to the Ministry of Earth Sciences. This is the second story in our series on how climate change is disrupting people’s lives (you can read the first part here).

The series combines ground reporting from India’s climate change hotspots with the latest scientific research. India has a coastline of 7,500 km--nearly three-and-a-half times the distance between Ahmedabad and Kolkata--divided almost equally on the east and the west of the country. Along it are nine states, two union territories (UT) and two island territories. Of the country’s 1.28 billion people, 560 million, or 43%, live within these coastal territories. Of the coastline that is eroding, 40% is in four states/UTs alone. West Bengal has lost 99 sq km of land in the past 26 years, making up 63% of the state’s coastline and equivalent to the area occupied by 18,500 football fields. Puducherry has lost 57% of its coastline, Kerala 45%, and Tamil Nadu 41%, to heavy erosion. India’s coasts are under attack both from man-made activities--such as growing construction, damming of rivers, sand mining and destruction of mangroves--as well as natural causes linked to climate change such as rising sea levels, according to the report.

Growing construction, rising temperature, threatens coastline India has 5,264 large dams and another 437 dams are currently under construction, according to the Central Water Commission (CWC). Of these, the highest--2,354--are in Maharashtra, followed by Madhya Pradesh (906) and Gujarat (632). These dams starve the coasts of sediments that the rivers would otherwise carry, disturbing the natural equilibrium. Then, there are 13 major ports, 46 fishing harbour and 187 minor ports on the coast for the building and maintenance of which sediments are regularly removed. This sediment is rarely ever returned to the coast. All this has left India’s coasts vulnerable to the full impact of climate change. “Climate change is making weather systems in the Bay of Bengal erratic,” said M. V. Ramana Murthy, director of NCCR.
“We have some evidence for sea level rise. The Lakshadweep lagoons, which are enclosed water bodies, are also getting eroded because of sea level rise.” Global warming will cause the sea levels to rise well beyond the year 2100. This rise could be as much as the height of a 500 ml bottle of coke to the height of four such bottles put together if global warming raises temperatures by 1.5 degree Celsius. If the Earth warms beyond this, the rise in sea level could be even more, according to the latest report by United Nations’ Intergovernmental Panel on Climate Change released in October this year. Rising sea levels are predicted to disproportionately affect fishermen like Karvi and farmers owning fields along the coast. In the past two years, Karvi’s entire home was ravaged by the sea. Even as his parents refused to move, Karvi and his siblings moved away with their families in tow.

They now live in rented homes. With the little money they had, they constructed a two-room mud home with no windows and a roof so low that one has to bend to enter, where their parents lived till their death in 2017. Soon after, the waves began to cross the stone wall built by the government and gnaw at the remains of their old home, now reduced to rubble. The Karvis return to the old house, now reduced to debris, on special occasions. There is a tulsi plant outside that Karvi returned to on the day of Dussehra to offer prayers. In Honnavar, the only asset those like Karvi have, are their homes and their land. With the sea swallowing up both, Karvi and his siblings have nothing left. In Pavinakurve village, many high yielding paddy fields along the coast are no longer suitable for agriculture as crops don’t grow in soil contaminated with the salty sea water.

The waves are only expected to rise higher as climate change causes changes in wind speeds. In the next three decades, coastal erosion will occur 1.5 times faster than the past three decades, according to a 2016 joint study by researchers of the Indian Institute of Technology in Mumbai and the National Centre for Earth Sciences Studies in Thiruvananthapuram, Kerala. Walls to fight waves Many countries, including India, have responded to this challenge by building hard engineering structures such as walls or bunds along the coastline. These are just a short-term solution, said Prasanna Patgar, regional director for environment for Karwar district, that also oversees Honnavar. They also might redirect the waves and cause another area along the coast to erode. Worse, as the sand below them shifts, the walls sink. At the moment, state governments are spending hundreds of crores of taxpayers’ money to construct walls which get eroded in a few years. But, why? “People want immediate solution and building a wall is one,” Patgar explained. As waves erode wealth accumulated over a lifetime, people panic and administrators are pressured to offer a quick fix. Other alternatives that work, such as mangroves, are either too expensive or time consuming.

Natural barriers are most effective against coastal erosion. They take years to establish themselves and become effective. Mangroves go a long way to reduce wind speeds and the swell of waves during storm surges. They bind the sand together and arrest erosion. “There is also the thermodynamic shelterbelt model in which four levels of vegetation are planted,” Patgar
explained. “Grass is planted closer towards the sea, followed by shrubs, herbs and finally the
trees. But these plants take 5-10 years to establish and become effective.” Another option that
has worked on a 40 km stretch off the Puducherry coast is a structure based on the erosion
patterns and requirements of the particular stretch. “We brought back the sediment naturally by
building a submerged structure that mimics how coral reefs protect an island,” Murthy explained.
Carrying out a scientific study for the 40 km stretch and coming up with the best design for the
structure cost Rs 50 lakh. To do that along India’s 7,500 km coastline would be too expensive.
Even if the money was found, there aren't as many experts as would be needed to study the entire
coastline.

A coastline in distress Coastal erosion hotspots are spread all along India’s coastline. There are
several hotspots along the Kerala coastline, recently left devastated by floods, according to a
2015 study. Areas nearly 2 km inland were found to be eroded. The Tamil Nadu coast is also
impacted by erosion, but the eastern coast, around the Bay of Bengal, is the worst affected. Low
and moderate erosion spots along India’s coastline. Source: National Assessment of Shoreline
Changes along Indian Coast; July 2018. Apart from increasing sea levels, climate change is also
going to change weather patterns along the coast. “The intensity and the number of tropical
storms, called cyclones, in India are likely to increase in coastal areas,” said Gerd Masselink,
professor of Coastal Geomorphology at the University of Plymouth, in the United Kingdom.
“The effect will depend on where you are on the globe. Some areas might become less stormy
and other areas might become more stormy.”

“There can be changes in the wave direction as the climate changes. This might change the
longshore sediment transport, which is movement of sand along the beach,” Masselink added.
Some coastal areas are likely to flood more and global warming will cause the water
temperatures to rise. All these changes will have a direct impact on the production of fish and
consequently those, like Karvi, who depend on it for a living. TH Nayak’s extended family
owned land on the Pavinkurve island (in background), which has now been eroded by the
Arabian sea in northwestern Karnataka. Standing at the edge of Karki village in Honnavar, TH
Nayak, 74, points to the expanse of the Arabian sea. “We had relatives living on the stretch of
land there. Now it is all under water,” said the former Karnataka bureaucrat. His home was
nearly 5 km away from the sea. Between the sea and his home shielded by Pavinkurve was an
estuary. “It was so shallow that we could walk across it,” he said.

In the last few decades, the entire topography of the area has changed. Left: The mouth of the
Sharavathi river has moved over 4 km from Kasarkod (south) to opposite Karki village (north).
Right: A 1932 map of the same region that shows the position of the mouth of the Sharavati
river. The island of Pavinkurve is a longer stretch of land and Karki village merely had a stream
in front of it, instead of the Arabian sea Karki village now overlooks the mouth of the Sharavathi
river which merges into the Arabian sea. When Nayak was growing up, the mouth of the river
was several kilometres away near the neighbouring Kasarkod village. “Coastal erosion is a
natural process but the rate at which the erosion is happening here has accelerated over the past few decades,” explained marine biologist Prakash Mesta, of the Centre for Ecological Sciences in Kumta, who is currently working on a project on coastal ecology and global warming. While land from one side of the river mouth is going under water, new land is emerging on the other side. This process is called accretion. Nearly 29% of India’s overall coastline is accreting, according to the NCCR report. Odisha (51%) and Andhra Pradesh (42%) have seen a maximum increase in their coastline.

While the island of Pavinakurve (on the left) is losing land to erosion, new land is being formed on the island of Kasarkod (right) due to deposition of sediments called accretion. The new land goes to the government and not the ones who lost their land to erosion. While Karvi and Nayak are losing their land due to erosion and not being compensated for it, the new land the sea throws up goes to the government. “Climate change along the coast has affected the livelihoods of the fishermen community. The new land can go to them to make up for the land they have lost,” said Ramachandra Bhatta, former professor of Fisheries Economics at the College of Fisheries in Mangalore. “If the government does a risk assessment study and offers them an insurance cover, the fishermen will not need to go begging to the authorities after every disaster, the frequency of which will only increase going forward,” said Bhatta, explaining that the government has yet to conduct such a risk assessment.

Human activities worsen natural erosion For over two decades, Aurofilio Schiavina, co-founder of Pondicherry Citizen's Action Network (PondyCAN), has been watching the beaches of Pondicherry disappear due to erosion. While he agrees climate change is a factor, he highlights the need to check man-made structures like building coastal walls, dams, as well as illegal activities like sand mining. At Honnavar, for instance, locals revealed a kilogram of sand sells for Rs 5 and the sand mafia routinely take away truckloads of sand from the beach. Schiavina also agreed with the decision recalling the proposal to build a wall from Chennai to Kanyakumari right after the tsunami struck in 2004. “The damage that would have done in ten years would be more than what climate change would have done in decades,” Schiavina said. “We need policies rooted in science,” he added. New rules on coastal regulation unscientific Avoiding construction close to the coast is one of the easiest steps to take, according to scientists. The technical knowledge to identify areas that are at risk of erosion is available. “People think erosion is always bad thing, but erosion at one location causes sedimentation somewhere else,” Masselink said.

“A heavily managed coastline, for example a beach with a seawall, cannot adapt very well to climate change impacts and requires constant attention, whereas a natural coastline, or one that is managed using more sustainable methods on management such as nourishment, can naturally adapt to climate change impacts.” Any sand taken away from the coast needs to be replaced, added Murthy. “We need at least 100 metres of space along the coast.” The government, though, has other plans. In April this year, a new coastal regulatory zone draft was released in which the
No Development Zone (NDZ) around coastal areas was reduced from 100 mt to 50 mt allowing for more construction along the coast in rural areas—the opposite of what scientists advise. Coasts in urban areas don’t have NDZ at all. The move is being hailed as one meant to benefit builders. And what’s our defence against climate change? “There is no way other than being vigilant,” said Murthy. Full report is available at: National Assessment of Shoreline changes along Indian Coast 1990-2016 https://www.indiaspend.com/wp-content/uploads/2018/11/National-Assessment-of-Shoreline-Changes-NCCR-report.pdf

**West Bengal: Skilling the Fishermen**

https://www.ruralmarketing.in/industry/case-studies/skilling-the-fishermen

Indian fisheries and aquaculture is an important sector of food production, providing nutritional security to the food basket, contributing to agricultural exports and engaging about 14 million people in different activities. With diverse resources ranging from deep seas to lakes in the mountains, and more than 10 percent of the global biodiversity in terms of fish and shellfish species, the country has shown continuous and sustained increments in fish production since independence. According to National Fisheries Development Board, constituting about 6.3 percent of the global fish production, the sector contributes to 1.1 percent of the GDP and 5.15 percent of the agricultural GDP. West Bengal is bestowed with all types of fishery resources of immense potential, spread over the state, from the marine jurisdiction in the Bay of Bengal in South India to the cold water region at the base of the Himalayas in North India.

As per Government of India figures, fish and fish products have presently emerged as the largest group in agricultural exports of India, with 10.51 lakh tonnes in terms of quantity and Rs. 33,442 crores in value. This accounts for around 10 percent of the total exports of the country and nearly 20 percent of the agricultural exports. The National Fisheries Development Board (NFDB) is an autonomous organisation under the administrative control of the Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare, Government of India. With an aim to enhance fish production and productivity in the country and to coordinate fishery development in an integrated and holistic manner, NFDB conceptualised the Recognition of Prior Learning (RPL) Programme in Marine Capture Fisherman cum Primary Processor and Aquaculture Worker Job Roles to benefit fish farmers in West Bengal. Recognition of Prior Learning (RPL) is a platform to provide recognition to informal learning or learning through work, to get equal acceptance as the formal levels of education. It aims to appreciate prior learning, irrespective of the medium of achieving it.

Agriculture Skill Council of India (ASCI), under the aegis of Ministry of Skill Development & Entrepreneurship (MSDE), works towards capacity building by bridging gaps and upgrading skills of farmers, wage workers, self-employed and extension workers, engaged in organised and unorganised segments of agriculture and allied sectors. ASCI will certify the candidates after the
successful completion of assessment tests for candidates under the NFDB RPL programme. NFDB is providing financial assistance for conducting RPL programme for fish farmers based on QP’s approved by ASCI. Sabiruddin Gazi, a resident of Basuldanga, Diamond Harbour, South 24 Praganas in West Bengal, is an aquaculture worker since 2014, earning a monthly remuneration of Rs. 15,000, says “In my family there are 5 members.

I took ponds on rent and started fishing with a few ponds; now I am having 16 ponds. During the training, I learnt about fish feed and its importance, types of diseases associated with fish, and how to gain profit by using latest techniques during fishing.” Adds Mintu Kayal from Kakdwip, who is a marine capture fisherman cum primary processor, working since 2001, “I have a rich experience in marine capture, but some of the aspects, which I ignored during the fishing at marine such as the importance and usage of safety devices, were reiterated during the training. Besides, I learnt about different types of devices used in marine.”

"I believe that agriculture skills can play an instrumental role in shaping the growth trajectory of the country, especially for those living at the fringes of social growth and development. Such initiatives empower them to grow from being an unskilled workforce to skilled fishermen and yield impact through improvement in income and standard of living, not only for individuals but also their families and communities," explains SS Arya, CEO, Agriculture Skill Council of India.

In West Bengal, IL&FS Skills, under the mandate, Recognition of Prior Learning, will train 2500 fish farmers across diverse locations, namely: South 24 Parganas, North 24 Parganas, Murshidabad, Purba Medinipur and Howrah districts. "IL&FS Skills has skilled more than 1.6 million people across manufacturing, engineering, construction and service sectors pan India. Our placement linked and upskilling training programmes link youth with employment or opportunities of self-employment. We have been working with the Agriculture Skills Council of India, and over the years, have implemented various programmes for fresh skilling and upskilling of youth in trades likes dairy farmer entrepreneur, tuber crop cultivator, maize cultivator, organic grower, animal health worker, quality seed grower, micro irrigation technician, gardener among other related works,” says Ketul Acharya, COO. & Group Head, IL&FS Skills. “These programmes focus on enhancing the career and employability opportunities of an individual as well as provide alternative routes to higher education. It also envisages providing opportunities for reducing inequalities based on privileging certain forms of knowledge over others,” Acharya adds.

**West Bengal: Water resources ministry turns focus on improving Hilsa population**


In a bid to improve the fauna relating to the Ganges, the Water Resources Ministry has turned its focus on improving population of Hilsa -- a high pedigree and arguably East Asia’s most prized
fish, which has declined due to obstruction to their migration from Bay of Bengal into the river to breed. The obstruction is on account of Farakka barrage commissioned in 1975 on the Hoogly, a branch of the Ganges, in West Bengal. The dwindling migration has been a cause for concern among policy makers at the Centre, and the governments in the Ganges’ five basin states which comprise Uttarakhand, Uttar Pradesh, West Bengal, Bihar and Jharkhand. The National Mission for Clean Ganga (NMCG), a nodal body of Water Resources Ministry with regard to “Namami Gange” project, has approved two projects worth Rs 50 crore for West Bengal, including for Hilsa fisheries improvement at Farakka barrage. “Implementation of the fishery project will increase the natural stock of Hilsa in the river Ganga, upstream of Farakka barrage through ranching of wild collected Hilsa seed/juveniles,” the Ministry said.

The project includes study and monitoring Hilsa migration across the barrage in the main river Ganga. Hilsa is a salt water fish, but migrates to sweet waters of the Ganges from the Bay of Bengal (the river drains in it). It travels upstream of the river during the mating seasons and returns to its natural abode after spawning. The hatchlings also head to marine water, and the cycle goes on. The breeding season happens thrice a year, the most intense being the monsoon season when the river is in full flow. The Central Inland Fisheries Research Institute (CIFRI) in one of its report on the status of Hilsa in the Hoogly-Bhagirathi river said they used to migrate up to Agra and Kanpur in years of abundance, while in normal years, the fish used to migrate up to Allahabad and further up — a distance of about 1,700-1,800 km. It added that following commissioning of the barrage Hilsa fisheries upstream of barrage have been negligible in most of the fish land centres.

**West Bengal: Fishes bite into Bhai Phonta pockets**

[https://m.telegraphindia.com/states/west-bengal/fishes-bite-into-bhai-phonta-pockets/cid/1674487](https://m.telegraphindia.com/states/west-bengal/fishes-bite-into-bhai-phonta-pockets/cid/1674487)

Hilsa sold at Rs 1,500 a kilo at Gariahat, Maniktala and other markets in the city on Thursday. Topshe cost Rs 750 and parshe Rs 500 plus. A day before Bhai Phonta, the price of Bengal’s favourite fishes soared across the markets but still found takers. Most varieties of fish in the market have become costlier by at least Rs 100 a kilo since last week. Hilsa, on its way out for this year, has seen a steeper rise, fish sellers said. Tarun Parui, a businessman from Howrah, bought a 1.25kg hilsa from Maniktala on Thursday evening. “I was in two minds over hilsa and mutton. But when the fish seller said the hilsa was from Bangladesh, it was a no-brainer,” said Parui, who will host his brother-in-law for lunch on Friday. “I get treated to a lavish feast on Jamai Sashthi at my in-laws’ place every year. Bhai Phonta is when I get to play host and I don’t want a loss of face,” said Parui, a regular at Maniktala.

He also bought lobsters for Rs 600 a kilo. Bacchu Pramanik, a fish seller at Maniktala, said apart from hilsa and prawn, topshe, parshe and pomfret were the hot selling items. Pratima Roy bought
topshe and parshe from Gariahat, for Rs 750 and Rs 500 a kilo respectively. Also on her shopping list was mutton. “I like to cook for my brothers on Bhai Phonta,” said Roy, 49, a Bengali teacher at a government school. A group of three sisters came looking for katla, lobsters, pabda and topshe at the Gariahat market on Thursday morning. “We have a grand family feast on Bhai Phonta every year. We have two cousins who come with their families,” said Tulika Bandopadhyaya, 40, the elder sister.

West Bengal: Water resources ministry turns focus on improving Hilsa population


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West Bengal: Fishermen protest merchant shipping corridor

The fishermen community belonging to different organisations in the state came together on Tuesday to protest against the proposed Merchant Shipping Corridor (MSC) along the coastal regions of the country, expected to paralyse the fishing industry in West Bengal as well. The protesting fishermen, whose livelihood is mainly dependant on marine fish, demanded withdrawal of the MSC project of the central government, which is presently underway from the West Coast up to some distance beyond Kanyakumari. The stretch meant only for merchant ships, however, is soon to be extended till the Eastern Coast, covering parts of West Bengal, including Tajpur in East Midnapore where mapping work has already been started.

According to members of the Dakshinbanga Matsyajibi Forum (DMF), one of the major fishermen associations in the state, the proposed shipping corridor will mean confinement of fishing activities within 15 nautical miles or 27.78km from the coast. Beyond this stretch, the proposed corridor of 20 nautical miles or 37.04 km wide will be used by merchant ships only and fishing activities would be strictly prohibited. As this part of the coastline harbours most of the marine fish of various edible species, the fishing industry along the corridor is expected to be affected badly. “The project will hit the livelihood of 1.4 lakh fishermen in the state who are fully dependent on this marine stretch for their livelihood,” said Milan Das, general secretary of DMF. “The corridor if it materialises will also destroy the marine ecological balance in the Sunderbans, where lakhs of people are directly or indirectly dependent on this portion of the sea,” he added.

Underscoring how the development projects in the coastal areas are adversely affecting the fishermen, Debashish Shyamal, member of National Fishworkers’ Forum, said: “The development of a deep sea port at Tajpur, and other places under the Sagarmala Project, will mean that not only will the corridor be used by the ships, but also the inner coastline will be occupied with commercial activities. Such extensive industrial use of the part of the sea which accommodates the maximum percentage of useful marine organisms, will not only destroy the marine life but will also take away the livelihood of about 80 per cent of fishermen in the state and four crore fishermen along the MSC.” “A letter has been sent to the Centre on 10 September and a memorandum has been filed with the state government today. However, the state government instead of solving our problems of livelihood is working in close association with the Centre.” The state fisheries minister denied getting any formal intimation on the issue.

**West Bengal: Cultivates 3 new fish varieties, to go commercial early next year**


Your fish platter will soon get three new varieties. The State Fisheries Development Corporation (SFDC) has started cultivating Thai Sarputi, Indian Pompano and Gulas Tangra fish that will be commercially introduced in the markets early next year. SFDC officials said that the fingerlings
of these three fishes have already been released in different waterbodies owned by the authorities at Nalban, Goltala and Henry’s island in South 24 Parganas for cultivation. “While a Thai Sarputi grows for about four to six months, the same period for Gulas Tangra and Indian Pompano is six to eight months and six to seven months, respectively,” he added. Officials said that Thai Sarputi is a substitute of the desi punti fish, with a bigger size and cheaper price. Gulas Tangra substitutes the local tangra and the Indian Pompano is a substitute of the pomfret and silver pompano. “While Gulas Tangra and Thai Sarputi are being cultured in the sewage fed water of Nalban and in Goltala, Indian Pompano is being cultured in the waterbodies of Henry’s Island,” said an official.

Officials said that initially, SFDC would start selling the fishes, both raw and cooked, from its stalls and mobile vending outlets across the city. “They will also be sold through our app via which customers are already receiving fish they want to have at their doorsteps,” he added. Once the trial run is completed and the demand shoots up, the varieties would be placed at the auction market for fish vendors, who will buy them for commercial selling in the retail markets. While the price for Thai Sarputi will be around Rs 150 per kg, the price range for Gulas Tangra and Indian Pompano will be Rs 180 to Rs 200 and Rs 280 to Rs 300, respectively. SFDC is taking technical help from the Central Marine Fisheries Research Institute and the Inland Fisheries Research Institute for cultivating the three varieties of fish at the SFDC-owned waterbodies.

While the fingerlings of Indian Pompano has been supplied by the Central Marine Fisheries Research Institute, the fingerlings of other two species have been given by the Central Inland Fisheries Research Institute. SFDC is also aqua hubs in different waterbodies that they are taking over. “It’s a concept where both fish farming and selling of cooked fish will take place,” an official said. The authorities are also planning to increase fish cultivation activities by utilising the waterbodies lying unused at Digha.

**West Bengal: Tiger kills fisherman**


A fisherman was mauled to death by an adult Royal Bengal Tiger at Pirkhali forest in West Bengal's South 24 Parganas district Wednesday, the police said. The incident took place at Bally-Satyanarayanpur under Gosaba area in the Sundarbans, where a group of three fishermen had gone to catch crabs. Early Wednesday morning, the tiger attacked 42-year-old Madhu Mondal at Pirkhali forest injuring him severely. When companions of Mondal chased the Tiger, it left the injured Mondal and disappeared in the jungle. Mondal was rushed to nearby Gosaba hospital, where doctors declared him 'dead', the police said. In another incident, two girls drowned in a pond at Sitagachi village in the district Wednesday, police said. The two girls had gone to the pond for a bath and slipped and drowned, they said.
West Bengal: DMF welcomes landmark judgement to save east Kolkata wetlands

In a landmark order, the east zone bench of National Green Tribunal gave Nabalganta Industrial Township Authority (NDITA) and Vaidic Dharma Sansthan 30 days to remove encroachments in the East Kolkata Wetlands or face a penalty of Rs 50 lakh each with further fine of Rs 50,000 per day for any delay in implementing the order. The court also warned that it was reserving the right to pass appropriate orders on officials responsible for noncompliance as per provisions of the law. NGT had a year ago passed an order for removal of a road that was built around MunshirBheri in Salt Lake Sector V by NDITA as well as the three-storied, 60-ft tall building named Temple of Knowledge by Vaidic Dharma Sansthan, an organisation affiliated to spiritual guru Sri Sri Ravi Shankar.

Environmental action group PUBLIC had filed a petition in 2016 on the blatant violations in East Kolkata Wetlands, an internationally recognised Ramsar site that enjoys protection under a 1992 Calcutta high court order as well as multiple legislations. PUBLIC had pointed out that neither the private organisation, nor the government body, had sought permission from East Kolkata Wetlands Management Authority (EKWMA) for construction. According to PUBLIC, both of them had violated the East Kolkata Wetlands Act, which prevents change in existing land use. The NGT, hearing the matter over video conference from Delhi, appeared to be upset over the deadline misses. Under the Act, government officials at fault can even be given a prison sentence. Dakshinbangla Matsyajibi Forum (DMF) welcomes the judgement and congratulates PUBLIC for their efforts. East Kolkata Wetlands provide livelihood to thousands of fishers and their livelihood is being threatened by the encroachments. DMF also takes this opportunity to remember the invaluable contributions of Late Dr. Dhrubajyoti Ghosh, who relentlessly fought to protect the East Kolkata Wetlands and has been responsible for its declaration as a Ramsar Site.

West Bengal: For the first time in India, pen culture in wetlands to take place in Bengal


Keeping in line with numerous success of the West Bengal Government in the cultivation of fish, the National Fisheries Development Board has selected the state for the first pen culture of fish in wetlands in India. The Fisheries Department is now the leading innovator in fish culture in the country. Among its numerous successes is the culture of fish in the East Kolkata Wetlands. Keeping this success in mind, the pen culture project has also been decided to be held at the at the East Kolkata Wetlands, at the section in Goltala near Dhapa. The State Fisheries Development Corporation (SFDC) will be in charge of the project. Depending on the success of the project here, this type of culture will be started in other states.

West Bengal: A study of bacteria in the Sundarbans has implications for conservation of the mangrove system
They may be microscopic in size, but bacterioplankton steer major carbon cycling and food webs in aquatic ecosystems. Bacterioplankton are the bacterial component of plankton that live in water bodies, including oceans and lakes. Now, scientists at the Indian Institute of Science Education and Research Kolkata are keeping an eye out for bacterioplankton and how they chow down and use carbon, in the world’s largest delta, the Sundarbans, to track changes in freshwater flow that could have implications for the sustainability of coastal fisheries. Explaining the premise for this microbe-based monitoring, they reason that when environmental parameters change (such as influx of fresh or saline water), it throws the existing bacterial community structure into turmoil. This disturbance, in turn, shapes up how nutrients are broken down in the system and made available through the food chain to the organisms higher up in the web, such as fish.

Aiding the team in their observations is a time series, the Sundarbans Biological Observatory Time Series, which maps data monthly to pinpoint trends in the health of the Sundarbans ecosystem. “Understanding elemental cycling [such as carbon cycling] is a good way to understand the health of the ecosystem. I believe this is the only mangrove time series in India if not in Asia,” Punyasloke Bhadury of the Centre for Climate and Environmental Studies at the Kolkata institute told Mongabay-India. The Sundarbans study Spread out across 10,000 square km, the Sundarbans, the largest single-track mangroves in the world, lies in the Ganga-Brahmaputra-Meghna delta and is shared by India and Bangladesh. This mangrove ecosystem encompasses over 102 islands in the Indian side (in the state of West Bengal) with a network of innumerable rivers, rivulets and creeks.

The study stations for the time series are located in the 223.4-square-km Sagar Island, the largest compact island of the Sundarbans that sits at the confluence of the Hooghly river (a branch of the Ganga) and the Bay of Bengal. The shrinking island lies 6.7 metres above sea level and is battling soil erosion, breach of embankments and loss of landmass and rising sea levels. “Based on our preliminary studies, we believe that freshwater flow in the Sundarbans [at Sagar] is now starting to change and these changes are now starting to show clearly through the level of changes happening at the bacterial community structures,” Bhadury said on the sidelines of the international Land-Ocean-Atmosphere workshop. At this year’s workshop, convened by Bhadury at the institute, it was discussed how understanding land-ocean-atmosphere interactions aids in management of terrestrial and coastal resources nationally to maximise benefits to people’s livelihood as well as environmental protection.

A key example of such dynamics, said Bhadury and colleague Anwesha Ghosh, is the land-ocean boundary-based coastal ecosystem in the Sundarbans, a region that experiences the third largest river discharge in the world through the Ganga-Brahmaputra-Meghna outflow. The Indian
Sundarbans archipelago acts as the “nursery” for nearly 90% of the aquatic species of the eastern coast of India. In Sagar, fisheries rank second after agriculture in terms of livelihood. Based on their research, the scientists say they now have some idea of how carbon cycling is taking place in the system and that the system in the Sagar Island is now “probably transitioning to a marine system from an estuarine system”. “The reason why we set up monthly monitoring since 2010 in the time series is so that we have long-term data to determine the exact changes,” explained Ghosh. “What makes it more complex for the Sundarbans is that if you look at all the seven estuaries, each of them is very different.

The freshwater inputs differ from the eastern part to the west. [The] Eastern part of the Sundarbans are more protected [very minimal human interference], so the kind of nutrients you would see from anthropogenic sources is different than that you would see in the western part,” Ghosh said. Sustainability practitioner Anurag Danda, who was not involved in the study, emphasised on the variability across the estuaries. “Yes, at this location the system may be transitioning into a marine system but it may not be the case in Meghna estuary at the eastern extreme due to higher volume of freshwater flow,” Danda, senior advisor to WWF, told Mongabay-India. Tracking freshwater flow is important, said Danda, as deltas are highly sensitive to changes in freshwater flows.

“Progressive layering of sediment over time results in the build-up of delta land mass that will continue to build seaward – as long as rates of erosion do not exceed rates of sedimentation. Reduced freshwater flows reduce the rate of sedimentation thereby impacting the physical integrity of a delta. We are already witnessing this on the south-western sea-facing islands in the Sundarbans,” Danda told Mongabay-India. Under rising sea level conditions, freshwater flows become even more important, he said. Reduced freshwater flows result in the saline front being pushed further inland and reduction in mangrove area because of man-made barriers to successful migration of mangroves. The man-made freshwater agro-ecosystem further inland also witnesses falling productivity due to increased soil and water salinity, he said. “In addition, there is a change in species composition on land and in water. This is not problematic by itself but the change could result in replacement of commercially important species by less important species,” he said.

The monsoon play Estuarine ecosystems, that form a transition zone from rivers to seas, receive nutrients from a variety of sources, including riverine discharge. Ghosh says that if you can track the microbial milieu and see what they are up to, then you can monitor the health of the ecosystem. Bacterioplankton are indispensable regulators of global element cycles owing to their unique ability to decompose and remineralise dissolved organic matter. “You can track any biological parameter but bacteria are very good because they are present in huge numbers and they are very precise. The precision level in bacteria is tremendous. Besides, they provide information on the elemental cycling, which is key to sustainable fisheries,” Bhadury said.
But the bacterioplankton communities have a whole lot of issues to grapple with in the Sundarbans – seasonal changes in surface water temperature, heavy local rains during monsoon, continuous flow of freshwater from Ganga-Brahmaputra-Meghna riverine systems, daily intrusion of saline water from the Bay of Bengal and dynamism of dissolved nutrients. Seasonal influences such as increased freshwater flow during monsoon can flip the script on the stability of estuarine microbes and thereby on nutrient cycling. “Increased freshwater flow alters prevailing environmental factors in coastal ecosystems and may lead to changes in bacterioplankton communities,” said study co-author Ghosh. “This area gets freshwater from the local rainfall from the south-west monsoon and also from the rainfall received in the upper reaches of the Ganga, Meghna and Brahmaputra rivers. All of these rivers have a long course and get a lot of rain in the upstream and if the water volume increases upstream, it also goes up in the estuary,” Ghosh observed. Monsoons have two kinds of effects. First, more nutrients become available due to river run off, which comes from both upstream of the river and also from local inputs of nutrients. But at the same time, the nutrients are diluted largely due to increase in volume of water. This increase also causes a flushing action that could decrease the overall time the organism needs to interact and break down nutrients into simpler forms. Further, as sediment is shaken loose and washed out due to the rains, a lot of nutrients in different forms enter the water from the land.

“This change in mix of nutrients also influences the bacterial community structure. In addition, a lot of soil bacteria from the sediment shake-up is also pumped into the estuary water. This change in environment hampers the activity of the soil bacteria,” Ghosh explained. All of this happens very fast during the monsoons. “But post-monsoons, these effects nullify and the system becomes more stable. The steady supply of freshwater decreases and nutrients become more homogenous. Around December, the East India Coastal Current reverses pattern and brings in a lot of saline water into the Sundarbans. Additionally, the surface water temperature decreases,” Ghosh said. So a bacterial population that is more marine in nature starts to emerge due to enhanced salinity. “We have shown that the system becomes completely dominated by the Vibrio [typically marine] in December,” Ghosh said. “In a stable estuarine environment where water stands for a longer time, if you look at the bacterial population, it has signatures of marine and freshwater and it has its own signature. This is because the plankton has enough time to get used to this intermediate salinity,” said Ghosh.

In contrast, when there is a diverse bacterioplankton community structure, the cycling of nutrients is very different when you have the system dominated by a specific set of organisms because this set of organisms would be using very specific nutrients. This hits the availability of food for the fish, she added. The study said: “Drastic increase in sediment associated bacteria such as members of Firmicutes and Desulfovibrio was found in monsoon, hinting possible resuspension of sediment-dwelling bacteria into the overlying water column. Principal component analysis revealed dissolved ammonium and dissolved nitrate to account for
maximum variation observed in the bacterioplankton community structure.” Overall, the study showed that a “strong interplay exists between environmental parameters and observed variability in bacterioplankton communities as a result of precipitation which can ultimately influence processes and rates linked to coastal biogeochemical cycles.”

A recent study that sheds light on water-related risks in the Sundarbans and policy alternatives sheds light on concerns due to changes in salinity in the estuaries of the Indian Sundarbans. The study states: “Owing to higher freshwater flows in the Hooghly estuary, salinity has decreased in that zone. As a consequence, fish species of low commercial value, particularly hilsa [Tenualosa ilisha], have increased significantly, but the commercially important taxa have become less abundant [Ghosh, 2015; Sinha, Mukhopadhyay, & Mitra, 1997]. The situation is different in the central portion of the Sundarbans. Salinity has increased in that area because connections to meltwater sources have been eliminated by heavy siltation of the Bidyadhari Channel [Banerjee, 2013].”

**West Bengal: Dwellers to lose source of income**


Ministry of Environment, Forest and Climate Change has declared 73 percent forest area of the Sundarbans under Sharankhola Range as Wildlife Sanctuary without ensuring alternative livelihoods of the dwellers living near the world's largest mangrove forest. Due to the move about three months ago, at least 15,000 people, including fishermen, Bawals and Mowals have lost their livelihood and are passing their days in acute hardship. Earlier, the Ministry of Environment, Forest and Climate Change imposed a ban on collection of all types of forest resources from 73 percent areas under Sharankhola Range, which is designated as 'sanctuaries'. Consequently, the Forest Department has demarcated the sanctuary area and blocked the entrance of fishermen, Bawals and Mowals. “Fishing boats are lying idle beside the river since a major portion of the forest was declared as 'wildlife sanctuary,' said fisherman Rahman of Sharankhola area. “I borrowed money from a local moneylender about four months ago. But, I don't know how I am going to pay my debt as I cannot go for fishing in the forest area,” Rahman said. “Only a small area (27 percent) under Sharankhola Range is out of the sanctuary status where as many as 200 to 250 fishermen can catch fish and crabs,” another fisherman Masum Farazi said, adding that as a result most of the fishermen near the Sundarbans have become unemployed.” Besides, about 18 percent area under Chandpai Range has been declared as 'wildlife sanctuary,' he said. “I went to Chattogram for an alternative job, but had to return home empty handed as could not earn much money to maintain my family,” Masum said. “After being unemployed for long, some of our fellows left the area for alternative jobs but those who are still here are passing an inhuman life,” fisherman Keramat Farazi said.
Jalal Mollah, a local moneylender of Sharankhola Bazar, said, “I have given over Tk 20 lakh as loan to several fishermen but they are not returning the debt as they could not catch fish.” Divisional Forest Officer (DFO) of the Sundarbans East Zone Mahmudul Hasan said, according to Bangladesh Wildlife Preservation Act, 1974, about 1.39 lakh and 699 hectares of Sundarbans East and West region were declared as sanctuaries. “A scheme of Tk 406 crore for 'Sundarbans Protection Project' is going to be implemented soon to rehabilitate the fishermen,” he said.

**West Bengal: 20,000 Sundarbans fishermen, woodcutters lose livelihood for sanctuary expansion**


About 20,000 fishermen and woodcutters of the Sundarbans have been living a measurable life for the last three months due to the extension of its wildlife sanctuary at Sharankhola range ‘without making any rehabilitation plan’ for those who depend on the forest for their livelihood. As the Forest and Environment Ministry designated 73 percent of Sharankhola range of the Sundarbans as wildlife sanctuary, many fishermen have turned unemployed as they cannot enter the forest for fishing. Al Amin, a fisherman from Charpara village of the upazila, said, “I had been earning my living from fishing in the Sundarbans since my 15 years of age. I had to take loan from mohajon (money lenders) as I couldn’t go for fishing in the forest for the last three months. Now the money lenders are forcing me to return their money…I don’t know how I’ll repay it.” Another fisherman, Mamun, said now fishermen have access to 27 percent of the Sharankhola range where only 200 to 300 fishermen can go for fishing. As a result, the rest of the fishermen have lost their work, and are living in misery.

“After the sanctuary was declared, I went to Chattogram to earn living but had to return after working as a day-labourer for a week,” he said alleging that as schoolteachers there refused to enroll his children as they were not permanent residents there. Jalal Molla, a fish trader of Sharonthali market, said they need to provide loans to fishermen to send them for fishing in the forest, but now the business got stopped. Bachchu Munshi, a ward member of Southkhali Union Parishad, told UNB that if the situation does not change many fishermen of the region will be forced to leave their village to find alternative works. Contacted, Divisional Forest Officer (DFO) of the Sundarbans East Forest Zone Md Mahmudul Hasan said a Tk-406 crore project is coming soon to protect the Sundarbans and for those who have turned unemployed due to the extension of the sanctuary.

Under the project, Tk 250 crore will be spent on rehabilitation of the unemployed people under a five-year livelihood development programme, the DFO added expressing his hope that the unemployed fishermen will get out of the crisis soon. In July 2017, the government issued a new notification on expansion of the sanctuary areas in different parts of the Sundarbans. With this
notification, another 178,260 hectares of land were added to the existing sanctuary, giving half of Bangladesh’s Sundarbans a sanctuary status. Of the additional 178260 hectares of sanctuary, 91,693 hectares are under Sundarbans East division in Sarankhola; 38,339 hectares under Sundarbans South division in Khulna; and 48,216 hectares under Sundarbans West division in Satkhira, said sources at the Forest Department. The government has banned the collection of forest resources from the sanctuary areas, aiming to help increase the biodiversity of the forest, including the wildlife and trees.

**West Bengal: Hilsa timeframe is here, but something is amiss**

https://cantoncaller.com/hilsa-season-is-here-but-something-is-amiss/155473/

The hilsa timeframe is here, but something is amiss about the succulent, silvery delight, without which no monsoon platter is complete. The fish has shrunk in size. About 60%-70% of the catch that reached Kolkata over the last three days weighs less than 500g. The smaller hilsas don’t quite taste like the adult ones, agree both buyers and sellers. About 500 tonnes of hilsa reached Kolkata from Digha and between Thursday and Saturday. It has pushed down the price a tad. A 500g hilsa is now selling for Rs 550-600.

While the supply has made fish lovers happy, the decrease in the size of the fish has come as a dampener. Wholesellers and fish experts believe indiscriminate fishing is responsible for the smaller hilsas the market this time. Secretary of Fish Importers’ Association said, “This trend started a few years ago with smaller hilsas being caught in large numbers. Over the years, despite laws banning netting of small fish, nothing has changed.” Hilsa supply had been scarce till this week. With import from Bangladesh stopped six years ago, Myanmar is the lone source. But the hilsa timeframe in Myanmar is from February to March. So the imported fish are stored for the local timeframe which begins in July. “The fish naturally loses freshness and taste. But this time, the Myanmar stock is exhausted,” said a retailer. It is illegal to catch hilsas weighing less than 500g.

A net size has been specified to ensure that the smaller ones are not caught. But lax enforcement of the rules has failed to price out indiscriminate fishing. Oceanographer Sugata Hajra, who has been part of several studies on the dwindling hilsa catch, said, “Hilsas are caught randomly in Bengal. Fishermen often break the rules. As a result, the fish are not able to grow. Also rampant fishing at the mouth of the sea has not spared those that are on the way to lay eggs in the rivers.” “This routinely happens every year,” he said. The average size of the hilsa will stay below 600g in Kolkata unless fishing rules are adhered to immediately, said a pisciculture analyst. “Adult hilsas swim into the rivers to lay eggs and swim back once the spawns attain a weight of around 300g. The only way out is to restrict the size of the fishing nets to ensure that smaller hilsas are not caught,” Hajra said.

**West Bengal: Sundarbans sanctuary expansion: Fishermen, woodcutters left in misery**
According to the Divisional Forest Officer (DFO) of the Sundarbans East Forest Zone a project costing Tk406 crore is underway to protect the Sundarbans and for those who have turned unemployed due to the extension of the sanctuary. A large number of fishermen and woodcutters, who depend on forest resources of the Sundarbans, are living in misery as they are unable to earn their livelihood due to restrictions in entering the forests. Many fishermen who live on fishing in water bodies of the Sundarbans have been restricted from entering the area. The Forest and Environment Ministry designated 73% of the Sharonkhola range of the Sundarbans as wildlife sanctuary and restricted the fishermen and woodcutters from entering the area without taking any measures for their rehabilitation. Al Amin, a fisherman from Charpara village of the upazila, said, "I had been earning my living from fishing in the Sundarbans since I was 15. I am looking after my family with loans from the mohajon (money lenders) as I couldn't fish in the forest for the last three months. Now the money lenders are forcing me to repay the loans...I have no clue how to repay them." Another fisherman, Mamun, said now fishermen have access to only 27% of the Sharonkhola range where only 200 to 300 fishermen can go fishing. As a result, the rest of the fishermen have lost work, and are living in misery. "After the sanctuary was declared, I went to Chittagong to earn a living but had to come back after working as a day-labourer for a week," he said alleging that teachers there refused to admit his children in the school as they were not permanent residents of the area, reports UNB. Jalal Molla, a fish trader of the Sharonkhali market, said he used to provide loans to fishermen and send them fish in the forest, but the trade is totally collapsing now.

Bachchu Munshi, a ward member of the Southkhali Union Parishad, said if the situation does not change many fishermen of the region will be forced to leave their village to find alternative work. According to the Divisional Forest Officer (DFO) of the Sundarbans East Forest Zone Md Mahmudul Hasan a project costing Tk406 crore is underway to protect the Sundarbans and for those who have turned unemployed due to the extension of the sanctuary. Under the project, Tk250 crore will be spent on rehabilitation of the unemployed people under a five-year livelihood development program, the DFO added expressing hope that the unemployed fishermen will get out of the crisis soon. In July 2017, the government issued a new notification on the expansion of the sanctuary areas in different parts of the Sundarbans. With this notification, another 178,260 hectares of land have been added to the existing sanctuary, giving half of Bangladesh's Sundarbans a sanctuary status.

Of the additional 1,78,260 hectares of the sanctuary, 91,693 hectares are under the Sundarbans East division in Sarankhola; 38,339 hectares under the South division in Khulna; and 48,216 hectares under the West division in Satkhira, sources in the Forest Department said. The
government, aiming to help increase the biodiversity of the forest, including wildlife and trees has imposed a ban on collecting forest resources from the sanctuary areas.

**West Bengal: 48 fishermen still missing in Bay**


At least 48 fishermen from Barguna and Patuakhali remained missing for four days since Thursday evening trawler owners and fishing community leaders expressed fears on Sunday that their fishing trawlers capsized in the Bay of Bengal during storm. They told New Age that 32 missing fishermen were from Barguna and 16 others from Patuakhali. Coast Guard officials told New Age that since receiving information about the missing fishermen from different places they launched rescue operations in the Bay. Barguna district Fishermen-Trawler Owners’ Association president Golam Mostafa Chowdhury told New Age that at least 32 fishermen on three boats from Kalapara, Barguna remained missing. He said that 11 fishermen were on Fishing Boat Tanjila, four on FB Arman and 17 on board the FB Maa. Quoting his organization members, he said that at least nine fishing boats capsized in the deep sea near Fairway Boya, Narkelbaria and Dubla during Thursday night’s storm.

He said that on Friday and Saturday fishermen rescued most of 99 fishermen floating in the bay 14 others from the channels passing through the Sunderbans. He said that some of the fishermen were rescued by the Coast Guard and the Bangladesh Navy. Mostafa said that contacted 39 fishermen who with their fishing boats were carried away to Kakdwip off India’s West Bengal coast. He said that they told him that they were safe and in good health. New Age Correspondent in Patuakhali reported that 16 fishermen from the district on board three fishing trawlers were missing. He reported that eight of the missing fishermen were on board the Fishing Boat Nur, seven on FB Swapan and one was on the FB Sajeda. They are from villages in Kalapara upazila, Patuakhali, said Alipur-Mahipur Fish Traders’ Cooperative Society president Ansar Uddin Molla.

The missing fishermen on board FB Nur are Nur Islam, 30, Shahjahan, 36, Khaleq, 50, Nur Jamal, 28, Shahidul, 30, Rasel 25, Harun, 55 and Sabuj, 40, said Md Monirul Islam of Kalapara, the owner of the fishing boat. The Cooperative Society president Ansar said that FB Sajeda was carrying 16 fishermen, 15 of whom were now at Pekuar Khal in West Bengal, India and the boat was missing with a fisherman. Coast Guard west zone staff officer for operations Lieutenant Zahid Al Hasan told New Age that all the five Coast Guard Stations in the Sunderbans were continuing the search for the missing fishermen.

**West Bengal: Microbe-based monitoring to conserve Sundarbans**

They may be microscopic in size, but bacterioplankton steer major carbon cycling and food webs in aquatic ecosystems. Bacterioplankton are the bacterial component of plankton that live in water bodies, including oceans and lakes. Now, scientists at the Indian Institute of Science Education and Research Kolkata (IISER Kolkata) are keeping an eye out for bacterioplankton and how they chow down and use carbon, in the world’s largest delta, the Sundarbans, to track changes in freshwater flow that could have implications for sustainability of coastal fisheries. Explaining the premise for this microbe-based monitoring, they reason that when environmental parameters change (such as influx of fresh or saline water), it throws the existing bacterial community structure into turmoil. This disturbance, in turn, shapes up how nutrients are broken down in the system and made available through the food chain to the organisms higher up in the web, such as fish.

Aiding the team in their observations is a time series, the Sundarbans Biological Observatory Time Series (SBOTS), which maps data monthly to pinpoint trends in the health of the Sundarbans ecosystem. “Understanding elemental cycling (such as carbon cycling) is a good way to understand the health of the ecosystem. I believe this is the only mangrove time series in India if not in Asia,” Punyasloke Bhadury of the Centre for Climate and Environmental Studies (CCES) at IISER Kolkata told Mongabay-India.

Spread out across 10,000 square km, Sundarbans, the largest single-track mangroves in the world, lies in the Ganga-Brahmaputra-Meghna (GBM) delta and is shared between India and Bangladesh. This mangrove ecosystem encompasses over 102 islands in the Indian side (in the state of West Bengal) with a network of innumerable rivers, rivulets and creeks. The study stations for the time series are located in the 223.4 square km Sagar Island, the largest compact island of Sundarbans that sits at the confluence of the Hooghly river (a branch of the Ganga) and the Bay of Bengal. The shrinking island lies 6.7 metres above sea level and is battling soil erosion, breach of embankments and loss of landmass and rising sea levels. “Based on our preliminary studies, we believe that freshwater flow in the Sundarbans (at Sagar) is now starting to change and these changes are now starting to show clearly through the level of changes happening at the bacterial community structures,”

Bhadury said on the sidelines of the international Land-Ocean-Atmosphere workshop. At this year’s workshop convened by Bhadury at the institute, it was discussed how understanding the land-ocean-atmosphere interactions aids in management of terrestrial and coastal resources nationally to maximise benefits to people’s livelihood as well as environmental protection. A key example of such dynamics, informed Bhadury and colleague Anwesha Ghosh, is the land-ocean boundary based coastal ecosystem in the Sundarbans, a region that experiences the third largest river discharge in the world through the Ganges-Brahmaputra-Meghna outflow. The Indian Sundarbans archipelago acts as the “nursery” for nearly 90 percent of the aquatic species of eastern coast of India. In Sagar, fisheries rank second after agriculture in terms of livelihood. Based on their research, the scientists say they now have some idea of how carbon cycling is
taking place in the system and that the system in Sagar Island is now “probably transitioning to a marine system from an estuarine system.”

“The reason why we set up monthly monitoring since 2010 in the time series is so that we have long-term data to determine the exact changes,” explained Ghosh. “What makes it more complex for the Sundarbans is that if you look at all the seven estuaries, each of them is very different. The freshwater inputs differ from the eastern part to the west. Eastern part of the Sundarbans are more protected (very minimal human interference) so the kind of nutrients you would see from anthropogenic sources is different than that you would see in the western part,” Ghosh said. Sustainability practitioner Anurag Danda, who was not involved in the study, emphasised on the variability across the estuaries. “Yes, at this location the system may be transitioning into a marine system but it may not be the case in Meghna estuary at the eastern extreme due to higher volume of freshwater flow,” Danda, senior advisor to WWF, told Mongabay-India. Tracking freshwater flow is important, said Danda, as deltas are highly sensitive to changes in freshwater flows.

“Progressive layering of sediment over time results in the build-up of delta land mass that will continue to build seaward — as long as rates of erosion do not exceed rates of sedimentation. Reduced freshwater flows reduce the rate of sedimentation thereby impacting the physical integrity of a delta. We are already witnessing this on the south western sea-facing islands in the Sundarbans,” Danda told Mongabay-India. Under rising sea level conditions, freshwater flows become even more important, he said. Reduced freshwater flows result in the saline front being pushed further inland and reduction in mangrove area because of man-made barriers to successful migration of mangroves. The man-made freshwater agro-ecosystem further inland also witnesses falling productivity due to increased soil and water salinity, he said. “In addition, there is a change in species composition on land and in water. This is not problematic by itself but the change could result in replacement of commercially important species by less important species,” he said.

The monsoon play Estuarine ecosystems, that form a transition zone from rivers to seas, receive nutrients from a variety of sources including riverine discharge. Ghosh says if you can track the microbial milieu and see what they are up to then you can monitor the health of the ecosystem. Bacterioplankton are indispensable regulators of global element cycles owing to their unique ability to decompose and remineralise dissolved organic matter. “You can track any biological parameter but bacteria are very good because they are present in huge numbers and they are very precise. The precision level in bacteria is tremendous. Besides, they provide information on the elemental cycling which is key to sustainable fisheries,” Bhadury said. But the bacterioplankton communities have a whole lot of issues to grapple with in the Sundarbans—seasonal changes in surface water temperature, heavy local rains during monsoon, continuous flow of freshwater from Ganga-Brahmaputra-Meghna riverine systems, daily intrusion of saline water from Bay of Bengal and dynamism of dissolved nutrients.
Seasonal influences such as increased freshwater flow during monsoon can flip the script on stability of estuarine microbes and thereby on nutrient cycling. “Increased freshwater flow alters prevailing environmental factors in coastal ecosystems and may lead to changes in bacterioplankton communities,” said study co-author Ghosh. “This area gets freshwater from the local rainfall from the south-west monsoon and also from the rainfall received in the upper reaches of the Ganga, Meghna and Brahmaputra rivers. All of these rivers have a long course and get a lot of rain in the upstream and if the water volume increases upstream, it also goes up in the estuary,” Ghosh observed. Monsoons have two kinds of effects. First, more nutrients become available due to river run off which comes from both upstream of the river and also from local inputs of nutrients. But at the same time, the nutrients are diluted largely due to increase in volume of water.

This increase also causes a flushing action which could decrease the overall time the organism needs to interact and break down nutrients into simpler forms. Further, as sediment is shaken loose and washed out due to the rains, a lot of nutrients in different forms enter the water from the land. “This change in mix of nutrients also influences the bacterial community structure. In addition, a lot of soil bacteria from the sediment shake-up is also pumped into the estuary water. This change in environment hampers the activity of the soil bacteria,” Ghosh explained. All of this happens very fast during the monsoons. “But post-monsoons these effects nullify and the system becomes more stable.

The steady supply of freshwater decreases and nutrients become more homogenous. Around December, the East India Coastal Current reverses pattern and brings in a lot of saline water into Sundarbans. Additionally, the surface water temperature decreases,” Ghosh said. So a bacterial population that is more marine in nature starts to emerge due to enhanced salinity. “We have shown that the system becomes completely dominated by the Vibrio (typically marine) in December,” Ghosh said. “In a stable estuarine environment where water stands for a longer time, if you look at the bacterial population, it has signatures of marine and freshwater and it has its own signature. This is because the plankton has enough time to get used to this intermediate salinity,” said Ghosh. In contrast when there is a diverse bacterioplankton community structure, the cycling of nutrients is very different when you have the system dominated by a specific set of organisms because this set of organisms would be using very specific nutrients. This hits the availability of food for the fish, she added.

The study said: “Drastic increase in sediment associated bacteria such as members of Firmicutes and Desulfovibrio was found in monsoon hinting possible resuspension of sediment-dwelling bacteria into the overlying water column. Principal component analysis (PCA) revealed dissolved ammonium and dissolved nitrate to account for maximum variation observed in the bacterioplankton community structure.” Overall, the study showed that a “strong interplay exists between environmental parameters and observed variability in bacterioplankton communities as a result of precipitation which can ultimately influence processes and rates linked to coastal
biogeochemical cycles.” A recent study that sheds light on water-related risks in the Sundarbans and policy alternatives, sheds light on concerns due to changes in salinity in the estuaries of the Indian Sundarbans.

The study states: “Owing to higher freshwater flows in the Hooghly estuary, salinity has decreased in that zone. As a consequence, fish species of low commercial value, particularly hilsha (Tenualosa ilisha), have increased significantly, but the commercially important taxa have become less abundant (Ghosh, 2015; Sinha, Mukhopadhyay, & Mitra, 1997). The situation is different in the central portion of the Sundarbans. Salinity has increased in that area because connections to meltwater sources have been eliminated by heavy siltation of the Bidyadhari Channel (Banerjee, 2013).”

**West Bengal: Fishermen forum writes to Nitin Gadkari: ‘Proposed merchant ship corridors a threat to livelihood’**


A fishermen forum in West Bengal has opposed the central government’s proposal to set up designated corridors along the west coast for merchant ships in a bid to avoid mid-sea collisions between fishing boats and ships. The Dakshinbanga Matsyajibi Forum (DMF) has submitted memorandums to Union Shipping Minister Nitin Gadkari, Defence Minister Nirmala Sitharaman and Director General of the Indian Coast Guard, Rajendra Singh, claiming that the move would jeopardise the livelihood of fishermen. The National Fish Workers Forum (NFF) — the parent organisation of the DMF — has also written to Gadkari in this regard. The forum said that the National Waterway 1, which runs from Allahabad in Uttar Pradesh to Haldia in West Bengal, is having an adverse effect on fishermen in the eastern part of the country. “Director General of Shipping (DGS) is in the process of setting up a traffic corridor for merchant vessels sailing India’s western seafront to prevent mid-sea collisions involving commercial ships and fishing boats.

The corridor will start from the Gulf of Kutch and the Gulf of Khambhat (Gulf of Cambay) down through the coast of Maharashtra, Goa, Karnataka, Kerala and till some distance beyond Kanyakumari in Tamil Nadu. The proposed corridor is 20 nautical miles (37.04 km) wide and about 15 nautical miles (27.78 km) away from the coastline,” said Debasis Shyamal, secretary of the NFF and vice-president of DMF. “If implemented, the proposed coastal traffic corridor will confine small-scale fishing communities within 15 nautical miles (27.78 km) from the coast. There will be a prohibited area of about 2,300 km in length and 20 nautical miles (37.04 km) in width. This would amount to an area of about 85,000 sq km of sea waters to be prohibited for fishing. This will endanger their livelihoods. Similarly, the NW-1 is also having an adverse effect on the livelihoods of fishermen in Eastern India,” he added.
Pradip Chatterjee, a senior member of the DMF, said fishing communities are not going to give up their right to fish. “We demand that the Merchant Shipping Corridor along the Indian coast be stopped and there be no infringement on fishing rights in coastal waters. There should be consultation with fishing communities first to contain the risk of collision between merchant ships and fishing boats,” he added.

West Bengal: Fish to reach home from rearing unit


A state-of-the-art fish rearing and retail facility is set to come up in Nalban near Nicco Park from the end of this month. The State Fisheries Development Corporation (SFDC) has already received funds from the National Fisheries Development Board to start the project. And as a bonus for residents of Salt Lake, the fish reared here will be sold in the township as a pilot project. According to Soumyajit Das, the managing director of SFDC, this is the first time that the central body is funding a project that will have a waterbody fed by sewage water. “They were very happy with our proposal and have released funds for the same. We will start work later this month,” said Das.

According to Das, unlike other fishery projects they will have fish hatcheries in Nalban. “They will be similar to hatcheries for chicken where we will raise the fish inside specially-curated waterbodies from fish eggs.” In most centres, SFDC would release fingerlings or small fish into the water and then raise them into bigger fishes. However, this time the body will create special pools with proper ambient temperature to raise fish from eggs. “This facility will encompass everything that is required for a modern fish breeding centre,” said Das. According to him, while home grown varieties of freshwater fish like Rohu and Katla will be reared Silver Pompano and Cobia will also be hatched here. At present, the SFDC has a fish hatchery project at Jamunadighi. The 10-hectare Nalban waterbody will be divided into sections where the fish will be reared.

“The Nalban waterbody is unique as it is a brackish water project where fish is reared in sewage fed pools of water,” said Das. Apart from the rearing of fish, the project will focus on direct marketing of the fish and the corporation has zeroed in on Salt Lake for doing the same. “We will get solar powered vans and sell the fish in the township,” Das said. According to him, everything on these vans will be powered by solar cells. “From the drive mechanism to the cooling unit fixed on the van, everything will be powered by solar cells that will charge the batteries on the go,” he said. Residents will also be able to order fish through Smartfish, an app launched by SFDC earlier this year to get fish delivered at their doorstep in fillet, dressed, dry or pickle form.

West Bengal: Climate adaptation remains neglected in the Sundarbans
When researchers involved Gauri Mondal, a woman farmer in the Indian Sundarbans, as a participant in a project to evolve adaptive strategies to counter the impact of climate change in the world’s largest estuarine mangrove forest, she had little idea what it was all about. By the third year of the study, Mondal’s income had risen to INR 40,000 (USD 550) a year by rearing poultry and adopting many other farming practices recommended by the researchers. “At that time, we used to rear 50 ducks and 50 poultry at a time, besides much else, with project support,” the 33-year-old subsistence farmer told indiaclimatedialogue.net. The good days, however, did not last. Once the project got over, she found that the costs of maintaining the newly taught practices were not sustainable. “I had to scale down the work,” she recounted.

“During the project, we received focused training from the experts. But after the project was over, neither the research team nor the Sundarban Development Board came back to us for any follow-up.” Such tales of hope and despair abound in the world heritage site of Sundarbans, which is already reeling under the impacts of climate change in the form of more turbulent seas, increasingly saline soil and violent cyclones.

The Sundarbans is the world’s largest contiguous mangrove forest and one of the most highly modified estuaries in the world. It has attracted a steady stream of researchers from home and abroad, but the outcomes and findings have often not been appropriately communicated to the subjects of the research or to policymakers. Fish production the Sundarbans is a case in point. In 2010-11, the Sundarbans produced nearly 40% of the combined fish catch in the inland sector of the North and South 24 Parganas districts of the state of West Bengal. Freshwater aquaculture, a significant driver of the local economy, is clearly threatened, and experts say the vulnerability of fishery-based livelihoods to climate change has increased over time. In 2013, India ranked third in the Global Climate Risk Index, a ranking of 170 countries that are most vulnerable to climate change, behind the Philippines and Cambodia.

Anthropogenic activities, together with climate variability, pose a serious threat to the biotic and abiotic integrity of the Sundarban delta. Climate-resilient aquaculture One of many research projects — Development of Climate Resilient Aquaculture Strategies for Sagar and Basanti Blocks of Indian Sundarban — was conducted by the West Bengal University of Animal and Fisheries Sciences (WBUAFS) between 2010-11 and 2014-15. Besides the university, which is an institution affiliated to the Indian Council of Agricultural Research (ICAR), other stakeholders included the Sundarban Development Board, West Bengal’s Department of Fisheries and Sundarban-based NGOs such as Paribesh Unnayan Parishad and Joygopalpur Gram Bikash Kendra and fish farmers of the surveyed area. The project aimed to develop climate-resilient aquaculture strategies for freshwater aquaculture against climate change induced salinity intrusion in the Sagar and Basanti administrative blocks, which fall under the...
high aquatic saline zone and are often exposed to climatic hazards. Both the blocks suffered heavily during Cyclone Aila in 2009.

When a survey report was published as the first official output of the project in 2012, S. Ayyappan, Secretary General of ICAR, expressed hope that “the benchmark survey… could prove useful in making policy and planning for the future aquaculture development programme for the Sundarban region.” After interactions with farmers, the researchers thought it was best to integrate aquaculture with livestock rearing and cropping. They tried out their model in the fields and ponds of farmers such as Mondal. The results were encouraging. The participatory mode research showed increased production and profitability, resulting in a 60% jump in farm cash incomes compared with pre-intervention levels. Better space utilisation, recycle of domestic waste, crop diversification and better manpower utilisation brought this turnaround. The testing of solutions in the two blocks affected by Cyclone Aila in 2009 and by increasing climatic variability in subsequent years was done by the study team for a three-year period.

Interventions in the farmers’ fields included raising of pond dyke heights and fencing of pond with nets, supply of various species of fish and partial supply of fish feed, supply of improved variety paddy seeds and other costs of paddy farming, supply of ducks, poultry, goats and their feed and building their dwelling places and supply of various salinity tolerant fruit trees and plants such as guava, mango, jackfruit, coconut etc. The research team also evaluated salinity tolerance of 17 freshwater fish species convenient for saline aquaculture in the Sundarbans, which was thought to be useful for integrated climate-adaptive farming. Disappointing follow-up The findings were disseminated through stakeholders’ meetings and reports were made to the Sundarban Development Board (SDB) and other relevant stakeholders. However, the project’s recommendations were not widely adopted, and policymaking and planning for a future aquaculture development programme in the Sundarbans never materialised.

“Unfortunately, things have not moved,” Raman Kumar Trivedi, Principal Investigator of the project, told indiaclimatedialogue.net. This was despite the fact that the Sundarban Development Board was a partner in this project. “Our process was elaborate and selection criteria included noticeable levels of vulnerability in the farmer, reasonable level of knowledge of aquaculture, technicalities of the surroundings of the ponds and presence of womenfolk who stood to benefit from the intervention, since women played an equal role in decision-making in the Aila-affected households. The board helped us in all this, giving us logistical support,” Trivedi said. “However, the next two stages — upscaling the solutions and policy-making interventions — was never in our hands.” The availability of institutional credit is poor in the Sundarbans and the research report had recommended that this be strengthened to facilitate climate-resilient agriculture.

During the project period, efforts towards capacity building of affected farmers and joining them up with locally situated government and non-government institutions was undertaken regularly.
But it was not enough to ensure continuation of those activities or improvement in the credit scenario after the project period. Anindya Sundar Ghosh, former Deputy Project Director of SDB who was a key person during the implementation of the project, admitted the lack of follow-up. “SDB provided logistics support during the project period,” he told indiaclimatedialogue.net. “After dissemination meetings were held and results announced to us, no livelihood support programme was evolved by correlating project findings with follow-up action.”

Lack of policy intervention The lack of policy intervention is only too evident in the Sundarbans. Although training has been imparted on climate-resilient aquaculture for the past two years, no other initiative is being carried out, admitted Abdul Gani, Special Secretary at the Sundarban Affairs Department. “We have no separate policy on climate-resilient aquaculture,” Gani said. “Policy formulations with respect to climate change are the responsibility of the climate cell of the Department of Environment.” The state’s officer-in-charge of climate issues in the Department of Environment admitted the lack of policy communication. “With respect to the Sundarbans or aquaculture practiced there, no study findings or policy suggestions have come to us,” he said. “As a matter of practice, we incorporate any suggestion from any department of the state government into the State Action Plan on Climate Change, which is due to be updated and released soon.”

In terms of scaling up such interventions, the responsibility usually rests with institutions that look after fisheries extension work. Normally, Krishi Vigyan Kendras (KVKs), which are affiliated to the ICAR, as also Fisheries Extension Officers at the Department of Fisheries are supposed to carry out this task. For this project, the best-situated institution to carry out this work was KVK Nimpith located in the Sundarbans. However, queries to the Subject Matter Specialist at KVK Nimpith, who was present at the stakeholder meetings during the project period, went unanswered, as he declined to comment on the findings of this study. “In terms of extension work, KVK Nimpith showed a greater emphasis on agriculture and horticulture, and less of an orientation towards fisheries. They also had a limited area of operation,” Trivedi said.

“Therefore, extension work related to the findings of our project has not been effective.” Sourabh Kumar Dubey, who was Senior Research Fellow at the WBUAFS during this project period and is now with the International Water Association, summed up the situation. “The ultimate outcome is project findings stay under the carpet. The fish farmer, researcher and policymaker have a clear disconnect, which results in non-implementation of project recommendations. Effective action on the ground to tackle climate change and develop adaptive capacity of the farmers is the final casualty.”

**West Bengal: Where erosion leads to land loss**

It’s a land-starved State, and between 1990 and 2016, West Bengal lost more to erosion. A report by the National Centre for Coastal Research (NCCR), under the Ministry of Earth Sciences, released recently said West Bengal recorded the maximum erosion of 63%, followed by Puducherry 57%, Kerala 45%, and Tamil Nadu 41%. Why is the State vulnerable? The coastal stretch of West Bengal, bordering Bangladesh and located on the eastern end of the Indian peninsula, is one of the largest deltaic regions of the world. The coastline has numerous rivers and the largest single block of tidal halophytic mangroves. The 534 sq km coastline of West Bengal, regularly hit by tides, tropical cyclones and storm surges, has suffered 63% erosion. Between 1990 and 2016, West Bengal lost 99 sq km land due to coastal erosion. The land gain in the State, due to accretion has been only 16 sq km. Sagar, the biggest island of the Sunderbans archipelago, which is home to almost 2 lakh people, is facing severe erosion on its western and south eastern parts.

Islands like Ghoramara and Mousuni are also facing erosion. The same trend has been observed at Jambudweep Island and Henry Island in the Sunderbans. Other than the natural process, like storms and sea level rise, anthropogenic issues like aquaculture, port construction and other developmental activities also lead to coastal erosion, say experts. What will be the impact? West Bengal is a land-starved State with the fourth highest population in the country. It is also the second most densely populated State. According to the 2011 census, 1,029 people live in each square kilometre of West Bengal. The Sunderbans, which comprises most of the coastline in the State, has about 1,000 people living per sq km.

The loss of more than 80 sq km of coastal land puts further pressure on the population of the island, who are dependent on economic activities centred on the coastline. This stress leads to migration from these coastal areas and islands. Researchers call the people moving out of the Sunderbans “climate change refugees.” The erosion of coastal areas, coupled with climate change, is a major cause of migration from the Sunderbans, which is one of the most backward regions of the State. Reports say that of the 1,000 inhabitants of the Sunderbans, 190 eat just one meal a day and 510 are malnourished. The extent of migration can be gauged by a recent publication of the School of Oceanographic Studies, Jadavpur University, which said 75% of the people living on the island are dependent on remittances from outside. According to NCCR researchers, the report on the national survey of coastline will provide inputs for framing policies to address the stress of the people residing in coastal areas, especially in the Sunderbans.

Is it happening only in Bengal? Coastal erosion has been noticed in nine States and two Union Territories. The NCCR report said 34% of India’s coastline underwent varying degrees of erosion during the period under consideration, and 28% of the shoreline showed accretion and 38% of the country’s coastline remained stable. A State-wise analysis of the coastal erosion suggests that more than 40% erosion was observed in four States and Union Territories. The report states that the west coast has relatively been stable with erosion in minor pockets like Kerala. In the west, 48% of the coastline is stable, whereas only 28% of the eastern coast has
been deemed stable. When it comes to accretion, States such as Odisha (51%) and Andhra Pradesh (42%) recorded the maximum gain owing to coastline changes. Goa and Maharashtra have the most stable coastlines in the country.

**West Bengal: Unused waterbodies to be utilised for fish production**


Bengal government is chalking out a comprehensive road map in order to utilise all the unused waterbodies across the state for fish farming, thereby increasing the overall fish production in the state, state fisheries minister Chandra Nath Sinha said. He was speaking at 'Fisheries Conclave: Maximising Production and Ensuring Safety' organised by the Confederation of Indian Industry (CII) at a city hotel on Tuesday. Bengal has the potential to overtake Andhra Pradesh in fish production within the next couple of years, the minister said. If we could utilise the unused waterbodies in the state for pisciculture through more scientific intervention, Bengal will surpass Andhra Pradesh in the near future. A lot of initiatives are being taken to educate people involved in fish farming.

Our department is formulating a road map to increase fish production in the next couple of years," Sinha said. Bengal has exported around 1.7 lakh metric tonne of fishes abroad including 70 thousand tonne of shrimps. Last year, the overall fish production in the state remained at 17.42 lakh metric tonne, while the fisheries department has set a target to increase the productivity up to 18.5 lakh metric tonne in the next year. According to sources at the fisheries department, around 15 percent of waterbodies in the state have been lying unused. If these waterbodies could be used for pisciculture, fish production would be manifold.

It may be mentioned that Chief Minister Mamata Banerjee has said Bengal will be self-reliant in case of fish production. Banerjee's brain child 'Jol Dhoro, Jol Bhoro' project has significant contribution towards the increase in fish production in the state in the past few years. The Fisheries department has developed Moyna in Purba Medinipur district as Bengal's largest fisheries hub, following instructions of the Chief Minister to cut down on fish imports from other states. A stress has been given to increase the productivity of small fishes as well. Steps have also been taken to use ponds for cultivating small fishes twice in a year. A study has been conducted to examine what species of fishes can be produced in which aquatic conditions in the districts, Sinha said.

"We are trying to increase the production of prawns in the districts. Our department is setting up hatcheries in various places and fingerlings are being distributed among farmers by our department for free," Sinha said. Soumyajit Das, Managing Director, the State Fisheries Development Corporation (SFDC) Ltd said farmers training, application of scientific food and medicine have been given utmost importance to maximise the production. Ravi Inder Singh,
Principal Secretary, department of Fisheries said steps have been taken to strengthen cold chain management in the state. Focus is on creating infrastructure in production and exports of fishes, he added.

**West Bengal: Chalks out road map to turn to modern ways of farming and fishing**


The West Bengal Fisheries Department is on course to reach 18.5 lakh-tonne production target in 2018-19, Fisheries Minister Chandra Nath Sinha said today. Sinha, who was addressing a CII Fisheries Conclave here, said the state government has chalked out a five-year road map to instill awareness and proper education among the fishermen to go for scientific and modern ways of farming. "In 2017-2018, we managed 17.4 lakh-tonne productions of fish. But, we need to raise the production level by several notches in another five years. We need to encourage fishermen to shift to a more modern and scientific way of pisciculture. We need to maximize use of ponds in rural areas," he said. Sinha said 1.7 lakh tonnes of fish were exported in 2017-18, including the volume sold to other states in the country. "We have the potential to substantially increase the volume of exports, too, in another five years." He said many ponds in rural Bengal have not been properly used, due to factors like one water body having several owners for years and sticking to traditional fish farming.

If these can be sorted out, there will be better utilization of ponds for pisciculture and water bodies can be more economically viable, he said. Sinha said the department was planning to increase farming of endangered species of fishes, including starting rearing of small fishes in water bodies by local fishermen. "We are giving more stress on high-yield aqua farming and adopting modern marketing ways," Managing Director of State Fisheries Development Corporation Ltd (SFDC), Soumyajit Das said. He said the SFDC was developing a cold chain network system to store fishes and has introduced a mobile app for customers in the city for delivery of fish. Meanwhile, a CII official said a white paper will be prepared on ways to facilitate loans to fishermen and introduce insurance facilities, on the lines of crop insurance to farmers.

**West Bengal: Fisheries Department aims 18.5 lakh tonne production in FY19**


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West Bengal: DMF objections to MoEF&CC notification amending CRZ-2011 admitted by NGT for hearing

On 2nd July 2018, the Ministry of Environment, Forest and Climate Change (MoEF & CC) had come up with a notification No. S.O. 3197(E) dt. 2nd July 2018 stating, inter-alia, that the regulatory regime of Coastal Regulation Zone (CRZ) Notification 2011 is being removed from areas between the Hazard Line and 500 m landwards from the High Tide Line in case of coastlines as well as from areas between the Hazard Line and 100 m in case of tidally influenced water-bodies. This notification was passed despite the process of calculation & demarcation of Hazard Line being an ongoing one pursued by the MoEF & CC along with the Survey of India and without any public hearing/consultation. Furthermore, this change was thus effected despite the fact that consultation process has been ongoing for a draft CRZ Notification 2018 passed by the same Ministry which also address, inter alia, the same Hazard Line issues and considerations.

The MoEF&CC Notification dated 2nd July 2018 has been challenged by the Dakshinbanga Matsyajibi Forum (DMF) through an Appeal (Number 4 of 2018) placed before the National Green Tribunal (NGT), Eastern Zonal Bench at Kolkata. The same was heard by the L/d Justices of the Tribunal on 27th August 2018 through Video Conferencing. In course of the Hearing, the L/d Justices, in appreciation of the seriousness of the issue, decided to have the matter heard by a
Higher Bench, being the Bench of the Chairperson, National Green Tribunal, also through Video Conferencing. The L/d Justices also directed the MoEF&CC to also place their views on the objections raised by DMF before the same Bench. The date of the next hearing, before the Chairperson's Bench, has been fixed on 18th September, 2018.

West Bengal: No stopping abduction in Sundarbans


As many as 274 pirates of 26 gangs have surrendered to the law enforcement in the last two years, choosing to make a return to normal life. Over hundred have been killed in [gunfights] while around 500 have been put behind the bars. Yet, the situation has hardly improved, with new gangs joining the old ones in terrorising the Sundarbans. Over 50 fishermen were abducted by these gangs in the last three months and locals say the terror cannot be contained if the masterminds are not brought to book. Some pirates are taking the advantage of the 'surrender scheme', planning to make some money by being a pirate and then returning to normal life by surrendering to the law enforcement. Forests department sources say the pirates cause problems all the year round as October to February is the season for shutki (dried fish), April to September is the time for hilsa, honey and wax while the other parts of the year mangrove palm collectors remain busy to make their ends meet.

The pirates are merciless; they throw fishermen and other people dependant on the forest if the ransom is not paid. Locals say they mostly meet the pirates' demands without letting anyone know, to avert further problems. Previously 25-30 gangs were active in the Sundarbans. In the last two years, RAB-8 and RAB-6 gave them the chance to return to normal life. The official initiatives resulted in the surrender of 274 pirates of 26 gangs with huge firearms and ammunitions. However, a few new gangs are now being created while the older ones getting more ferocious. Abul Hossain, president of a local platform of the fishermen, said to Prothom Alo, "The number of abduction has gone down since a good number of gangs had surrendered. However, it has not stopped.

The law enforcement, especially RAB-8, and Jamuna TV's special correspondent Mohsin Ul Hakim played a significant role to this end. But the patronisers who supply them arms or provide them with money, should be brought to book, at any cost." "It will be better if RAB and the Coast Guard work together," he added. Major Khan Sajibul Islam, deputy commander of RAB-8, said, "We hope to bring the masterminds to book soon and free the Sundarbans and the coast from pirates."

West Bengal: North Bengal fishing communities to claim right to water

Representatives of fishing communities from Coochbehar, Jalpaiguri and Dakshin Dinajpur districts held a consultation for two days in Siliguri to consider their livelihood issues and draw a
strategy action plan to protect fish workers livelihood rights in North Bengal. They were joined by Dakshinbanga Matsuajibi Forum (DMF) leaders Pradip Chatterjee, Milan Das and Ambia Hossain alongwith Office Bearers of DISHA Sasanka Dev, Shyamalendu Biswas and Supratim Lahiri. The meeting was convened by Anirban Choudhury, Convener of UMF. The meeting started with welcoming address by Anirban Choudhury followed by self-introduction of participants. Pradip Chatterjee spoke about the need to get organised and raise united voice to 'Save Water, Save Fish and Save Fisher People'.

Fishing communities can challenge the age old deprivation and neglect only by getting themselves organised he said. He mentioned the need for national policy on inland fisheries that would link up with national water policy and prevail over all development planning that affect water bodies, fish resources and livelihood of fishing communities. He also presented a brief description of the struggles and achievements of DMF and the newly formed National Platform for Small Scale Fish Workers (Inland). He urged upon the fishing community representatives to work hard for a united organisation of fishing communities in North Bengal which will link up with DMF and the National Platform and muster formidable strength. The consultation, held on 18th and 19th August 2018, first took stock of the situation with fish workers' livelihood in North Bengal.

One after another, the fish workers' representatives, came up with annals of deprivation and neglect of a community that supplies the society with cheap and widely available animal protein in the form of fish, a community that cares for water and tries to protect water bodies as repositories of fish resources. Stories of their loss of livelihood intertwined with that of extinction of rivers and wetlands due to pollution, water diversion and encroachments. They lamented indiscriminate interventions on watersheds through constructions of roads, railways, buildings that lacerated both catchment and drainage channels resulting in intermittent overflowing and drying of water bodies.

They also raised their concern about eschewing lease rents of both public and private water bodies that are making it impossible for small scale fish farmers to access those resources. They spoke about increasing usurpation of water bodies by a new breed of entrepreneurs who are taking over not only private water bodies by paying higher lease rents but also public water bodies through open bidding system introduced by the government. They also mentioned urgent need of reforming primary fisheries cooperatives, most of which are either non-functional or have been usurped by people with vested interest. Last but not the least, they unanimously complained about rampant malpractices in distribution of Government assistance for fish workers and raised burning need for transparency. In depth interactions and discussions among participants on important livelihood issues of fish workers led to an overarching conclusion - The root cause of the present day wretched condition of fishing communities lies in the lack of their rights on water.
The meeting resolved to raise the following demands - Give titles of water bodies to fishers and fish farmers; - Provide security of tenure to fish farmers on private water bodies - stop eviction, introduce regulated increment of rent; - Stop auctioning of water bodies - livelihood of fishing communities cannot be auctioned; - Prohibit entrepreneurs from taking over water bodies used by fish farmers; - Provide each fish worker with government Identity Card; - Provide each fish workers with comprehensive social security; - Stop malpractices in distribution of government assistance - maintain full transparency. The fishing community representatives decided to convene district level meetings of fishing communities to prepare district level charter of demands through interactions with more fishers, fish farmers and fish vendors. They also decided to collect more memberships and submit memorandum of demands to district authorities.

**West Bengal: 40 deaths in 2 months force Bengal govt to frame guidelines for fishing trawlers**


The deaths of 40 fishermen in three incidents of trawler capsize in the Bay of Bengal in a little over two months have prompted the West Bengal government to formulate guidelines for fishermen, trawler owners and operators. Fisheries minister Chandranath Sinha said the guidelines will include identification of certain “safe shipping routes” that will have to be mandatorily followed by trawlers and non-mechanised boats. The administration will also be strict about the use of life-jackets for all abroad these vessels that go out to fish in the coastal waters of Bengal. “The trawler owners and trawler in-charge will be held accountable on this count,” the minister said. According to the records of the state fisheries department, around 10,000 trawlers and boats set out for deep-sea fishing from the three harbours of Namkhana, Fraserganj and Kakdwip. Of these around 5,500 are trawlers and the rest are non-mechanised boats.

A fisheries department official, who did not wish to be named, said that the marine division of the department has identified certain routes where most of the trawlers have capsized. “These routes are mainly adjacent to islands like Kendo and Jambu islands. These routes will marked as unsafe and buoys will be anchored at these points to warn vessels,” said the official. According to the president of West Bengal United Fishermen Welfare Association, Bijan Maity, every year mishaps take place during this time of the year when thousands of fishermen go out to the deep-sea braving choppy waters to catch Hilsa, a fish favourite of most of the Bengalis. “Some precautions and restrictions need to be imposed to prevent such mishaps. Let us wait and see how the measures announced by the department work out,” said Maity. The Mamata Banerjee administration pays Rs 2 lakh compensation to the families of fishermen who die in incidents of trawler/boat capsize.
West Bengal: Trawlers return with 500 tonnes of hilsa


Bengalis can look forward to a scrumptious Hilsa lunch on Independence Day with retail prices of their favourite fish set to dip on Wednesday, thanks to Tuesday’s 500-tonne haul, the largest catch this season, at Digha and Diamond Harbour, the two key fishing harbours. Fishermen returned overjoyed early on Tuesday. In fact, with trawlers returning with 300 tonnes of hilsa at Diamond Harbour on Monday, retail prices plummeted by Rs 200 a kg at Lake Market, Gariahat, New Market and College Street Market on Tuesday itself. While Diamond Harbour recorded a catch of 400 tonnes, 100 tonnes were offloaded at Digha.

The catch marked a turnaround from market depression as bad weather kept fishermen off the sea for more than half the time this fishing season. “The ideal weather for a good hilsa catch is cloud cover with slight drizzle, along with an easterly wind. We didn’t get it even on days we could go to sea,” said Shyamsundar Das, Digha Sankarpur Fishermen and Fish Traders’ Association president. Bijon Maity, West Bengal Fishermen’s Association joint secretary, said, “Ideal weather for a good hilsa catch pushed down prices of hilsas, weighing 500gm-900gm.”

West Bengal: Tiger prawns collected by women of the Sundarbans are a global delicacy, but collectors remain a neglected lot


The next time you order tiger prawns at a fancy restaurant, spare a thought for Asharani Mondal and her 12-year-old daughter. They are two among the nearly two lakh faceless women who collect prawns in the Sundarbans, enabling diners the world over enjoy this high-priced delicacy. Wading out at the crack of dawn in waist-deep saline water, a fishing net slung over her shoulder and her daughter swimming behind her, dragging the net to catch tiger prawn seedlings they call "meen", the 30-year-old is the sole breadwinner of her family, comprising an ailing husband and two children. Asharani has been a prawn collector for five years now. Every time they head out for their work, Asharani and her daughter risk encounters with crocodiles and tigers lurking on the waters' edge in the swamps of the Sundarbans — a cluster of tiny islands in the southern fringes of West Bengal's 24 Parganas district with a population of 45 lakh.

They also risk illnesses such as skin cancer, vaginal infections and bone- and knee-related health issues from wading in highly saline water for around six hours every day. Asharani's neighbours Pratibha Das, 23, Bhadrosree Mondal, 60, and Champa Mondal, 17 — to name a few others — are all in the business of collecting prawn seedlings. Some of them have been in this line of work for 40 years now, earning Rs 300 to 400 a day. They use age-old knowledge of climatic
conditions, the nature of the tide and the swirling water flow, which indicates which parts of the river would provide a decent catch. "We just pray for low tide as during this time, we get more prawn seedlings," Asharani said. "We eagerly wait for purnima (full moon) and amavas (new moon) days that mark the waxing and waning cycle of the moon. Collecting seedlings during these times brings us maximum catch."

These women also make their own lightweight nets, or jaals. "It costs us around Rs 1,500 to Rs 2,000," said Pratibha. "We use lightweight jaal as collecting meen is a laborious and painstaking exercise. We even go out after dinner at times." Plethora of health issues, no hospital nearby. Sitting on the dinghy or canoe, Asharani talks about the health problems caused by spending long hours in saline waters and mud. "I feel a constant burning sensation in my body," she said. "I also face certain gynaecological problems." Nearly all women in every household of the 45 blocks in the remote Sundarbans is involved in collecting tiger prawn seedlings. There is only one sub-divisional hospital 25 kilometers away from Basanti village, where Asharani and the others live, that they can visit for treatment. "I get sea fatigue and nausea, my limbs become motionless and numb at times. I also have to do the cooking, take care of my ailing husband and send two children to primary school.

All of it takes a toll on my health," Asharani lamented. "Hundreds of people queue up for treatment at a small hospital that does not have proper equipment for checkups. The medical staff usually gives me painkillers. There is no permanent relief as healthcare officials are not experienced enough to treat our diseases. Women and children are always at the receiving end." Sharp drop in seedling prices "Meen dhora", as they call the practice, was once profitable. The price of a thousand seedlings, which was Rs 600 till two years ago, has dropped to Rs 200. But due to the lack of alternative means of earning and in the absence of an effective government programme to support them, these women are left with no choice. "In my more than 40 years of association with this work, I have seen the plight of family members of women who were killed by crocodiles while netting fish," said Bhadrosee Mondal.

"Neither the government nor anyone else thinks of us. People only express pity." Bikarna Naskar, who runs NGO Surojyoti Sangha — the only NGO in the area that work on the education of the fisherfolk's children — explained that landless communities that had "struggled to eke out livings elsewhere" had made the Sundarbans their home. "Fishing became the only choice for them, but fishing in the creeks running through the mangroves exposes their lives to risks, with the female fishing community the most vulnerable," he said. "(West Bengal Chief Minister) Mamata Banerjee speaks of Kanyasree and Rupasree for the uplift of girls, but these are all a bluff. My NGO took up women's issues with the government but to no avail. The primary health centres at the village are run by quacks who have little knowledge about treating their diseases. The state government's efforts are limited to only announcing grand schemes."
The Assessment of Ergonomic and Occupational Health-related Problems was a study carried out among the female prawn seed collectors of the Sundarbans on 60 randomly selected women in the profession and 60 female control subjects from the Sajenakhali and Sandeshkhali blocks. The study was carried out to evaluate and compare musculoskeletal disorders and physiological stress. It was found that most participants suffered from discomfort in the lower back (98 percent), knees (88 percent), shoulders (75 percent), ankles (70 percent) and feet (67 percent).

Also, a 2013 study conducted in the Patharpratima block by the National Institute of Cholera and Enteric Diseases and international NGO Save the Children found that as much as 64 percent of the women in the Sundarbans were anaemic. Middlemen make a killing. The biggest irony here is that bagda, or tiger prawns, are a big-ticket export item, earning West Bengal Rs 1,500 crore in foreign exchange. Sundarbans has the highest concentration of prawn hatcheries, and the middlemen who buy seedlings from these women make a killing.

The seedlings these women collect are cultivated for four months, during which they grow before being sold in the wholesale markets of Canning, Barasat and Dhamakhali. The prawn collectors separate the tiger prawn seedlings from other tiny fish and collect them in small vessels. The remaining seedlings are dumped. Tiger prawns from the sea lay their eggs at embankments and at the roots of mangrove trees. When the eggs hatch, the tiny micro-seedlings are caught in fine nets and taken to hatcheries, and these tiger prawns fetch up to Rs 1,000 per kilogram in the market. Debabrata Mondal, a social worker and associate of Naskar, said the government has not carried out any in-depth investigation into the health hazards these women face. Environmentalists, too, have been raising this concern. "Nowhere in the world will you find such a community of the poor and suffering female fishing folk," said Santanu Chakravarty, an environmentalist and an expert on the ecology of the Sundarbans.

The organisation head of local fishermen, Malay Das, said his association has raised the issue with the government in vain. Even though the government created a department to deal with the affairs of the Sundarbans, with a minister in charge of taking care of the developmental needs of the delta, little has changed for these fisherwomen. The tigers of the Sundarbans get more attention lavished on them.

**West Bengal: Govt imposes ban on catching young hilsa**


The West Bengal Government is now implementing strict rules on the catching of young hilsa. The activity is already banned in Bangla; however a few fishermen continue to do so. The issue with this is that catching the young fishes deprives people of getting eat the adult fishes, which are much tastier. It’s a loss for fish-sellers and cultivators as well, because the big fishes garner much higher prices. It has been determined by experts that April 15 to June 14 is the period when
most hilsa in India lay eggs. Hence these 60 days comprise the ban period, as determined by the Government of India – when catching hilsa in both rivers and seas is banned. Catching of the young fishes has been increasing over the last few years because of the increased demand. To cater to this demand, the State Fisheries Department has been increasing the rearing of hilsa. Also, more and more fish cultivators are being given incentives to cultivate hilsa.

West Bengal: Accidents at sea: Condoles death of 33 fishermen demands urgent administrative measures In past few days a spell of disaster and gloom has descended upon the deep sea going fishermen communities of West Bengal and Odisha. From 16th to 31st July 2018 4 fishing trawlers have capsized in the coastal waters of West Bengal killing 27 fishermen. In Odisha 6 fishermen have died. Extremely inclement weather and rough sea with cyclonic wind induced by a depression in the Bay of Bengal has, beyond doubt, been the direct cause of the disaster. But the disaster, by its sheer magnitude, has thrown up some basic questions - A. It is reported that fishing trawlers ventured into the sea in spite of repeated warnings issued by the Department of Fisheries.

Why the trawlers violated the warnings? Is there any administrative mechanism to prevent fishing vessels from going to the sea after warning is issued? B. Did the boats have adequate numbers of life saving jackets on board? If not, why? The fishing vessels procure license on production of purchase receipts of life jackets. Were the receipts submitted by trawler owners genuine? Or, they were not taken on board in spite of procurement? C. Were the capsized trawlers sea worthy? Is there any administrative mechanism for regular check up of the trawlers. D. What amount of life insurance cover has been due to the crew of the trawlers? Does the owners bear any responsibility towards insurance cover of the crew of their vessels? The answers to the above expose the extreme lawlessness and administrative lapse prevailing in the mechanised fishing sector.

The owners of the trawlers are saying that the crew members had ventured into the sea in spite of asking them not to go. Which is, in all probabilities, not true. The crew does not have the power to defy the order of the owner. Actually the owners need fish to make a profit and the crew are paid by percentage of the sale proceeds of the catch. So the economic interest provokes them to go to sea defying warnings. The Administration says that they are helpless, they cannot prevent a trawler from venturing into the sea. This too is not true. The trawlers operate from fishing harbours. Fishing harbours are owned and run by the Department of Fisheries. It is criminal negligence on their part if they do not close the harbours even after warnings are issued. The boat owners say that they had bought life saving jackets for the crew but the crew did not take those on board.

Actually, the boat owners have to show receipts of purchase of life jackets while procuring license from the authorities. There is a tendency to show fake receipts and there is no system of
verification. There is no system of checking whether the boats are actually carrying life jackets or not. The Administration does not even make random checks; they say that they lack manpower. There is also no system to check whether the trawlers are seaworthy or not. It is another criminal negligence on the part of the administration to issue licenses to the trawlers without verifying their seaworthiness. The fish workers on board have very low insurance cover for their lives, though deep sea fishing is considered as one of the most hazardous jobs in the world. Thus, more often than not, the families of deceased accident victims lack minimum provision to pull through.

The Fisheries Department has a provision of providing Rs. 2 lacs to each family of the deceased and every fish worker on board has to show that he has a personal accident insurance cover of at least Rs. 1 lac. The owners of the fishing vessels bear no responsibility towards this. One very important observation in this regard is that though India is a signatory to the ILO 188 Convention in the Work in Fishing, which has now been globally ratified, no initiative is observed till date to implement its provisions for occupational safety of fish workers. Another observation is this that the fishermen associations for the mechanised fishing sector are actually associations of boat owners and not of common fish workers who work on board. As such the common fish workers lack the capacity to voice and address their problems. This results in almost absolute lawlessness in the sector.

No written agreement with or appointment of workers who work on board, irregularities in payment, occupational entitlements including safety measures, health and life insurance covers. In view of the above Dakshinbanga Matsyajibi Forum (DMF) demands - - Immediate rescue of lost fishermen. - Immediate payment of Rs.10 lacs by the Government to the families of the deceased. Henceforth every sea going fisherman will have to be provided with an insurance cover of Rs. 10 lacs each to be made jointly by the Fisheries Department and the boat owner at the time of issuing license. - Cancellation of license of the fishing vessels that went for fishing defying weather warning. - Effective closure of harbour once weather warning is issued not to go for fishing in the sea. - Cancellation of the license of the fishing vessels which did not / do not have sufficient numbers of good quality life saving jackets on board while fishing.

Enforcing keeping of sufficient numbers of good quality life saving jackets on board through sudden random checks and cancellation of license of erring vessels. - Putting in place a system of checking sea worthiness of the fishing vessels while issuing license for fishing. - Coast Guard and coastal police are to be on high alert once weather warnings are issued, they should have the capacity for rescue operations under inclement weather. - All deep sea going fishing vessels should have installed mechanism for auto transmission of signals to detect their location - it is necessary for both prevention from fishing during inclement weather and rescuing. - Implementation of provisions of ILO 188 Convention in Work in Fishing.

**West Bengal: New initiatives to increase Boroli fish production**
The Fisheries Department is going to cultivate Boroli fish in a big way. This tasty fish is endemic to the rivers of north Bengal but over the years, for various reasons, the numbers have dwindled. To solve the problem of numbers, the Fisheries Department has devised a process to cultivate the hatchlings in lakes. A special hatchery is being constructed in Tufanganj-1 block of Cooch Behar district for the purpose, at a cost of Rs 22 lakh. More such inland hatcheries would be set up both in Cooch Behar and Jalpaiguri districts, the work for which had started last year. After growing big enough, the fishes would be released in batches in the waters of the Teesta and Torsha, the traditional homes of the fish.

West Bengal: Hilsa fish reaching Kolkata shrinking in size

The season of Hilsa is here, but something is amiss about the soft, succulent, silvery delight, without which no monsoon platter is complete. It has shrunk in size. Hilsa supply has been scarce till this week. With import from Bangladesh having stopped six years ago, Myanmar is the lone source. But the Hilsa season in Myanmar is a different one – February-March. As a result, the imported fish are stored for the local season, which begins in July. “The fish naturally lose freshness and taste. It cannot be compared to the fresh catch that comes from Digha, Frazerganj or Sunderbans. But this time, the Myanmar stock is exhausted so the fresh supply is only source. But it will leave a bad taste in the mouth for most,” said a retailer.

West Bengal: Flouting rules, fishermen flood markets with smaller hilsas

The hilsa season is here, but something is amiss about the succulent, silvery delight, without which no monsoon platter is complete. The fish has shrunk in size. About 60%-70% of the catch that reached Kolkata over the last three days weighs less than 500g. The smaller hilsas don’t quite taste like the adult ones, agree both buyers and sellers. About 500 tonnes of hilsa reached Kolkata from Digha and Diamond Harbour between Thursday and Saturday. It has pushed down the price a tad. A 500g hilsa is now selling for Rs 550-600. While the supply has made fish lovers happy, the decrease in the size of the fish has come as a dampener.

Wholesellers and fish experts believe indiscriminate fishing is responsible for the smaller hilsas flooding the market this time. Secretary of Fish Importers’ Association Anwar Maqsood said, “This trend started a few years ago with smaller hilsas being caught in large numbers. Over the
years, despite laws banning netting of small fish, nothing has changed.” Hilsa supply had been scarce till this week. With import from Bangladesh stopped six years ago, Myanmar is the lone source. But the hilsa season in Myanmar is from February to March. So the imported fish are stored for the local season which begins in July. “The fish naturally loses freshness and taste. But this time, the Myanmar stock is exhausted,” said a retailer. It is illegal to catch hilsas weighing less than 500g.

A net size has been specified to ensure that the smaller ones are not caught. But lax enforcement of the rules has failed to check indiscriminate fishing. Oceanographer Sugata Hajra, who has been part of several studies on the dwindling hilsa catch, said, “Hilsas are caught randomly in Bengal. Fishermen often break the rules. As a result, the fish are not able to grow. Also rampant fishing at the mouth of the sea has not spared those that are on the way to lay eggs in the rivers.” “This routinely happens every year,” he said. The average size of the hilsa will remain below 600g in Kolkata unless fishing rules are adhered to immediately, said a pisciculture (fish farming) expert. “Adult hilsas swim into the rivers to lay eggs and swim back once the spawns attain a weight of around 300g. The only way out is to restrict the size of the fishing nets to ensure that smaller hilsas are not caught,” Hajra said.

**West Bengal: Search continues for four missing fishermen**


The bodies of 15 fishermen, who had been missing since three trawlers capsized on the Bay of Bengal on July 16, were recovered on Sunday after a search by the coast guard and fisheries department officials. Search is still on for four other missing fishermen. The adverse weather condition have been forcing fishermen to return from the deep sea from the very beginning of this season. On July 16, three trawlers in which fishermen had ventured out in the sea for fishing, capsized. Seventeen fishermen from one of the trawlers were rescued. The trawler, however, is yet to be found. But another 19 fishermen, who were in the other two trawlers went missing. One of the two capsized trawlers have also been found.

The victims are all residents of Kakdwip and Frasergunge areas. Bijan Maity, secretary of West Bengal United Fishermen Association said search by the coast guard and fisheries authorities have been going on for the past one week to trace the missing fishermen. “The bodies of 15 fishermen were recovered and search will go on to trace the rest of missing fishermen,” he said.

**West Bengal: Fishermen had not received any weather alert**

[https://www.telegraphindia.com/calcutta/eight-fishermen-found-dead-246280](https://www.telegraphindia.com/calcutta/eight-fishermen-found-dead-246280)
The bodies of eight fishermen, who went missing after three trawlers capsized in the Bay of Bengal on Tuesday, were fished out from the sea on Thursday. Nineteen fishermen had gone missing on July 16 after the trawlers capsized. One of the three trawlers was found on Thursday with a fisherman's body on board. Another trawler was found broken and the third is yet to be traced. The India Coast Guard, which carried out the search operation, handed over the bodies to the fishermen's association in Kakdwip. Bijan Maity, the secretary of the association, said eight of the seven of the victims had been identified. All of them were from Namkhana. Kuldip Singh Sheoran, the inspector general of the Coast Guard's north-east region, said fishermen had been advised not to venture into the deep sea because of the inclement weather and choppy sea conditions.

A Met official said the alert message had been issued on July 15, a day before the fishermen ventured into the sea ignoring the warning. "The alert has not been withdrawn," he said. Maity, however, said the fishermen had not received any weather alert. "The advice has come after the trawlers capsized," he said. A member of the fishermen's association said this was the peak season for hilsa. "If they feel the sea is safe, we will not be able to stop them. Their families survive on their catch," he said. Around 250 trawlers left from Kakdwip, Namkhana and Frazerganj on July 16. Witnesses to the capsize have said that the sea had been calm on Tuesday morning but became choppy around 1pm. The fishermen who survived admitted they had no option but to watch the capsize. "We were helpless. Had we tried to go near them, we would have met with the same fate," a fisherman told police.

A Coast Guard Dornier aircraft from Calcutta and a ship are continuing the search for the remaining fishermen. "A hovercraft is searching the coastal areas," Singh said. Man electrocuted
A 28-year-old man, who worked in a detergent company, was electrocuted on Thursday while at work in Kamarhati, Barrackpore. Jagannath Dutta, a resident of Kankinara, was switching on a pedestal fan when he was electrocuted. Police sent his body for post-mortem.

West Bengal: 19 fishermen missing after trawlers capsize in Bay of Bengal


At least 19 fishermen have gone missing after their boat capsized in the sea, off Frazerganj harbour, in Sundarban area of south Bengal, officials said today. A senior police officer said a hovercraft and an airplane have been pressed into service to look for the missing persons. Apart from that, coast guard personnel, police officers and members of a fishermen association have also gone out into the sea for the rescue operation, Sunderban Superintendent of Police Tathagata Basu said. Bijan Maity, the secretary of West Bengal United Fishermen Association, said the men, mostly from Namkhana and Kakdwip areas of South 24 Parganas district, set sail into the Bay of Bengal around 10am yesterday as there were "no Met department warnings on radio".

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Around 4pm, however, the sea turned rough and huge waves, accompanied with gusty winds, overturned several trawlers in the sea, he said. "Although many trawlers returned to safety, three boats - MV Malleshwar, MV Joykishan and MV Maa Shibani - capsized in the sea. Around 10 fishermen of MV Joykishan and six of MV Malles hwar, and three more of some other trawlers have gone missing," Maity said. The Met office website, however, shows that West Bengal fishermen were advised against venturing into the sea yesterday.

**West Bengal: Formalin in fish: West Bengal government warns of stern action**


In the wake of reports about the presence of formalin in fish, the West Bengal government has started State-wide collection of samples and monitoring of major fish markets. “We will ensure that no one can sell such fish in Bengal... stern action will be taken against those who are found to be selling formalin-laced fish.” State Minister of Fisheries Chandranath Sinha said. The development comes after fish samples tested positive for formalin in Kerala, Tamil Nadu and Assam. The Assam government on July 10 imposed a 10-day ban on import of fish from Andhra Pradesh and other States.

**West Bengal: Govt to preserve rain water to boost pisciculture in drought-prone areas**


Bengal government is taking initiatives to increase fish production in the drought prone areas of the state by preserving rain water. This will assist the local fishermen to increase the production of fishes. In a bid to boost pisciculture, the state fisheries department will set up more watersheds in the drought prone districts like Bankura, Purulia, Birbhum, West Midnapore and some other districts, where considerable amount of rain water is wasted. According to the experts, if rain water is harnessed by small dams, it can be used for pisciculture, cultivation and also domestic purposes during the lean season. The department is taking up comprehensive development schemes to enhance fishery infrastructure in the drought prone areas to improve the overall socio-economic condition of fishermen in the region.

A watershed is defined as the land that contributes water to a given site. It is a line that connects all the highest points in the area. A watershed provides a natural environmental unit for planning a developmental initiative. The watershed mapping in the districts of Purulia and Bankura has been done to delineate watershed boundaries and suggest the suitable sites for check dams for water harvesting. A digital map of water bodies was already created by the Fisheries department. The GIS based map of water bodies will help in managing e-governance in the fishery sector.
Web based availability of GIS maps will improve decision making process in a decentralised set up, thereby creating a scenario of efficient management.

Moreover, water stored in check dams also helps in reaching the ground water through bottom percolation in the subsurface. Watershed development thus plays an important role in uplifting the rural economy, increasing fish production, agricultural production, afforestation, water, soil and land management in the drought prone areas. Co-operative farming is also given paramount importance to strengthen co-operative fish farming. The schemes will engage unemployed rural youth that will uplift the rural economy. The department has chalked out a detailed plan to make West Bengal self sufficient in fish production and to increase export.

The state fisheries department is also keen on the implementation of the People Participatory Programme (PPP) method for the sustainable development of fisheries. The purpose of PPP is to develop an operational method to increase participation of local fishermen in fish production, storage and distribution. This will also prove handy for the fisher folk to organise self-help groups and co-operatives which in turn will increase their income. They will be given access to the existing fishing ponds and fishery infrastructure.

**West Bengal: GPS tracker plan for Sunderbans boats**


A GPS-based boat tracking system may soon aid the foresters in checking man-animal conflict in the Sunderbans, the mangroves delta where at least 15-20 human lives are lost on an average to tiger attacks every year. This is an official figure, the actual figure is higher. With about 700 boat-licence certificates to carry out fishing activities in circulation in the region, the foresters have called a meeting this week to discuss the feasibility of such a move. WWF-India in its report ‘Status and Monitoring of Tigers in Sunderbans Biosphere Reserve’ has recommended installation of GPS-based applications, like vessel monitoring surveillance that tracks and monitors fishing boats and trawlers anytime, anywhere. TimesView: This move, if implemented properly, can provide a solution to the problem.

Man-animal conflict harms both man and animal; it's only that the impact on human beings is felt gradually over time and not immediately and so tends to be taken less seriously. So, how will the system work? WWF-India’s Sunderbans chapter head Ratul Saha said: “GPS trackers on boats or trawlers can be linked to a central server at the Sajnekhali office, the entry point to the Sunderbans Tiger Reserve (STR). The precise locations of the boats can be displayed on the system and automated alerts can be sent out to the boats when they approach the boundaries of restricted areas.” Recently, a group of fishermen were caught on camera chasing and poking a tiger when it was crossing a river near Kendo island.
The new move, according to Saha, will help foresters manage such situation more effectively once implemented. STR field director Nilanjan Mullick said: “It’s in a proposal stage. We will have to first find out how viable it is technically.” The report also says that fishing-related offences are on the rise in the mangroves. Already, eight persons have been killed and three injured in tiger attacks in the Sunderbans this year. In majority of the cases, the fishermen had set out on illegal fishing trips. The report also alerted that forest compartments with least degree of protection have witnessed reduction in forest cover by 12% in the past one decade, whereas the figure is about 3.75% for forest compartments with the highest degree of protection. “This could be due to anthropogenic factors,” the report said. The report also revealed that fishing-related offences were recorded more in Sajnekhali Wildlife Sanctuary area because of its proximity to fringe villages.

**West Bengal: Bengal Govt organises workshop for women engaged in fishing sector**


West Bengal Fisheries Department recently organised a workshop, at its office in Haldia block of Purba Medinipur district, to train women engaged in the fishing sector to make and repair fishing nets. This would add another dimension to their livelihoods, a state department official on Monday said. The weekly workshop (since the women had to make time out of their work) was run for one-and-a-half months. Making a cast net takes around 15 days and it costs Rs 500 to 550. These are usually sold for around Rs 3,000. Hence, the women can earn a decent income.

**West Bengal: 12 fishermen held for hounding a Royal Bengal Tiger in Sunderbans**


Based on a complaint lodged by the state forest department, we have nabbed twelve fishermen from Sundarbans for poking a tiger, which was crossing Raimangal river, with a bamboo or stick from their trawler," a local police official told IBNS. Earlier on June 29, a video footage came to public where it was seen that few fishermen were poking a mature Royal Bengal Tiger with a bamboo or stick while the big cat was swimming across a river in the Sundarbans. Examining the video clip, the forest department identified those fishermen as well as their trawler and lodged a complaint with the Sundarban Coastal Police Station on July 2. "We had received the video footage on last Friday (June 29) and after examining it, we found that the tiger was swimming on its own way and the fishermen drove their trawler straight towards it with an intention to hound the animal," a forest department official told IBNS.

"After lodging a complaint with the local police against the 12 fishermen and the owner of 'MV Jaba', we assisted the cops in finding them," the officer added. The fishermen, who have been
charged under few sections of Wildlife Protect Act, will be produced before a local court in Kolkata's Alipore on Thursday.

**West Bengal: Seed production of Mystus guliolo to provide livelihood option to farmers in Sundarban**


Seed production and culture of Mystus gulio, locally known as Nuna Tengra, can provide an assured livelihood option to small and marginal farmers of the Sundarban in West Bengal. Mystus gulio is a commercially important brackishwater catfish, which is an important small indigenous fish species (SIS) of the Sundarban delta. It can tolerate a wide range of salinity and has high market demand with price ranging Rs. 200-500/kg. Due to overexploitation and environmental degradation, availability of seeds from nature has been decreased. In order to conserve the species, and promote scientific farming and diversified aquaculture, Kakdwip Research Centre (KRC) of ICAR-Central Institute of Brackishwater Aquaculture (CIBA) has developed a complete package comprising of homestead/backyard hatchery technique and grow-out culture of this fish in brackishwater system.

Breeding technology package of Mystus gulio in backyard hatchery system comprises of broodstock development, maturity assessment, induction of spawning, incubation and hatching of eggs, and larval rearing in brackishwater environment. Total cost of production of a 30-day old seed is only Re. 0.30 and it has a market selling price of Re.1, which is economically lucrative. Cost effective backyard hatchery operation requires less capital and less labour. The woman member of a family can easily manage these less cumbersome and easy activities. A small farmer with a minimum operational cost of Rs 20000 can easily earn Rs 42000 in a breeding season of six months. Many rural people, small and marginal farmers may get employment through production and supply of seeds.

**West Bengal: Sinking ship threat to marine life in West Bengal's Haldia**


Oil spill threat from MVSS, the cargo ship that caught fire in the Bay of Bengal has now raised dangers for hilsa breeding and marine conditions around Haldia area in East Midnapore district of West Bengal. MVSS vessel, the fire-hit cargo ship, sailing from Krishnapattam to Calcutta reportedly developed a crack on the starboard. The salvage operation team tried to dock it in Haldia. The cargo vessel caught fire on June 14, at midnight. Water ingestion into the ship has led it to tilt on the right side. Presently sited at the Sundarbans, the heavy vessel is not likely to be towed, as reported by the salvage operation team. Indian Coast Guard Inspector (Northeast
region) Kuldeepp Singh Sheoran, after an inspection carried by an ICG aircraft Dornier, said that no major oil spill has been reported till Wednesday. Further additions from the salvage team stated that since it is being difficult to tow the vessel any further the cargo has to be unloaded to avoid oil spills.

A severe threat lies in this season as the warm backwaters of the delta are home to Hilsa. Earlier this week, fishing trawlers were sent back. The unloaded cargo is to be handed over to the salvage operation team at ICG Air Enclave, Kolkata for further transportation to Haldia. "Oil spill reduction measures are being taken by Coast Guard operation teams, pilferages are less likely to occur since the oil tanks are being removed to prevent spillage or damages on a greater scale," Sheoran added. Four recovery ships have been sent from Mumbai for recovering the ship and check on the damage, however, these ships are yet to reach the sinking cargo.

**West Bengal: Fisheries Dev Corp impresses on national platform**


The State Fisheries Development Corporation (SFDC) of West Bengal recently made a mark at a seminar-cum-fish festival organised by National Fisheries Development Board in Visakhapatnam. SDFC featured its saline water fish culture in ponds, that it has developed in Henry's Island. Managing director of SDFC said the delegates were highly impressed by this innovation. The fish cultivated in the state also received appreciation in the exhibition organised during the event. The chefs from Bengal cooked several famous Bengali dishes using the fishes from the state, which were applauded greatly.

**West Bengal: Government to set up training centre for fishermen to make them self-employable**


With a view to make fishermen self-employed, the West Bengal government has for the first time decided to set up a training centre for fishermen to train them in cultivating fish. In this regard, State Fisheries Development Corporation (SFDC), which is under the State Fisheries Department, will set up the training centre at a cost of Rs 2.27 crore. It will be located on Henry’s Island in South 24 Parganas. The training modules include the ways to cultivate fish, examine their health, and if found to be suffering from some disease, examine the water and soil of the place where the fishes breed. Experts in specific fields will be employed to provide training to fishermen of the state. Under this, free training will be provided to fishermen covered under various Government schemes.
Besides, other fishermen as well as cooperative societies associated with fish farming would be able to acquire training too, at a minimal cost. At a time, 50 fishermen will be able to acquire training at the centre. This training centre becomes particularly important in the context of the State Government’s recent stress on cultivating many new varieties of fish, which are often more profitable. Later, at least two more such training centre would come up, one in the district of Purba Medinipur and another either in north Bengal or south Bengal.

West Bengal: Crocodile swallows lone fisherman while catching fish in river, 2nd case in same river in 10 days


A lone fisherman has been devoured by a crocodile while fishing in Jagaddal river in Sundarbans of South 24 Parganas, police investigating the disappearance of Anukul Maity today said. This was the second such case in ten days in the same river. Forty-six-year-old Anukul Maity, a resident of Satyadaspur, disappeared while fishing in the riverine water on Sunday afternoon at Patharpratima. Local people said the poor man have been gobbled up the crocodile. A search since yesterday could not trace the remains of the fisherman. On June 8 last, the 55-year-old fisherman, Jareswar Modal, was killed by the crocodile while fishing into the Jagaddal river. The eye witnesses said Jareswar Mondal, a resident of Bonoshamnagar village of Patharpratima, while catching shrimps was caught by the crocodile, which dragged him down the deep water. He was never seen despite a search was conducted by his fellow fishermen.

West Bengal: Bad weather, vessel fire likely to hit supply, make dear hilsa dearer


Supply of fresh hilsa could dip, and the price of stored hilsa could increase in the coming days with fishing trawlers reeling under the twin impact of inclement weather and the cargo vessel fire in the Bay of Bengal. After the seasonal ban on fishing was lifted on June 15, around 2,500 trawlers from Diamond Harbour ventured out into the sea. But they returned in a day due to harsh weather conditions and the ship blaze that started on Wednesday. This may result in the shortage of fresh hilsa in the city markets, said the fishermen’s unions. Usually, around 12 to 15 fishermen in each trawler stay back in the deep sea for 10 to 12 days. But this time, many trawlers returned within a day and more are on their way back. West Bengal United Fishermen Association joint secretary Bijon Maity said they have been hit by the twin impact in the beginning of monsoon.

The cargo vessel has been stranded in the Bay of Bengal near Bangaduani Island, a popular fishing zone. “Most trawlers are returning from deep sea as the South 24 Parganas district
administration has asked fishermen not to venture out to the zone for safety reasons,” Maity said. According to local fish market unions, it is not that there is no hilsa in the city, as adequate amounts are kept in storage. Lake Market fish union secretary Amar Das said some hilsa has been supplied in the city markets but it was not adequate to meet the high demand, especially during Jamai Shasthi on Tuesday. According to market rates, 600g to 700g of fresh hilsa is priced at Rs 1,000 and the same amount of fish from storage costs Rs 600. With fresh fish supply likely to be affected, the price of stored hilsa could increase by Rs 50 to Rs 100 per kg during Jamai Shasthi, said union representatives.

West Bengal: Fishermen oppose CRZ draft

http://www.thehindu.com/news/national/other-states/fishermen-oppose-crz-draft/article24139784.ece

An organisation of fishermen in West Bengal has written to the Central government to scrap the draft Coastal Regulation Zone (CRZ) Notification 2018, alleging that it would have adverse effects on their livelihood. Citing that the notification proposes to allow CRZ-IV, which comprises coastal water, transfer of hazardous substances from ships to ports, projects related to defence and atomic energy, the association has claimed that “it would destroy the fishing areas of small and traditional fishing communities near shore water”.

The letter sent by representatives of Kanthi Mahakuma Khoti Matsyajibi Union and Dakshin Banga Matyajibi Forum to officials of the Ministry of Environment, Forest and Climate Change has raised objections stating that the proposed changes would increase “pollution load in the sea and encroachment in the CRZ”. Debasis Shyamal, DMF vice-president, said the 2018 draft is silent on rights of small fishermen.

West Bengal: “It will affect our livelihood”: Fishermen write to Centre over coastal notification

http://indianexpress.com/article/cities/kolkata/it-will-affect-our-livelihood-fishermen-write-to-centre-over-coastal-notification-5213744/

Two fishermen groups has written to the central government, raising several objections to the Draft Coastal Regulation Zone (CRZ) Notification, 2018, issued by Ministry of Environment, Forest and Climate Change. A letter addressed to the director of the ministry (IA-III Division) Arvind Nautiyal was submitted to East Midnapore district magistrate office on Monday by representatives of Kanthi Mahakuma Khoti Matsyajibi Union and Dakshin Banga Matyajibi Forum (DMF). According to DMF, changes in the CRZ notification issued in April this year will have adverse effect on the livelihoods of fishermen in the coastal region. Speaking to The Indian Express, DMF vice-president Debasis Shyamal said, “The Centre has gone silent on the rights of fishermen in its new notification.
The draft also violates Environment (Protection) Act, 1986, which states that the central government shall take all measures to protect and improve the quality of the environment. The present CRZ, 2011 notification says that setback zones be demarcated, livelihoods be protected and unchecked development curtailed. The draft CRZ, 2018 notification overturns these by removing safeguards, facilitating development and in turn paving the way for the Sagarmala programmes.” Environmentalist Soumendra Mohan Ghosh said, “If construction is undertaken in the regulation zone it will lead to air, water and noise pollution.” State minister for fisheries Chandranath Sinha said, “We are looking into the matter… But first we need to find out what is there in the new notification… If need be we will bring the matter to the notice of Chief Minister Mamata Banerjee,” Sinha told The Indian Express.

**West Bengal: Lightning kills 10 in India's West Bengal**


At least 10 people were killed and several others injured after lightning struck them at different places in India's eastern state of West Bengal, officials said Wednesday. The lightning struck Bankura, Hooghly, West Midnapore, Birbhum and North 24 Parganas districts on Tuesday. "Yesterday lightning killed 10 people and injured several others in the state," a disaster management official said. "Four people were killed in Bankura district, three in Hooghly, and one each in West Midnapore, Birbhum and North 24 Parganas." On Tuesday the state received its first major spell of rain from the southwest monsoon. The downpour led to severe water logging and a delay in train services in Kolkata city. India's Meteorological Department has predicted heavy rain at isolated places in West Bengal over the next 24 hours, and has advised fishermen to avoid venturing into the sea. Last month storms accompanied by lightning and rains killed over 250 people and injured more than 400 in five states.

**West Bengal: Costly fuel may burn hole in pockets this Jamai Sashthi**


Parents-in-law gearing up to treat their sons-in-law to a sumptuous spread of mustard Hilsa and other Hilsa recipes for Jamai Sashthi on June 18 may find it heavy on the pocket. The hike in diesel prices is set to push up retail price of the favourite fish of Bengalis by Rs 80 to Rs 100 a kilogram. The peak Hilsa season starts from mid-June, just a few days before jamai sashthi. That’s when fishing trawlers which venture out on trips return to shore with their catch. Each short trip needs 800 litres of diesel, while long trips require 1,600 litres. Around this time last year, say fishermen, diesel cost stood at Rs 58 a litre. Thus, the jump to over Rs 71 a litre has raised the fuel cost for a short trip by Rs 10,400 and twice for a long one. After each trip, trawlers return with a catch of 1.5 quintals to 2 quintals of Hilsa along with other fish. This alone, say fishermen, will push up the wholesale price of Hilsa by at least Rs 52 a kilogram.
This Hilsa then has to be transported to Kolkata markets. This cost will rise as well, courtesy the sky-rocketing diesel prices. Those in the Hilsa trade, from fishermen to retailers, say that all this will push up the retail price of Hilsa by at least Rs 80 a kilogram. Fishermen say, around mid-June last year, the wholesale price of the fish weighing between 500 grams to 600 grams ranged from Rs 500 to Rs 600 a kilogram and the larger variety of Hilsa weighing between 800 grams to 900 grams was priced between Rs 800 to Rs 900 a kilogram. The retail prices ranged from Rs 800 to Rs 900 a kilogram for the smaller Hilsa weighing 500 grams to 600 grams and Rs 1,100 to Rs 1,200 a kilogram for the larger variety. West Bengal Fishermen’s Association secretary Bijon Maity said, “The hike of Rs 13 per litre of diesel will have a spiralling effect on the retail price of Hilsa.”

West Bengal: Government releases guppy fish across water bodies to combat dengue


To combat dengue in south Bengal, the State Fisheries Department, under the supervision of the State Fisheries Development Corporation (SFDC), is releasing guppy fish in the water bodies, drainage canals, agricultural canals and other similar structures of the region, both in the rural and urban areas. Till May, more than 11 lakh guppies have been released at a cost of more than Rs 11 lakh. A few lakh more were released in the first week of June. Of the more than 11 lakh, 1.26 lakh have been released in the area under South Dum Dum Municipality and 1.03 lakh in Bidhannagar Municipality. The municipalities of Maheshtala and Sonarpur have released 50,000 each in the areas under their jurisdiction. About 40,000 each has been released by the municipalities of Bardhaman, Guskara, Memari, Kalna, Dainhat and Katwa. The municipality of Kanchrapara has released 21,600.

West Bengal: Over-exploitation is threatening to take the prized hilsa away from West Bengal’s waters

https://scroll.in/article/878181/over-exploitation-is-threatening-to-take-the-prized-hilsa-away-from-west-bengals-waters

The number of fishing boats operating in the northern Bay of Bengal is in excess of the sustainable limit and there has been a persistent decline of fish catch. Tajen Das’s voice is full of foreboding. It mirrors the choppy waters of the Bay of Bengal as he spruces up his fishing boat and gear for the upcoming hilsa (Tenualosa ilisha) season in the monsoons. “My men are ready. My boat is ready. The fishing nets are in place. We are waiting for June when the monsoons begin. But how long will the hilsa survive in Bengal?” said Tajen Das, a fisherman associated with a south West Bengal’s fishermen forum. “The reign of the ‘king of fish’ may soon be over.” The highly sought-after silvery trans-boundary fish that travels between the saline seawater and
the sweet river water is not only integral to the socio-economy of West Bengal in east coast of India and neighbouring Bangladesh but also to diplomatic parleys.

A hilsa fish can weigh up to 2.5 kg and is rich in Omega-3-fatty acids. Inspiring poets and artistes, the “darling of waters”, is imperiled by over-exploitation in northern Bay of Bengal. What has dismayed Tajen Das and his co-workers is a persistent decline in hilsa catch in West Bengal waters despite revamped efforts. “It is extremely unnerving to watch the catch dwindle even as we press more boats into service,” said Tajen Das. Unsustainable fishing pressures In a new study, scientists questioning the sustainability of hilsa fishing practices in the northern Bay of Bengal region suggest that an excess of licensed fishing boats (mechanised boats or trawlers and non-motorised boats) are to blame for the plummeting stock. The study states that between 2002 and 2015, even though the number of boats engaged in fishing increased by 25%, the hilsa catch dipped by 13%.

“At present, the number of boats operating in the northern Bay of Bengal has gone beyond the sustainable limit resulting in over-exploitation of the hilsa population,” said Isha Das of Jadavpur University, lead researcher of the study. “We need to draw a line. Hilsa fishery is being significantly over-exploited in the West Bengal waters. Strict regulations are needed to curb overfishing.” Overfishing happens when more fish are caught than the population can replace through reproduction. Using available data, sample collection and computer modelling, the team estimated 25,440 tonnes as the sustainable yield limit for hilsa fishery annually in northern Bay of Bengal region of West Bengal, while the maximum number of boats that may be deployed to achieve this catch is 3,987. “We wanted to examine how we could increase the catch without impacting the fish stock.

So one way was to determine an acceptable limit of fishing with boats as one of the parameters. In practise, there are other factors as well that come into play as oceans and rivers are natural systems and are dynamic in nature,” said Isha Das. Referring to the West Bengal Government data, the researcher clarified that though in the last several years, except for 2010, the annual catch has remained below 25,440 tonnes, the number of fish removed from the population through interaction with fishing (fishing mortality) has been high and the number of boats have gone up. “This has had a negative impact on the stock in subsequent years,” said Isha Das. Currently, the study states, fishing pressure from the number of boats legally deployed is almost three times as much. When asked about the over-exploitation of the fish in northern Bay of Bengal, a peeved Tajen Das held the businessmen-fishermen-government nexus responsible.

“We fishermen have to make a living somehow and we are operating boats that belong to big businessmen. Each businessman owns about 12 to 13 boats. They are here to make money because hilsa fetches good money because of a drop in stock,” Tajen said. The state government, he claimed, argues that some boats are lost or wrecked on sea and so new vessels are needed.

The hilsa supremacy Like the salmon, hilsa live most of their lives in salt water and swim to
freshwater and estuarine waters to spawn (release eggs). Hilsa start swimming upstream during
the southwest monsoon when the rivers swell. The hatchlings go back to the sea and repeat the
cycle. They can cover as much as 70 km in a day. The species is widespread – ranging from the
Persian Gulf, Red Sea, Arabian Sea, Bay of Bengal and Vietnam Sea to China Sea.

The hilsa fishery in India and Bangladesh is dependent on hilsa harvested from a particular area:
the Indo-Gangetic and Brahmaputra river basins, said study co-author Sugata Hazra, director,
School of Oceanographic Studies, Jadavpur University. The species breed throughout the year
with peak activity in October-November and minor spawning phases in February-March and
July-August in various rivers and estuaries in the region. Between July and October, large size
groups of fish are abundant in the riverine area. In general, about 80% to 90% of the hilsa is
captured during monsoon months (July to October) coinciding with the upstream movement to
the rivers and estuaries. About 95% of the catch of this commercially important species comes
from India, Bangladesh and Myanmar. Annual average production of hilsa in India is 40,000
tonnes per year. In West Bengal, hilsa is an important component of the state fishery. It accounts
for about 11% of the total fish landings.

The annual fish catch of hilsa from the Bhagirathi–Hooghly River has fluctuated over the years,
ranging between 12,733 tonnes and 20,000 tonnes between 2000-2001 and 2010-2012. Over-
exploitation, siltation in riverbeds, dams, a decrease in water flow, pollution and fragmentation
of the river in the dry season are key impediments to migration. A fast swimmer, hilsa has a
history of migrating all the way to Allahabad and above in the Ganga river system from
Bangladesh. Installation of a barrage in Farakka has completely intercepted the Hooghly-
Bhagirathi migratory route of Hilsa since 1975, said Hazra. Hilsa’s well-being To shore up
supplies, one factor that requires urgent attention is the practice of trapping juvenile hilsa (100 to
150 mm), which according to Isha Das, has stretched on for years and has taken its toll on the
overall haul.

The stage right after the fingerling phase is referred to as a juvenile. “Hilsa normally has a life
expectancy of four to five years if not fished out. They spawn thrice,” Isha Das said. The
juveniles are entangled in fishing gear during their seaward migration. For four to five months,
the juveniles feed in freshwater before they make a move to sea water. They are caught in large
numbers using nets of small mesh size during their grazing period in rivers as well as estuaries
by artisanal fishermen resulting in indiscriminate killing of these tiny fishes, said Hazra. “We
have told the government that boats are in excess, especially the trawlers, and they should not be
allowed. We don’t like trawlers because the nets with small mesh size trap juvenile or baby hilsa
that could have become adults and spawned. This results in an overall decrease in catch,” Tajen
Das said. Juvenile hilsa, mostly the by-catch of fishery, is not preferred by the fishermen due to
their low market price, Isha Das said.
“Destruction of tiny hilsa and other fishlings are inadvertently brought upon by the prawn and prawn seed collectors using zero mesh nets,” Hazra explained. Isha Das said their study also draws attention to the case of netting first-spawners (270 mm). “Our analysis of decade-old data shows that the probability of first spawners getting caught in the nets is very high at 75%,” she added. “So you are destroying the opportunity for them to spawn and produce more hilsa.” She said this leaves a stock with a higher proportion old fish, the third time spawner or older than that. Further, the study also attributes the deterioration in the health condition of hilsa in its natural habitat to overfishing.

“They are not attaining the required length and weight. West Bengal hilsa fishery is targeting smaller hilsa fish that is unsustainable in the long-term,” she said. Tajen Das also rued the disappearing breeding grounds for the hilsa. “There is no breeding ground for the fish in India,” he said. “Earlier it used to breed in Uttar Pradesh also. Now the fish that we get comes from Myanmar, moves to Bangladesh and that is what we catch. Our fishermen have to go in illegally to Bangladesh waters often to get a decent catch.” Gap in enforcement Following recommendation from the IUCN-led trans-boundary studies on hilsa migration, in which Hazra was a participant, the government of West Bengal issued fresh regulation for hilsa fishery management in 2013 where five hilsa sanctuaries were declared and mesh size and minimum catch size were regulated.

The West Bengal government has imposed a fishing ban during the peak breeding period (between September 15 and October 24) every year and has issued directives on mesh size regulation to protect juveniles. Putting up bag nets, scoop nets and small mesh gill nets along the migratory route during to February to April each year is prohibited as per government regulations. “However, this remains to be implemented at the ground level with participation from department of fishery, fishermen association, businessmen and consumers,” said Hazra. Similarly, Hazra said this restriction of boats and catch in a year (as suggested in the study) should be announced by a fresh notification after thorough discussion with the stakeholders for implementation to meet the Sustainable Development Goal 14, which is mandatory for India as a signatory.

The country is committed to protect the oceans and the lives that depend on them. “The government can marginally modify the figures depending on last two to three years catch data. This will be more scientific. However, initially the limit suggested in the study can continue for four to five years,” Hazra said. The situation is improving But things are slowly looking up, according to the state fisheries department, even though there are gaps in enforcement of the rules. The state government admits that the hauling of juvenile hilsa is a “major problem” as also is the issue of unbridled use of mechanised fishing boats, use of bag nets, drag nets or gill nets with small mesh size (less than 90 mm mesh size). “For the last few years, we have had substantial catch in the open waters. But we do have a crisis in the sense that the production
needs to be ramped up to satiate the demand. The demand has not been estimated but is as much as you can get.

We are trying to generate more awareness among the fishermen,” a source in the state fisheries department told Mongabay-India requesting anonymity. The government is offering alternative employment opportunities and rice at Rs 2 per kg to fishermen during the ban period so they don’t catch the fish. Decline in hilsa availability threatens the livelihoods of over 26,000 fishermen, the source said, but Tajen asserts it could affect millions in Bengal who are both directly and indirectly dependent on it. Last year, the floods offered some respite to the fishermen community. “There was a glut of hilsa, particularly in Odisha, following heavy rains in the coastal belt.

They swam from the sea to the river mouth to lay eggs. This increase in supply also led to a drop in prices,” Tajen Das observed. The fisherman highlighted how the implementation of the 22-day ban slapped across the border in Bangladesh to stop catching, selling, transporting and hoarding of hilsa during its peak breeding season has been effective in ramping up supply. Hilsa is Bangladesh’s national fish. The Bangladesh government has introduced an extensive hilsa management action plan to increase hilsa production not only by conserving the juveniles but also by protecting the brood fish during breeding seasons by imposing a ban on fishing and restricting the mesh size. The Bangladesh Government also offers VGF (vulnerable group feeding) programmes for poor fishermen during the ban period.

Tajen Das batted for better management of hilsa fishery on the lines of Bangladesh’s policies, thanks to which the country has seen an increase in hilsa production at a rate of eight to ten percent every year. This is in contrast to the wane in production in India and other countries. The popular fish (hilsa of the Padma river) was last year recognised as geographical indication product of Bangladesh, which recently lifted its export ban on hilsa, whose key market is India. “The situation needs to improve in India. The fishermen have very limited means to earn money when the ban is imposed. The benefits announced by the government does not reach all sections. They have to pay the boat owners. The trend that we are seeing is most fishermen migrate out of Bengal to coastal states like Andhra Pradesh and Kerala to eke out a living,” Tajen Das claimed.

West Bengal: Govt to cultivate fish in unused waterbodies in Digha

The State Fisheries Development Corporation (SFDC) is preparing a roadmap on using a huge tract of land in Digha, lying unutilised for quite some time, for cultivating fish. The area, comprising 331 acres, in the district of Purba Medinipur contains as many as 50 waterbodies. The land belonged to West Bengal Fisheries Corporation (WBFC), which has been recently merged with SFDC, thereby providing the latter the opportunity to utilise the land. To its
advantage, the plot of land has ready infrastructure for channelling water from the sea, which can be used effectively for fish cultivation. There are sluice gates at various places for smooth flow of water.

The waterbodies have either dried up or have suffered a decline in navigability due to years of neglect. Upon realising their potential, the Fisheries Department Minister has instructed SFDC to prepare a detailed plan on the types of fishes that can be cultivated there. The area has the potential to turn into a major hub for fish cultivation.

West Bengal: Industries irreparably damaging Sundarbans, fish down by half


Rampant industrialisation on the Bangladesh side of the Sundarbans is causing irreparable damage, with oil levels in waterbodies rising six-fold and the temperature by over four degrees, pushing wildlife to the edge and reducing the fish population by half, new research has found. The first of its kind study, a copy of which is with IANS, compares the current condition of about 20 km radius from the periphery of the Sundarbans around the Mongla and Rampal area of Bagerhat district to that prior to 2010 before industries started flocking in. Spread across 10,000 sq km -- of which 62 per cent is in Bangladesh -- the Sundarbans, lying in the delta of the Ganges, Brahmaputra and Meghna rivers on the Bay of Bengal, was declared a World Heritage Site by Unesco in 1997. For Bangladesh, it accounts for 44 per cent of its forest area and 50 percent of its forest revenue.

The research on the world's largest mangrove forests was conducted from July 2015 to June 2017. The region currently has over 300 industrial units, including 190 of what are called "severe" units like oil refinery and a cement plant, driven by a 1,320 MW coal-fired power plant that India's NTPC is setting up at Rampal at a cost of $1.6 billion and which was sanctioned in 2010 -- ostensibly to improve ties between the two countries. While the Bangladesh government says the plant's location, 14 km from the Sundarbans Reserve Forest, is at a safe distance, experts think otherwise. "Water temperature increases because of the salinity and chemicals dissolved from industrial discharge and huge vessels plying. "Different types of chemicals like sulphuric acid are now present in Sundarban's water," lead author Professor Abdullah Harun Chowdhury of Khulna University's Environment Science Department, told IANS.

The report discloses the differences in temperature, oil and chemical contents, density of key species of flora and fauna and the threat to the region's food security due to the shift and drop in the hatching and breeding ground of crucial varieties of fish. It also pointed out loss in habitat and population of tigers, monitor lizards, crocodile, dolphins, otters, fishing cat, deer and wild boars, as also major species of birds including the masked finfoot, the ban morog, heron and kingfisher. The major physico-chemical and biological changes of waterbodies and soil include:

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* Common fish dropped from 31-43 species (prior 2010) to 14-20 at present * Maximum temperature of waterbodies (Poshur river and canals) increased by 4.6 degrees Celsius * 0.8 degree Celsius rise in air temperature * Water transparency has dropped from 32 cm to 16 cm * Total suspended solids (pollutants) increased from 15.8 to 678 microgrammes per litre(mgpl) *

Chemical oxygen demand of water bodies goes from 192 to 584 mgpl. * Productivity of water drops from 11.4 to 3.0 mgpl * oil content in water increases from 10.8 to 68 mgpl * oil content in soil increased from 7.6 to 10.7 mg per kg * Sulfur in soil increases from 98 to 128 microgrammes per gram of soil * Phytoplanktons, a key component to sustain the aquatic foodchain, drop from 462 to 199 units per litre * Zooplanktons, a very small species yet very important to sustain aquatic animals, drop from 126 to 85 units per litre * Particle pollutant tripled: the oxides of nitrogen and sulfur have more than doubled in the air The damage recorded goes on. According to the research, due to the salinity -- high salt content -- 70 percent of Sundri seeds could not be generated. The Sundarban gets its name from the Sundri tree. "Eggs and hatching of key fish like parshe, khursula, bagda and Harina have dropped from 6,800-9,600 (before 2010) to 1,700-2,400 units per litre. Snails dropped from 10-16 individual to only 3-7 per sq metres...Mud crab population dropped from 3-6 per sq mtr to only 0-1," the report finds. Only four of seven species of snake could be spotted; three times less monitor lizards were spotted and only three crocodiles could be spotted over two years against 5-6 daily prior to 2010.

Less than half the dolphins were seen; otter spotting dropped from "unlimited" to "only two foot marks"; poor numbers of deer were observed against previous "unlimited spotting"; only 11-16 wild boards were spotted against previous "unlimited spotting". Speaking of tigers, the report asserts: "Only 3 to 4 pug marks of tigers were observed in the study period against 9-12 pug marks daily before 2010, while the non-industrial area had 11-15 tiger pug marks." Interestingly, the non-polluted areas of Sundarbans had no change on the spotting of animals at present as compared to that before 2010, the report notes. "It's because of the assurance of power from Rampal project that such huge industrialisation has taken place... also this had more negative effect on the local population in terms of jobs, earning and quality of life," Harun added. Currently hundreds of vessels pass through the Pashur river and connecting canals. Ironically, a 2016 joint report by India and Bangladesh termed these "vessles" as "mobile bombs".

**West Bengal: SFDC preparing roadmap for fish cultivation in unused area at Digha**


The State Fisheries Development Corporation (SFDC) is preparing a roadmap on how to cultivate fishes on a huge tract of land, with as many as 50 waterbodies that have been lying unutilised at Digha in East Midnapore for quite some time. The land belonged to West Bengal Fisheries Corporation (WBFC), which has been recently merged with SFDC, thereby providing
the latter the opportunity to utilise the land. Senior officials of SFDC visited the land spanning around 331 acres that earlier belonged to WBFC at Digha recently and stumbled upon the unutilised land, with ready infrastructure for channelising water from the sea, that can be used effectively for fish cultivation. It may be mentioned that a top official of WBFC, during the erstwhile Left Front government, had given these waterbodies on lease to a number of companies for fish cultivation.

But after the lease expired, there was no renewal and hence activities came to a standstill. The waterbodies have either dried up or have suffered a decline in navigability due to years of neglect. However, there are sluice gates at various places for smooth flow of water. Bushes and shrubs have filled the entire tract of land, making it an eyesore and a haven of nuisance activities. "After the visit, our senior officials briefed about the condition of the land available in the area, that has the potential to turn into a major hub for fish cultivation. State Fisheries department minister Chandranath Sinha has immediately instructed us to prepare a detailed plan on the types of fishes that can be cultivated there," a senior SFDC official said.

It may be mentioned that shrimp farming has been given a major boost in Digha and its adjoining areas in East Midnapore by the Mamata Banerjee government. The state government is planning 'eco fish tourism' project in Digha, in which tourists would be taken to the water bodies managed by the Fisheries department. They can draw the nets along with the fishermen to pull in the fish and can then indulge in the quiet joy of angling. The waterbodies would be kept stocked with adequate fish. The fishes caught by the tourists would be cooked and served to them. They would not be allowed to take any fish home. "With the development of this area, the prospect of eco-tourism is expected to get a major boost," the official maintained.

**West Bengal: 7 abducted fishermen rescued in Satkhira**


Rapid Action Battalion (Rab) members rescued seven fishermen, who were abducted by forest robbers, from Pirkhali area of Malancha River of the Sundarbans under the Satkhira range early Tuesday. Assistant Superintendent of Police (ASP) Mukur Ahmed of Rab-8 said they rescued the fishermen from the den of robber gang ‘Kajal Bahini’ in the early hours. However, the bandits managed to flee. The rescued fishermen were identified as Rashedul Islam, 28, son of Montez Gazi, Bishwanath Sana, 28, son of Deben Sana of the same village, Bishwa Mondal, 20, son of Manaranjan Mondal, Joydeb Mondal, 25, son of Sujir Mondal, Paritosh Mondal, 24, son of Fakir Mondal, Masum Gazi, 23, son of Meher Ali Gazi, Ramesh Mondal, 20, son of Fanindra Nath Mondal of Mathurapur village of Shyamnagar upazila. Earlier on May 13, the fishermen were kidnapped by the robber gang while fishing in the river.

**West Bengal: Three fishermen electrocuted to death in S 24 Parganas**
Three fishermen on a mission to culture coloured fishes and used a pump to de-water the pond died of electrocution accidentally at Mamudpur under Bishnupur in West Bengal's South 24 Parganas, police said today. The dead, identified as Deep Das, Prem Gayen and Kamal as their bodies were found floating on the waterbody today. The trio had planned to culture coloured fishes after cleaning the pond and for this they put a pump for de-watering the pond. They had put a powerful lamp near the pond which was surrounded by the aluminium wiring. Police said the trio might have died of electrocution after the wiring got short with the burning lamp during the night.

West Bengal: Crabs in boxes to curb tiger attack

Mud crabs will be reared in plastic boxes on Henry's Island in South 24- Parganas as part of a pilot project aimed at preventing fishermen from falling prey to tigers in the Sunderbans. Every year, scores of fishermen in the Sunderbans are killed by tigers while catching crabs in the creeks. "If successful, the experiment could go a long way in bringing down such deaths," said Soumyajit Das, managing director of the State Fisheries Development Corporation (SFDC), which owns 900 hectares of water bodies across the East Calcutta Wetlands, Salt Lake, Rajarhat, Henry's Island, Frasergunj, Digha and other parts of the state. This is the first time crabs will be farmed in cages in the state, the corporation officials said. The SFDC has procured 200 boxes made of polymer fibre for the project. Each perforated box will hold a single crab. The boxes will be placed on a floating wooden frame on the brackish water bodies. Food, mainly crab feed, will be given through the holes in the box.

The crabs will be taken out of the boxes once they weigh around 150 to 200 grams. "It can take two to four months, depending on the size of the seeds," Mondal said. Crablings will be procured from the Central Institute of Brackishwater Aquaculture (CIBA) in Chennai for the project. "The seeds should arrive by next month. But we want to start the experiment with local crablings from this month," said Bijan Mondal, general manager (technical), SFDC. The officials hope the project will also help increase production for the export market. Crabs are in great demand in China, Thailand, Taiwan, Singapore, Malaysia, South Korea and Japan. More than 70 per cent of the crabs caught in Bengal are exported. But exports from other coastline states are still higher in volume than Bengal. Bangladesh and Sri Lanka are also bulk exporters of crabs. "We want to increase the production to boost export," Das said.

If successful, the experiment could be replicated in the Sunderbans, he said. Two villagers were recently attacked by a tiger in Sunderbans' Pirkhali forest after they entered a creek in a boat and jumped on the banks to catch crab. Both are feared dead. The project's success could also stop
bulk catching of crabs that affects the delicate ecosystem of the mangrove forests, Das said. There are several other factors that make caged farming economically viable, said the officials. Controlled production and pricing are among them. At present, a fisherman sells a kilo of crabs for less than Rs 100. In the market, it fetches more than Rs 600. "We want to bridge this gap," Mondal said. The mortality rate of crabs will also go down if they are farmed in boxes. "In creeks, bigger crabs often kill the smaller ones. There is no such possibility in cages, where there will be one crab in each box," he said.

**West Bengal: The iconic hilsa is facing a threat of being fished out of West Bengal rivers**


Tajen Das’s voice is full of foreboding. It mirrors the choppy waters of the Bay of Bengal as he spruces up his fishing boat and gear for the upcoming hilsa (Tenualosa ilisha) season in the monsoons. “My men are ready. My boat is ready. The fishing nets are in place. We are waiting for June when the monsoons begin. But how long will the hilsa survive in Bengal? The reign of the ‘king of fish’ may soon be over,” continued Tajen Das, a fisherman associated with a south West Bengal’s fishermen forum. The highly sought-after, silvery trans-boundary fish that travels between the saline seawater and the sweet river water, is not only integral to the socio-economy of West Bengal in east coast of India and neighbouring Bangladesh but also to diplomatic parleys.

The number of fishing boats operating in the northern Bay of Bengal is in excess of the sustainable limit, resulting in overexploitation of the hilsa population. * There has been a persistent decline of fish catch in spite of increasing efforts, a recent study reports. Between 2002 and 2015, even though the number of boats engaged in fishing increased by 25 percent, the hilsa catch dipped by 13 percent. * The study draws attention to the haul of juvenile hilsa and first spawners due to small mesh-size nets, which are detrimental to fish stock. * The enforcement of regulations is important for India to meet the Sustainable Development Goal 14 as a signatory. SDG 14 commits countries to protect oceans and the lives that depend on it. A hilsa fish can weigh up to 2.5 kg and is rich in Omega-3-fatty acids. Inspiring poets and artistes, the “darling of waters”, is imperiled by over-exploitation in northern Bay of Bengal.

What has dismayed Tajen and his co-workers is a persistent decline in hilsa catch in West Bengal waters despite revamped efforts. “It is extremely unnerving to watch the catch dwindle even as we press more boats into service,” said Tajen Das. Unsustainable fishing pressures In a new study, scientists questioning the sustainability of hilsa fishing practices in the northern Bay of Bengal region suggest that an excess of licensed fishing boats (mechanised boats or trawlers and non-motorised boats) are to blame for the plummeting stock. The study states that between 2002
and 2015, even though the number of boats engaged in fishing increased by 25 percent, the hilsa catch dipped by 13 percent.

“At present, the number of boats operating in the northern Bay of Bengal has gone beyond the sustainable limit resulting in over-exploitation of the hilsa population. We need to draw a line. Hilsa fishery is being significantly over-exploited in the West Bengal waters. Strict regulations are needed to curb overfishing,” said Isha Das of Jadavpur University, lead researcher of the study. Overfishing happens when more fish are caught than the population can replace through reproduction. Using available data, sample collection and computer modelling, the team estimated 25,440 tonnes as the sustainable yield limit for hilsa fishery annually in northern Bay of Bengal region of West Bengal, while the maximum number of boats that may be deployed to achieve this catch is 3987. “We wanted to examine how we could increase the catch without impacting the fish stock.

So one way was to determine an acceptable limit of fishing with boats as one of the parameters. In practise, there are other factors as well that come into play as oceans and rivers are natural systems and are dynamic in nature,” said Isha Das. Referring to the West Bengal Government data, the researcher clarified that though in the last several years, except for 2010, the annual catch has remained below 25,440 tonnes, the number of fish removed from the population through interaction with fishing (fishing mortality) has been high and the number of boats have gone up. “This has had a negative impact on the stock in subsequent years,” said Isha Das. Currently, the study states, fishing pressure from the number of boats legally deployed is almost three times as much. When asked about the over-exploitation of the fish in northern Bay of Bengal, a peeved Tajen held the businessmen-fishermen-government nexus responsible.

“We fishermen have to make a living somehow and we are operating boats that belong to big businessmen. Each businessman owns about 12 to 13 boats. They are here to make money because hilsa fetches good money because of a drop in stock,” Tajen said. The state government, he claimed, argues that some boats are lost or wrecked on sea and so new vessels are needed. The hilsa supremacy Like the salmon, hilsa live most of their lives in salt water and swim to freshwater and estuarine waters to spawn (release eggs). Hilsa start swimming upstream during the southwest monsoon when the rivers swell. The hatchlings go back to the sea and repeat the cycle. They can cover as much as 70 km in a day. The species is widespread—ranging from the Persian Gulf, Red Sea, Arabian Sea, Bay of Bengal and Vietnam Sea to China Sea.

The hilsa fishery in India and Bangladesh is dependent on hilsa harvested from a particular area: the Indo-Gangetic and Brahmaputra river basins, said study co-author Sugata Hazra, director, School of Oceanographic Studies, Jadavpur University. The species breed throughout the year with peak activity in October-November and minor spawning phases in February-March and July-August in various rivers and estuaries in the region. Between July and October, large size groups of fish are abundant in the riverine area. In general, about 80 to 90 percent of the hilsa is
captured during monsoon months (July to October) coinciding with the upstream movement to the rivers and estuaries. About 95 percent of the catch of this commercially important species comes from India, Bangladesh and Myanmar.

Annual average production of hilsa in India is 40,000 tonnes per year. In West Bengal, hilsa is an important component of the state fishery. It accounts for about 11 percent of the total fish landings. The annual fish catch of hilsa from the Bhagirathi–Hooghly River has fluctuated over the years ranging between 12,733 tonnes and 20,000 tonnes between 2000–2001 and 2010–2012. Over-exploitation, siltation in riverbeds, dams, a decrease in water flow, pollution and fragmentation of the river in the dry season are key impediments to migration. A fast swimmer, hilsa has a history of migrating all the way to Allahabad and above in the Ganga river system from Bangladesh. Installation of a barrage in Farakka has completely intercepted the Hooghly-Bhagirathi migratory route of Hilsa since 1975, said Hazra. Hilsa’s well-being To shore up supplies, one factor that requires urgent attention is the practice of trapping juvenile hilsa (100 to 150 mm), which according to Isha Das, has stretched on for years and has taken its toll on the overall haul.

The stage right after the fingerling phase is referred to as a juvenile. “Hilsa normally has a life expectancy of four to five years if not fished out. They spawn thrice,” Isha Das said. The juveniles are entangled in fishing gear during their seaward migration. For four to five months, the juveniles feed in freshwater before they make a move to sea water. They are caught in large numbers using nets of small mesh size during their grazing period in rivers as well as estuaries by artisanal fishermen resulting in indiscriminate killing of these tiny fishes, said Hazra. “We have told the government that boats are in excess, especially the trawlers, and they should not be allowed. We don’t like trawlers because the nets with small mesh size trap juvenile or baby hilsa that could have become adults and spawned.

This results in an overall decrease in catch,” Tajen Das said. Juvenile hilsa, mostly the by-catch of fishery, is not preferred by the fishermen due to their low market price, Isha Das said. “Destruction of tiny hilsa and other fishlings are inadvertently brought upon by the prawn and prawn seed collectors using zero mesh nets,” Hazra explained. She said their study also draws attention to the case of netting first-spawners (270 mm). “Our analysis of decade-old data shows that the probability of first spawners getting caught in the nets is very high at 75 percent. So you are destroying the opportunity for them to spawn and produce more hilsa,” Isha Das said. Das said this leaves a stock with a higher proportion old fish, the third time spawner or older than that. Further, the study also attributes the deterioration in the health condition of hilsa in its natural habitat to overfishing. “They are not attaining the required length and weight. West Bengal hilsa fishery is targeting smaller hilsa fish that is unsustainable in the long-term,” Isha said. Tajen also rued the disappearing breeding grounds for the hilsa.
“There is no breeding ground for the fish in India. Earlier it used to breed in Uttar Pradesh also. Now the fish that we get comes from Myanmar, moves to Bangladesh and that is what we catch. Our fishermen have to go in illegally to Bangladesh waters often to get a decent catch,” Tajen said. Gap in enforcement Following recommendation from the IUCN-led trans-boundary studies on hilsa migration, in which Hazra was a participant, the government of West Bengal issued fresh regulation for hilsa fishery management in 2013 where five hilsa sanctuaries were declared and mesh size and minimum catch size were regulated. The West Bengal government has imposed a fishing ban during the peak breeding period (between September 15 and October 24) every year and has issued directives on mesh size regulation to protect juveniles. Putting up bag nets, scoop nets and small mesh gill nets along the migratory route during to February to April each year is prohibited as per government regulations.

“However, this remains to be implemented at the ground level with participation from department of fishery, fishermen association, businessmen and consumers,” said Hazra. Similarly, Hazra said this restriction of boats and catch in a year (as suggested in the study) should be announced by a fresh notification after thorough discussion with the stakeholders for implementation to meet the Sustainable Development Goal 14, which is mandatory for India as a signatory. The country is committed to protect the oceans and the lives that depend on them. “The government can marginally modify the figures depending on last two to three years catch data. This will be more scientific. However, initially the limit suggested in the study can continue for four to five years,” Hazra said. The situation is improving But things are slowly looking up, according to the state fisheries department, even though there are gaps in enforcement of the rules.

The state government admits that the hauling of juvenile hilsa is a “major problem” as also is the issue of unbridled use of mechanised fishing boats, use of bag nets, drag nets or gill nets with small mesh size (less than 90 mm mesh size). “For the last few years, we have had substantial catch in the open waters. But we do have a crisis in the sense that the production needs to be ramped up to satiate the demand. The demand has not been estimated but is as much as you can get. We are trying to generate more awareness among the fishermen,” a source in the state fisheries department told Mongabay-India requesting anonymity. The government is offering alternative employment opportunities and rice at Rs 2 per kg to fishermen during the ban period so they don’t catch the fish. Decline in hilsa availability threatens the livelihoods of over 26,000 fishermen, the source said, but Tajen asserts it could affect millions in Bengal who are both directly and indirectly dependent on it. Last year, the floods offered some respite to the fishermen community.

“There was a glut of hilsa, particularly in Odisha, following heavy rains in the coastal belt. They swam from the sea to the river mouth to lay eggs. This increase in supply also led to a drop in prices,” Tajen Das observed. The fisherman highlighted how the implementation of the 22-day ban slapped across the border in Bangladesh to stop catching, selling, transporting and hoarding
of hilsa during its peak breeding season has been effective in ramping up supply. Hilsa is Bangladesh’s national fish. The Bangladesh government has introduced an extensive hilsa management action plan to increase hilsa production not only by conserving the juveniles but also by protecting the brood fish during breeding seasons by imposing a ban on fishing and restricting the mesh size.

The Bangladesh Government also offers VGF (vulnerable group feeding) programmes for poor fishermen during the ban period. Tajen batted for better management of hilsa fishery on the lines of Bangladesh’s policies, thanks to which the country has seen an increase in hilsa production at a rate of eight to ten percent every year. This is in contrast to the wane in production in India and other countries. The popular fish (hilsa of the Padma river) was last year recognised as geographical indication (GI) product of Bangladesh, which recently lifted its export ban on hilsa, whose key market is India. “The situation needs to improve in India. The fishermen have very limited means to earn money when the ban is imposed. The benefits announced by the government does not reach all sections. They have to pay the boat owners. The trend that we are seeing is most fishermen migrate out of Bengal to coastal states like Andhra Pradesh and Kerala to eke out a living,” Tajen Das claimed.

West Bengal: Scientists raise red flag on overfishing of hilsa


Scientists have raised alarm over the exploitation of hilsa, Tenualosa ilisha, undoubtedly the most sought after fish in West Bengal and suggested a cap on its maximum sustainable yield per year. A paper titled Present Status of the Sustainable Fishing Limits for Hilsa Shad in the northern Bay of Bengal, India, published earlier this year by scientists from the School of Oceanographic Studies (SOS), Jadavpur University, points out that the value of recorded fishing mortality has exceeded the sustainable fishing mortality over the past few years, putting the species in danger. “To conserve the hilsa population in its natural habitat, the hilsa fishery needs suitable fishing regulations, restricting the number of fishing boats within 3,987 and maximum allowable hilsa catch (Maximum Sustainable Yield) at 25,440 tonnes per year in the northern Bay of Bengal region,” the publication states.

This is the first attempt to measure the maximum sustainable yield of the hilsa species, particularly in West Bengal and offshore, Sugata Hazra, director, SOS, who is the principal investigator of the research and one of the authors of the publication said. The paper published in the National Academy of Sciences has also been authored by Isha Das, Sourav Das, Sandip Giri and Sourav Maity. Penal provision West Bengal Fishing Minister Chandranath Sinha admitted that the over-exploitation of the species is something which concerns the State government. “We
are considering a proposal of having penal provisions for those who catch hilsa less than 500 grams of weight. Even those who buy the fish will be penalised,” Mr Sinha told The Hindu.

Based on the advice of experts, the State government had issued notification of declaring five areas of the river Ganga, including a five sq.km. area around sand bars located in the rivers Matla, Roymongal and Thakuran in Sunderbans, where the river meets the sea as a hilsa sanctuary. As per regulations, all fish catching activities in these hilsa sanctuaries are prohibited from June to August and October to December. But according to experts these restrictions are far from being implemented at the ground level. The paper documents hilsa yield across three major fish landing centres — Digha, Diamond Harbour and Fraserganj in West Bengal — from 2002 to 2015 which dropped to 13, 405 tonnes from 32,100 tonnes. In 2010, the hilsa yield was abnormally high in the State at 60,460 tonnes, which scientist say was an exception and could have been triggered by global climate events.

According to Professor Hazra, the publication points out that the hilsa fishery in the northern Bay of Bengal is “being unsustainably exploited” and the over fishing about 38% over the past few years (2012-16) has been noticed after comparing the fishing mortality. The publication points out that the annual catch has decreased by 13% over the past decade and that the hilsa fishery in the northern Bay of Bengal is targeting smaller fish, which is unsustainable in the long run. Hilsa or ilish, as it is called in West Bengal is intrinsically linked to the culture of the State and makes 11% of the total fish catch of the State. Professor Hazra said that if the catch is regulated for a period about five years, the population will stabilise.

West Bengal and Odisha: Nor’wester rain to lash Odisha till May 4

http://odishatv.in/odisha/body-slider/norwester-rain-to-continue-to-lash-odisha-till-may-4-292240

Nor’wester rain accompanied by hailstorm and strong gusty winds reaching speed of 50 to 60 kmph will continue to lash Odisha till May 4, the regional office of India Meteorological Department (IMD) said today. “Severe thunder squalls and heavy rainfall will occur at isolated places over parts of eastern India comprising Gangetic West Bengal, Bihar, Odisha and northeastern states during next two to three days under influence of strong low level convergence, moisture incursion and presence of jet speed winds in the upper levels,” the IMD reported.

The weathermen also predicted isolated thunder squalls with wind speed reaching 45 kmph occasionally along coastal areas of West Bengal and Odisha. The fishermen have been advised not to venture into sea. Earlier in the day, thunderstorm and lightning alert had been issued for 11 districts including Jagatsinghpur, Kendrapara, Bhadrak, Dhenkanal, Angul, Nabarangpur, Kalahandi, Cuttack, Nayagarh, Ganjam and Khurda. Meanwhile one person was killed and seven members of a family injured in separate incidents of lightning on Monday.
West Bengal: Climate change is changing the reproductive behaviour of the fish in the Sunderbans


Some of West Bengal’s most-loved fish may go off the menu, thanks to climate change in the Sundarbans. A team of researchers that is mapping biological sensitivity of certain fish species to climate change said increasing salinity and temperature in the Sundarbans estuary is messing up their reproductive behaviour and may also likely alter their abundance, factors that could wipe them out one day, they warn. Spanning 10,000 square km along the coast of India and Bangladesh, the Sundarbans represent the largest expanse of contiguous mangrove forests in the world. This globally significant ecosystem is situated in the Bay of Bengal, within the delta of the Ganges, Brahmaputra, and Meghna rivers.

The Indian Sundarbans archipelago acts as the “nursery” for nearly 90% of the aquatic species of eastern coast of India. It is the top producer of fish and prawn, with both districts (South and North- 24 Parganas) combined producing roughly 31% of the total inland fish/prawn production of West Bengal, a state iconic for its fish-eating habits. Sundarbans also satiates 15% to 20% of the state capital Kolkata’s fish requirement. Observations of drastic decline in numbers of certain species in the last three decades, especially after cyclone Aila ravaged the islands in 2009, spurred fish endocrinologist Suman Bhusan Chakraborty from the University of Calcutta and collaborators from Visva-Bharati University to explore the combined impact of salinity and temperature rise on five ecologically important fish species in the Indian Sundarbans mangrove estuary.

“The combination of increasing sea surface temperature and salinity is going to make it harder for some species while others will adapt and emerge victorious. We are trying to understand which characteristics of the species make them more sensitive and less resilient to climate change,” Chakraborty told Mongabay-India at the India Biodiversity Meet at the Indian Statistical Institute where an abstract of the team’s latest study was presented. The five species on the team’s radar are Tangra (Mystus sp.), Pabda or butterfish (Ompok sp.), Ranga (Parambassis sp.), Dari (Esomus sp.), Kholse (Colisa sp.). Pabda (Ompok pabda), Kholse (Colisa fasciata), Akash tangra (Mystus gulio) are some of the species documented to be among those whose population has drastically declined in the last 30 years. Chakraborty said his research shows undesirable temperature and salinity is triggering a shift in both the reproductive season and the site of fishes.

Warming waters drive some species to move deeper into the water. “This in turn hampers the male to female ratio of a particular habitat. These stress factors (salinity and temperature variability) have a long-term effect on abundance and distribution. Such climatic stress is linked
to reproductive performance in fish as they affect the respective enzymes and hormones,” he said. Beating ‘stress’ with predictive modelling The know-how on which species will fare much worse than others as they become more vulnerable to the effects of climate change is a shot in the arm for predictive modelling, believes Chakraborty. So the goal, he said, is to develop a computational model based on a panel of multiple enzyme and hormone biomarkers. This could help analyse and predict how stressed a particular fish species will be on account of changing environmental parameters and how it will cope with that shift.

“The study might help to frame the reproductive strategy for these important fish species in future, as well. This would be helpful for both conservation as well as commercial practices as fish harvest is impacted by these changes,” Chakraborty said. Fish samples were collected each month throughout the year from three different study sites and various anti-oxidant (enzymatic and non-enzymatic) and detoxification enzymes were measured. Levels of the stress hormone cortisol and reproductive hormone 17-estradiol were also measured as indicators of stress accumulation and reproductive status of the selected fish species. During their assay, the researchers observed a spike in the hormone cortisol when the temperature varied from 30°C to 35°C.

“When the cortisol level goes up it indicates long-term stress. To adapt to that stress, which in this case is salinity and temperature, they have to change physiological activities including respiratory rate,” Chakraborty explained. “So the energy is diverted towards these adaptive activities and this in turn, hampers steroid production and other reproductive behaviour.” Due to slow rate of steroid production, the reproductive season is shifting for most of the species, particularly for tangra and ranga. Different species, different tolerances The team has also been able to show that species like kholse is much more adaptable to shifts in temperature and salinity in contrast to pabda that are able to survive only within a very narrow range.

“So species like kholse and rasbora are much more adaptable and their survival chances are more as it can tolerate a wider variation. Whereas pabda is comfortable within a very specific range of climatic parameters and any small change can lead to their decimation,” he warned. As climate shifts, certain species are forced to abandon their native habitats and invade a different site and adapt to that specific environment. “Some fish from its original habitat will be lost forever, while some can be found in new places where they are not supposed to be,” he said. Cutting to the chase, Chakraborty warns most of the concerned fish species may go extinct in the near future and the probable cause of extinction may not be the over exploitation of the species itself but a significant drop in their reproductive efficiency and production rate.

“For example, after Aila, the catch per unit and abundance of some species of Notopterus and Mystus has already gone down considerably from the previous availability and our data suggest that if the scenario continues for the next 10 years, the probability of extinction would be very high in some of the places of Sundarbans,” he said. Farmers’ perception According to
Sabyasachi Bhattacharya of Indian Statistical Institute, who deals with ecological statistics, the work done by the team is a “great initiative” to solve the major challenge of the future regarding framing of a production and conservation strategy through a computational model. “This can bridge the gap between individual species’ physiological status and ecosystem-level functioning, related to climatic change,” Bhattacharya told Mongabay India.

However, he emphasised the work should be considered as a valuable exploratory tool, a first step in data processing and should be combined with further ongoing statistical analysis. Sourabh Kumar Dubey who tracks the pattern of climate change and its impact on the Indian Sundarbans, especially in fisheries, aquaculture and livelihood, suggests climate-resilient aquaculture strategies and integrated coastal zone management should be implemented as part of a local adaptation plan. “Strategies could include incorporation of salt-tolerant species in freshwater aquaculture areas prone to saline water inundation, avoiding over dependence on specific species and emphasis should be given to species diversification,” Dubey, who is associated with International Water Association, told Mongabay-India.

Repair of age-old vulnerable coastal embankments would help to protect the islands from the ingress of saline water due to embankment breach during cyclonic storms and coastal flooding. Incorporation of salt tolerant fruit trees and horticultural crops with salt tolerant aquacultural species may result in better economic returns, adaptive capacity enhancement and reduce risk, he said. Sharing insights from a farmers’ perception survey conducted in Basanti and Sagar Islands, Dubey said the community reported that salt water inundation causes mass mortality of freshwater fish due to inability to cope up with the sudden salinity stress. According to the survey, “cyclones and storm surges were the most significant climatic phenomena that affected freshwater aquaculture; subsequently, coastal flooding and sea-level rise were mentioned which cumulatively led to salinity intrusion, followed by rising temperatures and drought.” “Some farmers also noticed growth retardation and altered feeding habits of the surviving fish after flooding events as a result of salinity stress,” Dubey added.

**West Bengal: Major boost to fishing infrastructure in Bengal**


The West Bengal Fisheries Department has endeavored to give every manner of infrastructural help to fishermen. The fishermen's cooperatives have been running lodges belonging to the Department. The Department is setting up block-level laboratory-cum-training centres for testing water and soil of waterbodies to determine suitability for pisciculture...

**West Bengal: Fisheries Development Corp to take up crab culture in cages to boost production**
In a stride towards increasing the production of crabs, particularly of the export variety, the state Fisheries Development Corporation (SFDC) will soon take up crab culture in cages. A pilot project will begin in Henry's Island near Bakkhali in South 24-Parganas, following which the SFDC will replicate the same in Sunderbans, where catching crabs is one of the major livelihoods of the people. "People from countries like China, Malaysia and Singapore are simply crazy about crabs and a bulk of their demand is met by Indian states, including Bengal, which have coastlines. However, crab exports from most other coastline states are much higher in volume than Bengal. We are taking measures to increase the production of crabs and boost export, because of its high value," a senior official of SFDC said. SFDC is presently at an advanced stage of talks with the Central Institute of Brackish water Aquaculture (CIBA) in Tamil Nadu, from where it will procure seeds for crab culture.

200 cages- for both the large variety and small variety of crabs, are also being brought for the purpose of culture. "Crabs that are found in sweet water are not fit for consumption and the ones we eat are wild crabs that are available in Sunderbans and in bheris which are connected with rivers," said B K Mondal, general manager (technical), SFDC. It may be mentioned that a village in Gosaba in Sunderbans is popularly known as widow's village (Bidhaba Gram), as a large number of women at the place had lost their husbands to tiger attacks, when the latter had ventured into the deep forest for catching crabs, or for collecting honey. As per estimates of researchers, every year 50 fishermen or honey collectors are killed in tiger attacks. "If we can take up cage culture of crabs, it will not only enhance their livelihood, but will also stop people from venturing deep into the forests for catching crabs," a senior SFDC official said. It may be mentioned that the state Forest department is also taking up a project to encourage the villagers to take up apiculture in their native villages, to stop them from venturing into deep forest and thus preventing deaths by tiger attacks.

West Bengal: Developments undertaken by the Fisheries Department

https://news.webindia123.com/news/Articles/India/20180424/3328144.html

The State Fisheries Department has undertaken various programmes for the development of the fisheries sector across Bengal. It is leading a balanced approach by enhancing fish production and thus ensuring nutritious foods for all while, at the same time, ensuring the protection of the fisher-folk by ensuring the adoption of sustainable methods of fishing and fish production. This approach has brought about considerable poverty alleviation. The Panchayats Department is also actively involved with the Fisheries Department. Bengal has achieved remarkable results in the inland fisheries as well as the marine fisheries sectors. Fish production during financial year
(FY) 2017-18, upto December 2017, the production was 13.42 lakh metric tonnes (LMT), while the estimated production for the entire FY is 17.52 LMT.

Fish seed production till December 2017 was 1.24 lakh. Bengal caters for a huge 40 per cent of the country's demand in this respect. During FY 2018-19, Bengal will start supplying fish seed in large quantities to neighboring states. For augmenting the production of fish, a new model called Moyna Model was adopted during FY 2017-18. Its prime objective is the culture of mainly rohu, catla and mrigel at the rate of 12,000 kg per hectare per year in the seven districts of Cooch Behar, Murshidabad, Dakshin Dinajpur, North 24 Parganas, Nadia, Howrah and South 24 Parganas as well as in Kalyani Fish Farm in Baro Sagar Dighi (Nadia district). Model fish farms have been identified covering 90 hectares of water area as well as 110 progressive farmers.

Achievements in the export sector have also been quite significant under the Trinamool Congress Government. From 61,709 MT of fish worth Rs 1,734 crore during FY 2011-12, the figures reached 1,04,762 MT worth Rs 4,455.74 crore during FY 2016-17. For attracting substantial investments in the fisheries sector, the government has promulgated the West Bengal Fisheries Investment Policy 2015. From FY 2015-17 till now, 30 projects have been initiated at an investment (by both private and government players) of Rs 339.35 crore. During the Bengal Global Business Summit 2018, 19 memorandums of understanding (MoU) worth Rs 760.3 crore were signed. Thus, Bengal is marching ahead towards not only self-sufficiency in fish production but substantial contribution towards exports too.

**West Bengal: Now get live crabs delivered to your home through Smart Fish app**


Come Poila Boishakh, the people of Bengal will be able to order their favourite fish dishes via a mobile app. Thanks to the State Fisheries Development Corporation (SFDC) which started the app in January. Called Smart Fish, this app would allow a user to order live crabs too. Crabs weighing 150 g to 500 g would be available; the price per kilogram would be Rs 500. For a start, only sea crabs would be available. Varieties of ready-to-cook as well as dressed fish can also be ordered, like rohu, catla, prawns, pabda and several more. Orders will be taken from 10 AM to 5 PM every day on this app. The fish items are delivered to the mentioned addresses within three hours.

**West Bengal: A new study on East Kolkata Wetlands'™ carbon-absorption abilities is a wake-up call for conservation**

[https://scroll.in/article/874651/a-new-study-on-east-kolkata-wetlands-carbon-absorption-abilities-is-a-wake-up-call-for-conservation](https://scroll.in/article/874651/a-new-study-on-east-kolkata-wetlands-carbon-absorption-abilities-is-a-wake-up-call-for-conservation)
Architecturally discordant high-rises and garish billboards screaming their products mask a placid blue-green expanse to the east of the Indian metropolis of Kolkata. Rushing through a busy day, commuters are barely aware of the East Kolkata Wetlands, which for over a century has been quietly flushing filth out of the city’s system and cleaning its air. Wetlands cover approximately four to six percent of the Earth’s surface and contain about 35% of global terrestrial carbon. In India, wetlands cover an estimated three percent of India’s land area. Groaning under the weight of encroachments, the rapidly shrinking East Kolkata Wetlands is considered the largest natural treatment system for solid and soluble waste and is a Ramsar site (Wetlands of International Importance).

Additionally, East Kolkata Wetlands claims the unique distinction of being the largest “wastewater-fed aquaculture system” in the world where the sewage is recycled for pisciculture and agriculture. The megacity’s core area does not have a sewage treatment plant. Now, researchers have shown that the internationally recognised East Kolkata Wetlands locks-in over 60% of carbon from the wastewater it encounters, which might otherwise pile up in the atmosphere. “The wetlands act as a carbon sink and clean up the city’s air. The carbon is sequestered in soil and biota (plant and animal life) of the EKW [East Kolkata Wetlands] ecosystem. If this 60% carbon is not stored by the EKW then it would have dissipated into the atmosphere,” said study author Sudin Pal, of the Department of Chemical Engineering, Jadavpur University, Kolkata.

Crisscrossed by creeks and canals, a mosaic of nearly 254 sewage-fed fishponds (bheris), agricultural land, garbage-farming areas and settlements make up the 125-square-km (12,500 hectare) wetlands that form an important portion of the mature delta of Ganga River. In the wake of urbanisation and vocation change observed among the East Kolkata Wetlands’ farming and fishing community, Pal and colleagues sought to flesh out the carbon storing efficiency of the waterbody and map its role in mitigating global warming and accumulation of greenhouse gas emissions. This long-term lockdown of excess carbon needs to be recognised and recorded in view of encroachment threats to the East Kolkata Wetlands as well as against the backdrop of India’s plan to create additional carbon sinks in line with the landmark Paris accord, argue researchers.

The researchers crunched data on organic and inorganic carbon content of wastewater and wastewater-fed fishponds across seven sampling sites along a 40-km stretch of the wetlands. “The study sites include some of the most polluted stretches of the city such as tannery conglomerates linked to China Town, a tannery effluent-fed fish pond, a composite wastewater-fed fish pond and a site where tannery effluent was mixed with municipal wastewater and other small-scale industrial effluents,” Pal told Mongabay-India. An ‘ecological subsidy’ for Kolkata The wetlands save Kolkata, India’s seventh most populous city, a staggering Rs 4,680 million a year in sewage treatment costs.
About 1,000 million litres of wastewater each day is funneled into the wetlands that filter it and discharge it in the Bay of Bengal some three or four weeks later. It takes care of more than 80% of the metropolis’s sewage, supports around 50,000 agro-workers and supplies about one-third of Kolkata’s requirement of fish, said Pal. “Kolkata has remained an ‘ecologically subsidised city’ since the British Raj as the government doesn’t need to invest in wastewater treatment for the city,” he said. But he points out that over four decades (between 1972 and 2011), about 38.6 square km of wetlands were converted to built-up areas. “The importance of wetlands in rendering ecosystem services and solving the water crisis are recognised globally,” Pal added. “Only motivated conservation efforts can resist further shrinkage of this sustainably productive natural treatment system in Kolkata’s backyard.”

Vocation switch The disruption of the critical ecological balance in the wetlands that impacts fishing and farming activities, is linked to the community giving up these activities, declares urban economist Mahalaya Chatterjee. “The ecological balance is disturbed due to various factors such as obstruction of wastewater flow due to encroachment and other reasons, siltation in bheris and the changing signature of bio-chemical components in sewage water,” said Chatterjee of the University of Calcutta. In addition, with scope for better education and lure of modern employment opportunities, fishing and farming have started losing appeal among the young generation. To tackle this switch, Pal and colleagues have proposed a carbon credit system for the farmers who have organically and unknowingly contributed to the ecosystem services by growing produce that sequesters carbon. Besides the sewage-driven pisciculture, other connected activities in the area that also trap carbon include paddy cultivation, farming of vegetables, poultry and animal husbandry.

Pal reasons, farmers can boost the carbon sequestration potential of their farms and other sites and gain economic incentive through a system of carbon credits. “Given the fact that the next generation does not want to adhere to the same vocation, a carbon credit system would help retain them in the vocation of farming which is essential to the survival of the wetlands,” he explained. Waste into wealth The wetlands transform the untreated, nutrient-rich raw tannery effluent, municipal and industrial wastewater they receive, into 18,000 tons fish yields per year and nearly 150 tons of vegetable produce daily, said Pal. Aquaculture and sewage treatment work complementarily, like the cogs of a well-oiled machine.

When the sewage arrives in the series of interconnected ‘bheris’ (shallow fish ponds), it is allowed to stand in the sun, letting bacteria and algae work their magic on the sewage and convert the waste into forms useful for fish feeds, says economist Debanjana Dey. The synergistic growth of bacteria and algae, in turn, is boosted by the nutrients in the waste water. Commending the mastery of the fishermen over the resource recovery activity, Dey points out the yield of fish from the bheris is two to four-fold more than the volume achievable through normal ponds. “They know exactly how to excavate the ponds to the correct depth, clean the water by spraying kerosene, lime and oil cakes (khol), mix the right quantity of sewage, allow
optimal time for conversion of the waste into fish feed, when to add spawns, how to protect the
embankments through water hyacinths and so on,” say Dey and co-author Sarmila Banerjee in a
chapter of the book Sustainable Urbanisation in India.

The biggest sources of carbon in the East Kolkata Wetlands area are the solid and liquid wastes
from the tannery industries with tannery waste typically containing a complex mixture of both
organic and inorganic pollutants, informs Pal. The municipal sewage water was also a significant
source of TOC (total organic carbon) in East Kolkata Wetlands. The inorganic carbon (total
inorganic carbon or TIC) mainly came from the tannery sludge. “This decrease in carbon in
wastewater was possible because of the flow-rate of wastewater in the carrying canals, long
residence time in the wastewater-fed fish ponds and repeated use of wastewater in irrigating
agricultural fields at the EKW ecosystem.

However, the wetlands need to be managed properly to curb methane emissions,” Pal concluded.
Under attack The establishment of the posh satellite township Salt Lake City in the north-eastern
fringes of the city reclaimed a part of the wetlands in 1960s, while two decades later,
construction of Eastern Metropolitan Bypass, which enhanced the connectivity of the area with
the city, made the wetland more accessible and made it an attractive site for real estate
speculation. The East Kolkata Wetlands, despite getting a Ramsar recognition in 2002, is yet to
have a “wise-use” plan which essentially relates to the conservation and sustainable use of
wetlands and all the services they provide, for the benefit of people and nature. Meanwhile, a 5-
km flyover through the wetlands has been planned by the West Bengal government which would
be brought up by filling portions of the wetlands with concrete piers.

The state government has promised compensatory digging of a 25-cottah lake (comes to about
1672 square metres) in the adjacent area. Last year, India notified a new set of rules under the
Wetlands (Conservation and Management) Rules, 2017 that replaced the 2010 the Wetlands
(Conservation and Management) Rules. Environmentalist Mohit Ray who has been championing
the cause of disappearing water bodies in Kolkata, says the 2017 rules has “very much limited”
the legal safeguard of the wetlands throughout the country as the rule is applicable only for (a)
wetlands categorised as ‘wetlands of international importance’ under the Ramsar Convention and
(b) wetlands as notified by the central government, state government and Union Territory
administration.

“There are just 26 Ramsar convention recognised wetlands in India,” Ray told Mongabay-India.
“Besides that, there are several millions of wetlands and water bodies but those will be no more
protected unless notified by the central or state governments. The previous Rule 2010 gave
protection to all those wetlands and water bodies even not notified by any authority. So the new
rule will definitely help the land sharks to fill up the precious wetlands and water bodies.”
Secondly, for East Kolkata Wetland, the rules bring “disaster”, he said. “Section 4 (v) of the Rule
2017 says discharge of untreated wastes and effluents from industries, cities, towns, villages and
other human settlements is not permitted in the wetland," he added. However, East Kolkata Wetland uses Kolkata city’s untreated wastewater for aquaculture in the wetlands and it is famous for such natural wastewater treatment. So the rule needs to be changed to include all types of wetlands and water bodies and also remove / edit Section 4 (v) of the Rule 2017.”

West Bengal: Govt to cultivate hilsa in ponds and rivers


In a significant stride towards becoming self-reliant in the production of hilsa (ilish), the State Fisheries Department will now take up the cultivation of the fish in ponds and rivers. The department has signed an agreement with a Norwegian company. The company has been successful in cultivating salmon in pond and river water, and is helping the State Government in replicating that success for hilsa. The department gradually wants to stop importing the fish from Myanmar, which is much more than gastronomy for a Bengali. Ilish, as hilsa is called in Bengali, is about identity, history and nostalgia. Hilsa is a significant component of open-water capture fishery in Bengal, contributing about 19 per cent of the total fish landing in the Hooghly-Matla estuarine system.

Over the years, due to wanton exploitation, pollution and habitat destruction, there has been a decline in the availability of hilsa. One of the measures to combat this was the setting up, inspired by the vision of Chief Minister Mamata Banerjee with regard to self-reliance in hilsa, of the country's first ever dedicated Hilsa Conservation and Research Centre (HCRC) at Sultanpur in Diamond Harbour in December 2013 by the Fisheries Department. The department is in the process of setting up two similar HCRCs in Tribeni in Hooghly district, located on the bank of the Hooghly, and Farakka in Murshidabad district, on the bank of the Ganga. The catching, marketing and transportation of fishes less than 23 cm in length is banned in the state.

The Fisheries Department has put in place vigilante teams in all the concerned districts for keeping regular vigil on markets and landing centres. Special raids are conducted during the designated ban period between September 15 and October 24 each year. The department also maintains coordination and synergy with laboratories and institutes working on hilsa fishery. The department also takes awareness campaigns for hilsa conservation, by distributing leaflets, putting up banners and posters, and conducting boat and road rallies in areas where the fish is netted by fishermen. The fish is anadromous, that is, migrates up rivers from the sea to spawn, during the periods from June to September and from January to April.