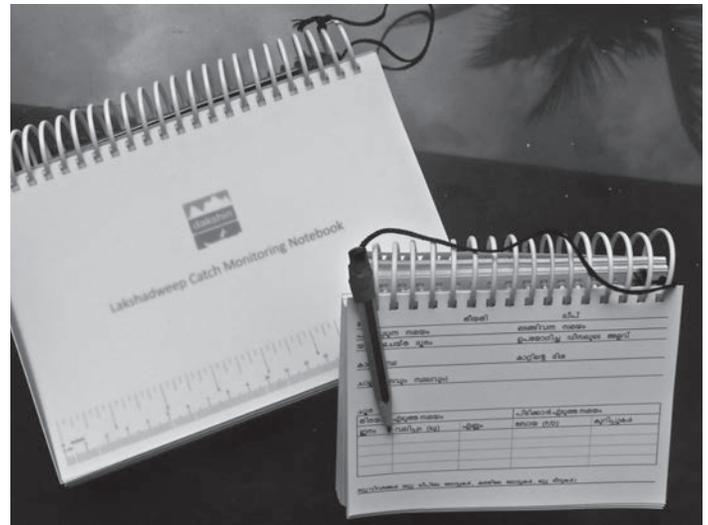


People in Conservation

Biodiversity Conservation and Livelihood Security



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Special Issue on Marine Ecosystems & Livelihoods

Editorial

More than 2 million people are engaged in marine capture and allied ancillary industries in the marine sector. Yet, like their territorial natural resources dependent brothers and sisters, the Indian fishing community people have been fighting poverty, unemployment, illiteracy and health issues for many years. For a country that is ranked seventh among large marine capture fish producing nations in the world in 2012, this is a matter of shame. The little protection offered through legal frameworks to the Indian fisher, is hardly implemented. In terms of the rights of fishing communities, ensuring consultative processes, protection of traditional fishing methods, etc. there seems to be little space for what can be construed as fair practices. The scale seems to be heavily weighed against the poor communities and too lightly in favor of trawling companies.

There is an urgent need for a separate ministry for fisheries and fishermen's welfare to redress the long-pending grievances of the fishermen community. Moreover there is a need for a ministerial berth to the Member of Parliament from the fisherman community. There is also a need to include the fisherman community in the Scheduled Tribe list. This is necessary not only for the sake of the security of the fishing community but also for the security of oceanic biodiversity. After all, who best can play a role in this than those very communities that have been doing it from time immemorial?

Have no illusions about the fact that the danger to marine biodiversity is serious enough. The challenge – and the one being faced by our oceans is real enough – is that of marine biopiracy. The demand for marine resources by pharmaceutical, cosmetic, mineral, oil and other companies is huge. Contentious issues of intellectual property and those relating to prior informed consent, access, and benefit sharing are far from being resolved. International conventions have their own limits related to jurisdiction and in the worse case sometimes are also in conflict. The country's environment-related legislation do not address such issues, and, while urgent steps are required to protect our natural marine bio-reserves and the traditional knowledge and livelihoods of local coastal communities, the political will to fulfill this objective is conspicuous by its absence.

Our oceans are also threatened by the prospect of deep-sea mining for rare metals. India has joined the global bandwagon and the future El Dorado, it seems is the ocean. If reports are to be believed, India is going all out to counter China's perceived 'strategic-play' in the Indian Ocean – a scary project. Not satisfied with the havoc and depredations caused to India's

territorial forest in search of minerals for 'development', we will now explore our seas. We have no idea at all about the damage this can cause to oceanic biodiversity. Our marine ecosystems – also called 'cradle of life on earth' – are in grave danger.

Another challenge that is staring us in face is that posed by the massive investment in building ports. Realizing the importance of marine ecosystems, especially mangroves and coral reefs, the Government of India had initiated efforts for marine conservation and management. Marine ecosystems were declared as ecologically sensitive under the Environment Protection Act 1986 (banning their exploitation) followed by the Coastal Regulation Zone (CRZ) 1991 notification prohibiting development activities and disposal of waste in the mangroves and coral reefs. These are zones designed to protect marine biodiversity from damage and disturbance. Yet over 300 ports are planned for the coast of mainland India. Many of these new ports are planned in or near mangroves, fish breeding grounds and the habitats of marine turtles and other vulnerable species. These areas are classified as CRZ1 under the Coastal Regulation Zone (CRZ) notification. The original purpose of the CRZ was protecting our coastal spaces and the traditional fishing livelihoods they support. Unfortunately in the quest for economic growth, all such commitments are given a short shrift.

Oceans are facing a growing number of serious threats like overexploitation of living marine resources, habitat degradation/destruction, pollution and climate change impacts. On the other hand, the ocean is integral to local peoples' cultures and economies. The government had initiated action through state governments to create a network of Marine Protected Areas (MPAs) under Wildlife (Protection) Act, 1972. However, as against territorial 'Protected Areas', the concept of MPAs has not taken root in India's environmental thinking. Prof. Kartik Shankar of Centre for Ecological Science, in his paper entitled "Deconstructing Sea Turtle Conservation in India"¹, observes that, "conservation in India has been bound by terrestrial paradigms; both in action and analysis...There has been overwhelming focus on PAs such as national parks and sanctuaries in national policies. These have had some success in terrestrial contexts, but are of doubtful value in a wider marine context. Considering that India's entire coastline is densely inhabited and near-shore waters are used extensively by traditional and modern communities, it would seem that the exclusionary paradigm of terrestrial conservation cannot work for the coast. However, this has not automatically led to an

¹ Please see, Making Conservation Work, (eds) Gazala Shahabuddin and Mahesh Rangarajan, Permanent Black.

inclusive participative approach to marine conservation.”

World over it has been found that the way they are envisaged, MPAs have typically been managed by government rather than by local communities and though MPAs are a vital tool for marine conservation, they often fall short of their potential and can have negative impacts on local fishing communities. There is growing evidence that marine conservation works best when local communities are responsible for fisheries management. A study² revealed that almost half of the marine protected areas—more than 11,000 km—in the Western Indian Ocean are now under local community stewardship. Coastal communities across a vast swathe of the Indian Ocean are taking more responsibility for their resources by setting up conservation zones known as ‘locally managed marine areas’ or LMMAs. LMMAs put people at the center: It’s the fishers themselves who are making the management decisions, based on their needs, their priorities, and their traditional ecological knowledge and have proven to be a cost-effective, scalable, resilient and more socially acceptable alternative to more traditional ‘top down’ methods of marine resource management. This is the way for India to go.

The Conservation movement lost two eminent personalities who were at the forefront on the fight for justice to the Indian fisher. On March 8, 2014, Chandrika Sharma who headed the International Collective In Support of Fishworkers (ICSF) was on board the Malaysian Airlines MH 370 flight that went out of view while flying over the Indian Ocean. She was a tireless advocate for the human rights of small scale fisheries and gender equity. In May this year, we also lost Fr Thomas Kocherry who was at the forefront of many agitations of the fishermen community. He was the former chairman of the National Fishworkers Forum and was also at the helm of the National Alliance of People’s Movements. His efforts in launching a World Forum of Fisher people earned him the ‘Earth Trustee’ award of the United Nations. To the memory of these two stalwart warriors, we dedicate this issue of People in Conservation.

In Solidarity,

Milind



2 <http://ourworld.unu.edu/en/local-communities-playing-vital-role-in-marine-conservation>.

1. Reflections

Issues and Challenges faced by the Indian Fishing Community

India (including the island groups Lakshadweep and Andaman & Nicobar) has a coastline of nearly 8,118 km. Its exclusive economic zone (EEZ)³, stretching over 2.02 million sq km, covers a wide range of coastal ecosystems such as estuaries, lagoons, mangroves, backwaters, salt marshes, rocky coasts, sandy stretches and coral reefs. Given its long and productive coastline, the fisheries sector is very important.

India was ranked seventh among large marine capture fish producing nations in the world in 2012, with a catch of over 3.4 million tonnes, and its marine fisher folk population of nearly 4 million is dependent upon the ocean’s resources. There are nearly 1 million active fisher folk dependent only on marine capture sector in mainland India. Besides this, there are around 1.6 million people involved in allied sectors and other ancillary industries in the marine sector, and part time fishers as well, of which 0.4 million are women.

According to the census carried out by the Central Marine Fisheries Research Institute (CMFRI) in 2010, mainland India has over 3200 fishing villages and 1511 landing centres dotting the coastline. The fishing communities populating these villages are of different types, belonging to a wide range of castes. They have their own distinct social, cultural, governance structures and traditional practices, depending on the type of the coast. The social organization of fishing communities is very different from the agrarian community systems. The fisher folk’s community institutions (such as caste panchayats in Tamil Nadu, Peddalu, or the Padu system) are organized along caste, kinship or religious lines, and play an important role in conflict resolution as well as in regulating resource use, both spatially and temporally, ensuring equitable access to resources. Besides these traditional institutions, there are also other governance systems such as mechanized boat owners’ associations, trade unions, co-operatives, federations, gear based groupings, and self-help groups. There are also women’s

3 An exclusive economic zone (EEZ) is a sea zone prescribed by the United Nations Convention on the Law of the Sea over which state has special rights over the exploration and use of marine resources, including energy production from water and wind. It stretches from the baseline out to 200 nautical miles from its coast.

groups including ones formed by those who are involved in the post-harvest sector.

According to Dr. E. Vivekanandan of CMFRI, the Indian coastline can be delineated into 22 zones, based on the ecosystem and functions. There is high diversity in the fishing vessels used in India, ranging from the traditional catamarans, masula boats, plank-built boats, dug-out canoes, machwas, and dhonis to motorized fibre-glass boats with outboard motors and the mechanized trawlers, gillnetters and long liners. It is important to note that most of India's fish production comes from the small-scale fisheries sector, with a large dependent population. While fishing in the territorial waters has been a State subject in India, fishing in the EEZ is under Central jurisdiction. The States have adopted the Marine Fishing Regulation Act and Rule(s) since 1980s, and demarcated zones for exclusive fishing by traditional fishing techniques, besides putting forth regulations for fishing in the territorial waters in terms of fishing vessel licensing, closed seasons (monsoon fishing ban) and certain gear restrictions. However, implementation of these regulations is often ignored by the State authorities. In the Indian EEZ, besides the marine fishing policy adopted in 2004, there is no other legal framework for fisheries management, not even one for the small-scale fisheries.

Fishing communities have nevertheless been practicing traditional management and have also initiated additional measures recently to protect the resources and their livelihoods. In Tamil Nadu, for example, there are measures, such as the alternate day fishing regulation in the Gulf of Mannar, that are implemented by the fishing communities along with the Department of Fisheries; self-regulation adopted for fishing such as the Padu system, or those adopted by women collectors of seaweed in the Gulf of Mannar. Demand from the fishing communities of Maharashtra to extend the period of the closed season from 60 days to 90 days has also been rising. Besides these fishing regulations, there are also conservation initiatives adopted, such as those in Odisha and Maharashtra. Fishing communities have been in the forefront in calling for protection of the coasts since 1989 (Kanyakumari March of the National Fishworkers' Forum), as also for withdrawal of the proposed Coastal Zone Management (CZM) Notification (with a march from Gujarat to Bengal in 2008 and demand for a 'quit the coast' day), and calling for implementation of the Coastal Regulation Zone Notifications (1991 and 2011).

However, within the realm of conservation legislation, fishing communities have borne the maximum costs for conservation of marine and coastal resources. The National Parks and Sanctuaries declared in marine and coastal habitats, under the Wildlife (Protection) Act, 1972, as amended in 2002 and 2006, restrict and regulate the collection and harvesting of resources within these protected areas. These national parks and sanctuaries were declared in the 1970s without any consultation with the fishing communities, and they follow a terrestrial framework of regulation for conservation and protection that is not relevant for marine and coastal ecosystems.

In most cases, regulations and prohibitions imposed on fishing have affected the livelihoods of local communities in a context where coastal fishing villages are, in general, located in remote areas and are characterized by high levels of poverty and poor access to basic services. In almost all designated Marine and Coastal Protected Areas (MCPA), there has been no consultative process with the local communities, especially those who are dependent on the resource, and fishing communities are often not even aware of the designation of the area as a protected area, as seen in the case of Gulf of Mannar National Park, where communities realized the 'protected status' only when they were restricted from accessing their fishing grounds and resources.

In a recent meeting organized by the Tamil Nadu State Planning Commission (June 2014) that included both fishing community representatives from the Gulf of Mannar, as well as representatives from the State Forest and Fisheries Department, it was suggested that the fishing communities apply for recognition of their community rights under the Forest Rights Act (FRA), 2006. However, there are a number of steps to be taken even before the community starts preparing for these processes. In most fishing communities, gram sabhas do not exist, and often there are no district level implementing committees under the FRA in the coastal areas. While the rights of local fishing communities, particularly small-scale and traditional fishers, to participate, and to protect their occupational interests, are recognized under the WLPA, and while the FRA recognizes the sustainable use of resources by communities, these are far from being implemented. It will, however, set a precedent if FRA issues are taken up in coastal and marine areas, as there has been no

instance of government departments mentioning FRA in these areas from the time that it came into force 8 years ago. Though traditional fishing communities have been demanding for legislation for coastal area, framed on the lines of the FRA, there has been no initiative to take it forward beyond a draft legal framework which is not very relevant.

It is not in protected areas alone that communities have borne the cost of conservation; they have faced the brunt of coastal development as well. With the establishment of new ports, and other developmental activities such as erection of thermal power plants on the coast, fishing communities have often been displaced from their territory without any proper resettlement plans, or have had to face consequences of coastal erosion due to the construction of breakwaters, seawalls or jetties that block littoral drift and accelerate erosion. There has been no effort to undertake a cumulative impact assessment, nor any to prevent violation of the CRZ notifications. Fishing communities in several places have now started using their own methodologies (GIS and mapping tools) to map their coast, to highlight the impacts of development activities, and to prevent further degradation of the coast.

While there are numerous legal frameworks in place, the issue of the rights of small-scale fishing communities to access and use resources still remains unrecognized. There is no framework, to holistically manage coastal and marine fisheries, either.

Hence it is important to develop a comprehensive and coherent broad legal framework for marine and coastal ecosystems that integrates sustainable use of resources, conservation and responsible management of resources, specifically recognizing the small-scale and traditional fishing sector. It is imperative that such a legal framework, when developed, draws upon existing international legal frameworks including the United Nations Convention for the Law of the Sea (UNCLOS), United Nations Fish Stocks Agreement (UNFSA), the 1995 FAO Code of Conduct for Responsible Fisheries (CCRF), and the recently adopted Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication (June 2014). It is important to note that the recently adopted guidelines call for responsible fisheries and sustainable social and economic development for the benefit of current and future generations, with an emphasis

on small-scale fishers and fish workers and related activities, and including vulnerable and marginalized people, promoting a human rights-based approach. The decisions of the Conference of Parties to the Convention on Biological Diversity (CBD) call for effective participation of indigenous and local communities in planning and management of protected areas and for equitable management of protected areas. Keeping all these issues in mind, it is essential for India to move from a terrestrial approach to a more nuanced holistic approach for marine and coastal ecosystems that takes into account all these legal obligations while drafting a legal framework.

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2. News and Events

Growing Mangrove Forests to Fight Sea Erosion

Locals of Badakota village of Odisha's Kendrapara district started efforts to grow mangroves to protect coast from sea erosion. Action for Protection of Wild Animals (APOWA), a voluntary organization that works on mangrove conservation, has been helping villagers to develop mangrove forest. When efforts were initiated for creation of a mangrove forest around the village, only a few residents were convinced and agreed to participate. Over time the entire village was convinced to participate. APOWA's volunteers counseled villagers periodically. Their efforts yielded results. Ever since villagers plunged into conservation efforts, there has been no looking back. Villagers guard the forest patch on rotation basis and a 'Village Mangrove Council' was constituted to coordinate protection efforts in their area.

Source: <http://www.thehindu.com/todays-paper/tp-national/tp-otherstates/growing-mangrove-forests-to-fight-sea-erosion/article5984582.ece>

Experts call for conserving rare turtles' - ASEAN meeting

Illegal international trade of the black spotted turtle in Asia has escalated over recent years and immediate action is required to stem the flow, the wildlife trade monitoring network TRAFFIC which reported "The attractive spotted visage of the black spotted turtle (*Geoclemys hamiltonii*) may well be its downfall".

The species is known to be traded for meat, medicine and pets and a TRAFFIC's research found a sudden rise in demand to the exotic pet trade. It is protected under national laws in its range countries and is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). All commercial international trade in this species is illegal.

"Turtle species are seriously threatened - nowhere more so than in Asia with 17 of the 25 most critically endangered tortoises and freshwater turtles on the IUCN Red List found in the region," said James Tallant, senior program officer of IUCN (International Union for Conservation of Nature) Natural Resources Group in Asia. Tallant said IUCN is working with partners across Asia, including TRAFFIC to stem the tide of biodiversity loss.

Source: <http://thanhniennews.com/education-youth/experts-call-for-conserving-rare-turtles-ahead-asean-meeting-26620.html>

151 Indian fishermen prisoners handed over by Pakistan at Wagah border

Pakistan on May 26 handed over 150 Indian fishermen and another prisoner held for crossing the border to Indian authorities at the Wagah border in a goodwill gesture by Premier Nawaz Sharif who is in India to attend the swearing in ceremony of Narendra Modi as Prime Minister.

Fifty nine prisoners were released from the district prison Malir in Karachi and 92 from the Nara prison in Hyderabad, officials said.

Out of the 151 people handed over to the Border Security Force at the Wagah border, 150 were fishermen and one was a prisoner in Karachi jail who inadvertently crossed into Pakistan from the Sindh border.

A fisherman named Nanji Soma said: "I am an illiterate

man good enough to catch fish only but my son will not be one. He is 10 years old now and goes to school. In my absence the fishermen community back home contributed for my poor family to keep sending him to school."

Source: <http://indianexpress.com/article/india/india-others/151-indian-fishermen-prisoners-handed-over-by-pakistan-at-wagah/>

Odisha: Odisha seafood exports show a surge

Seafood exports from Odisha state have shown an impressive surge due to the increase in international demand for Indian shrimp and the weakening of Indian rupee. Seafood export value from the State rose from INR 9,500 million (USD 161 million) in the fiscal year 2012-13 to INR 18,000 million (USD 306 million) in 2013-14 (1 April 2013-31 March 2014), representing an increase of more than 105 per cent.

Source: <http://www.fis.com/fis/worldnews/worldnews.asp?monthyear=&day=29&id=68822&l=e&special=&ndb=1%20target=>

Compensation for displaced fishermen

The National Green Tribunal has directed Jawaharlal Nehru Port Trust (JNPT) and ONGC to deposit Rs 30 crore in an escrow account with the Raigad collector in Maharashtra for disbursing it as compensation among fishermen displaced due to expansion activities.

Source: http://www.business-standard.com/article/companies/ngt-directs-jnpt-ongc-to-deposit-rs-30-crore-in-four-weeks-114052901478_1.html

Have separate ministry for fishermen's welfare

Goenchea Ramponkaranchi Ekvott (GRE) has urged the BJP government to carve out a separate ministry for fisheries and fishermen's welfare to redress the long-pending grievances of the fishermen community to redress the long-pending grievances of the fishermen community.

Fishermen have been demanding a separate ministry for a long time and it was also recommended by the BJP's fishermen's cell under the guidance of Muralidhar Rao and Prakash Malgave, GRE joint general secretary and national fishworker forum secretary Olencio Simoes stated.

Source: <http://timesofindia.indiatimes.com/city/goa/Have-separate-ministry-for-fishermens-welfare-GRE/articleshow/35612501.cms>

NFF roots for a ministerial berth for MP from fisherman community

While congratulating Prime Minister designates Narendra Modi, the National Fishworkers Forum (NFF) urged him to give a ministerial berth to the Member of Parliament from the fisherman community, create a separate ministry for fisheries at the Centre and include the fisherman Community in the Scheduled Tribe list.

Source: http://www.newindianexpress.com/states/tamil_nadu/Fishing-Community-Wants-Union-Minister/2014/05/21/article2236458.ece

Vizhinjam Seaport Project: NGT Principal Bench to Hear Pleas

The National Green Tribunal (NGT) has ordered that the petitions against the Vizhinjam seaport project will be heard by its Principal Bench in New Delhi, although Kerala State had demanded that the petition should be heard by the NGT's Chennai Bench. The latter had already conducted a number of hearings on petitions filed against the proposed project.

Two sets of petitions had been filed before the NGT - one before the Chennai Bench by Joseph Vijayan, Christopher and Michael of Thiruvananthapuram demanding withdrawal of Environment Clearance (EC) given to the project, and the second, filed by the Marydasan of Adimalathura and Wilfred of Puthiyathura in New Delhi, which challenged the Coastal Regulation Zone Notification of 2011 (CRZ Notification, 2011) and the Environment Clearance (EC) given to the project.

Source: <http://www.conservationindia.org/single-external?external=79847>



3. Perspectives and Analysis

Marine Biopiracy and India

Most of marine collection takes place within the sovereign territory of developing countries, often without the proper consent of appropriate authorities. The thin line between bio-prospecting and biopiracy is easily maneuvered by powerful companies operating in the less developed nations. Although the oceans cover nearly 70% of Earth's surface, their biodiversity-rich areas are located mainly in the tropical regions, within the shallow territorial waters and Exclusive Economic Zones (EEZs), mostly in the developing countries, and it is these countries that bear the brunt of effects of biopiracy and related economic losses⁴. It is no different in India.

Each of the following highlight the increasing demand for marine resources by pharmaceutical, cosmetic, mineral, oil and other companies:

- The infamous issue of sea weed collection by PepsiCo in Tamil Nadu and the controversial permission granted by the National Biodiversity Authority;
- The active presence of multinational companies such as Rhone Poulenc and Merck & Co. Inc. since 1991 for the collection of marine micro-organisms for drugs;
- The large-scale patenting of coral and sea creatures, with a record of about 59 patents in 2003-06 in the Indian Ocean by companies such as Clontech Laboratories and Nanocyt Inc.⁵

Some major international conventions that are legally binding, such as the Convention on Biological Diversity (CBD) and the United Nations Convention on the Law of the Seas (1994) and international organizations like the World Intellectual Property Organization, deal with the issues related to Prior Informed Consent, Access, and

4 Qanungo, Kushal. "Time for a New Deal on Marine Bioprospecting." *SciDev.Net*. N.p., 2002. Website: <http://www.scidev.net/global/biodiversity/opinion/time-for-a-new-deal-on-marine-bioprospecting.html>

5 Demunshi, Ypsita, and Archana Chugh. "Patenting Trends in Marine Bioprospecting Based Pharmaceutical Sector." *Journal of Intellectual Property Rights* 14 (n.d.): n. pag. Mar. 2009.

Benefit Sharing with regard to biopiracy, and provide guidelines for conducting marine research. However, these conventions are limited in their scope. One major problem with them is that international legislation on marine resources does not have jurisdiction over international waters; Secondly, presently applications of patents are not required to specify the place of origin of the resource, which actually goes against the concept of Intellectual Property Rights (IPRs). Even if one coastal area rejects a proposal, neighboring regions might agree to allow for the exploitation of a particular resource, thus limiting the scope (of consent) of the rejecting state, leading to losses, to both the economy and the marine biodiversity. This makes actions for conservation and for prevention of biopiracy difficult.

The two important international conventions dealing with the issue of marine biopiracy are the Convention on Biological Diversity (CBD), 1992, and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), 1996. These two pieces of international legislation contradict each other on issues of patenting, requirement of informed prior consent, and arrangements for benefit sharing. Thus it is not surprising that "TRIPS has paved the way for the private ownership of products developed from the traditional knowledge of communities in the South"⁶

These conflicting and overlapping pieces of legislation were addressed by the 2010 Nagoya Protocol to the Convention on Biological Diversity – a protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS). It is 'aimed at protecting the rights of those possessing genetic resources and traditional knowledge, while providing researchers with reliable and certain access to samples of these resources at low cost'. This Protocol gives clear guidelines for contractual as well as non-contractual transactions between multinational companies and powerful nations. It also gives guidelines for the less powerful indigenous communities and developing countries.⁷

India ratified this protocol in 2011; however, as in the case of other similar treaties, India has not taken

any significant steps in implementing the provisions of the protocol. The required actions associated with this include, (amongst many other clauses) plans for developing seed banks, botanical gardens and other collections assigned to providing only genetic resource samples that have been fully documented. The government's Unit for Research and Development of Information Products (URDIP) has prepared a database of patents granted world-wide on Indian bio-resources including marine resources. This database is expected to help monitor the patenting of bio-resources, detection of biopiracy, commercial exploitation, utilization, technological advancements and benefit sharing.⁸ However, considering India's vast coastline (measuring approximately 7,517 km) and the rich marine bio-reserves, India needs many such databases and banks. India also needs new technologies for documenting, understanding and conserving the marine ecosystem which has been out of the purview of our legal and economic concerns.

Unfortunately even the environment-related legislation in India, such as the Wildlife Conservation Act or even the Biodiversity Act, fail to address the issue of marine biodiversity and the rampant incidence of marine molecular and species' biopiracy. The Biodiversity Act of India, 2002, needs to be revised to deal with cases of biopiracy. First and foremost, there is a need to recognize that the different nature of marine biodiversity owing to the fact of its source of origin, and the fact that 'laws of the land' did not have conservation of marine biodiversity as their objective and hence they were never capable of conservation of the resources in question. Most of these laws deal with territorial areas.

Without identifying the Intellectual Property Owners for benefit sharing, collection of patent royalties is inadvisable. The provisions of the Act are more favourable for overseas applicants rather than Indian patent applicants. Indian researchers or inventors cannot patent their innovations and results. Foreign applicants can file overseas patents without any biodiversity permission from Indian authorities as the Indian Act does not have jurisdiction outside India.⁹ This is where international bodies such as the United Nations Informal Consultative Process on the Ocean,

6 Lemeire, Saskia. *Biopiracy*. Thesis. Faculteit Rechtsgeleerdheid Universiteit Gent, 2013.

7 "The Nagoya Protocol." *Convention on Biological Diversity*. Website:<http://www.cbd.int/abs/about/>

8 Das, Dipannita. "Soon, Database on Indian Bio-resources." *The Times of India*. 2011.

9 Jagdale, Scahin. "From Biopiracy to Bioprosperty." *Express Pharma*, 2008.

the International Seabed Authority, the proposed International Marine Bio-prospecting Authority and others come into picture, to resolve disputes and to deliver equitable sharing of benefits from marine resources.

The need of the hour is to take appropriate steps to protect our natural marine bio-reserves and the traditional knowledge and livelihoods of local coastal communities. However, we need provisions to fulfill this objective. We also have to take into consideration the needs of 'sea level' realties to effect proper conservation of marine biodiversity. India must widen its marine database; undertake and promote extensive research in the sea waters; and make stringent laws for patenting, sharing and Intellectual Property Rights. Along with these measures, what is needed is a strict implementation at a local level, all along the Indian coastline. A better understanding of the ecosystem from a scientific, economic, environmental as well as a social perspective will aid us in gaining a holistic perspective for designing an appropriate legal and practical solution to curb marine biopiracy and the associated destruction of the fragile marine ecosystem.

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Facts and Ideas

- With less than 2 percent of the world's oceans under some form of protection and only 15 percent of coral reef Marine Protected Areas considered as effectively managed, community led marine conservation can help to address some of the most pressing challenges facing the world's oceans.
- Small-scale fisheries support the livelihoods of over 500 million people worldwide. Training and supporting communities to manage and conserve their natural resources is vital to help rebuild tropical fisheries.
- More than 1 billion people throughout the world rely on seafood as a source of protein. Managing fisheries sustainably is vital for ensuring global food security.
- Globally around 500 million people are dependent on coral reefs for food or income. Community managed protected areas are vital for protecting fisheries and safeguarding marine biodiversity.

District Level Committees: lip-service or legitimate community representation ?

Globally, the sea coasts are mired in conflict today; conflict involving some combination of local communities, industry and the state. The most commonly used tool to resolve such conflict is the law. But can a law created solely by one party involved in the conflict effectively address the concerns of the marginalized? The failure of many marine and coastal conservation measures and policies has been attributed to the exclusion of local communities in the planning and execution phases. Recognizing this, international policy discussions around coastal management and fisheries governance are increasingly promoting the active participation of fishing communities in fisheries and coastal management.

Closer to home, fisher folk trade unions and civil society groups in India have been demanding the inclusion of fishing community members within implementation and decision-making bodies prescribed under relevant laws. A small victory seemed to have been achieved in the form of provisions under Coastal Regulation Zone notification 2011. Under this law, the lowest tier of implementing bodies, the district level committee (DLC), is mandated to include at least three representatives from local coastal communities. But to what extent has this new provision fulfilled the goals of devolution of powers, transparency of decision-making and equal representation of all concerns? In India, each state, that has a coastal line to speak of, will perhaps be required to deal with such challenges. In what follows we discuss the situation in Karnataka to highlight some of them.

Toothless bodies

Karnataka is one of the few coastal states with DLCs formed as per the letter of the CRZ 2011 provision. This means that each of the three coastal districts has a DLC with three fisher folk representatives on it. However, the CRZ 2011 is silent on how these representatives are to be selected and the roles and responsibilities of the DLCs. As a result of the law's silence, DLCs in Karnataka do not have any decision-making responsibilities: they merely make recommendations to the State Coastal Zone Management Authority (SCZMA) on projects that have applied for CRZ clearance. The SCZMA, when making their decision, is free to accept or reject the DLCs' recommendations with no mandate to share their decision or reasoning with the DLCs. Quite justifiably,

the fisher folk representatives on these DLCs are dissatisfied with this state of affairs. According to them the DLC provision is inadequate in its current form and there is an urgent need for the devolution of actual decision-making powers, instead of the lip-service currently being paid to the concept.

Questionable transparency

Interestingly in Karnataka the task of selecting the DLC representatives was delegated to the Fisheries department, unlike other states where the implementation of the CRZ 2011 lies with either the Pollution Control Board or the Forest Department. Possibly as a result of this delegation of responsibilities, prominent individuals from the fishing community have been chosen to join the DLC. This inclusion of the right leaders or community representatives in the DLCs is critical, if community concerns are to be clearly represented at this level. At the same time, given that the district Fisheries department does not consult any of the local community institutions, like trade unions or traditional panchayats, during this process of selection of community representatives, there is no guarantee that the right representatives will be selected when the DLCs are reconstituted in Karnataka. This also holds true for other states where the Fisheries department may or may not be involved in DLC constitution.

Flagging concerns

The process under which DLCs are constituted under the CRZ 2011 has allowed communities the space to bring their concerns to the table for consideration, through the selected community representatives. These concerns range from CRZ violations to the feasibility of asking community members to fill out the six-page long, detailed (and largely inapplicable) CRZ clearance form for minor work like the construction of their houses. The DLC representatives, however, are powerless when it comes to making any changes to the system and these concerns are simply passed on to the SCZMA for consideration. The SCZMA does not have any community members on board, effectively taking the final weighing of concerns and decision-making out of local hands.

All in all, the message that the new DLC provision sends, is that it is possible to create inclusive spaces if we stand together and fight for equal representation. But also, that the fight doesn't end there. The real victory will lie in ensuring the implementation of these spaces,

not just in letter but in the spirit in which they are being demanded.

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The land is not enough- Mining the sea

Over the past few years, 'deep sea-mining' has been the subject of a lively debate among maritime analysts. With global appetite for minerals and rare metals growing, the competition for deep sea-spaces rich with poly-metallic nodules and hydrothermal deposits has been increasing. As a result, many countries have embarked upon a drive to upgrade their under-sea mineral exploration and extraction capabilities.

India has joined the race to explore and develop deep sea mining for rare earth metals. This initiative that India has now launched in deep-sea mining seems linked to China's perceived 'strategic-play' in the Indian Ocean.

The country is building a rare earth mineral processing plant on the east coast of Orissa and it is spending around US \$ 135 million to buy a new exploration ship. The recent acquisition of India's deep-sea exploration ship 'SamudraRatnakar' by the Geological Survey of India (GSI) is a noteworthy development. SamudraRatnakar is equipped with sophisticated deep-sea survey instruments like Doppler profilers, multi-beam sonars, acoustic positioning systems, marine magnetometers and a marine data management system, which give it a qualitative edge over other survey ships. The Indian government also plans to bring together its marine science experts and engineers in nuclear energy, space research and defense, using their expertise to help accelerate mineral extraction.

One of the major issues with deep sea mining is that so little is known about its implications for the marine environment.

The main potential environmental impacts of mining include material and habitat removal, plume generation and water quality distress and noise and vibration

disturbances. Mining could devastate biodiversity hotspots and endanger deep sea organisms as sediment waste and pollution from toxic heavy metals are discharged. This comes as only 3% of the world's oceans and less than 1% of the high seas are protected, making them among the most environmentally vulnerable places on Earth.¹⁰

Deep seabed marine ecosystem is considered to be the 'cradle of life on earth', and it is the only one that does not depend on sunlight. There are exotic species that are found nowhere else on earth. According to Dr. Rod Fujita from the Environmental Defense Fund¹¹ there is an urgent need to establish a framework for conservation of the deep sea through establishment of a network of marine protected areas, and new international standards for environmental impact assessments that apply to all sectors of industry exploiting ocean resources. Also, the global economy does not require gold or copper. We are now aware of how to recycle and reuse the copper that is already up out of the ground. In this context, deep sea mining becomes a waste of resources, energy and money.

Operational strategies must be adopted to reduce the impact on seafloor environment by designating temporary refuge areas to help excavated areas recover over a period of time, relocating animals from non-excavating areas to places where excavation has been completed, and adding artificial substrates to increase chances of rehabilitation. The mid-ocean and surface environments are also susceptible to harm. Although arguments are made that any damage caused here will be mitigated by employing additional operational strategies, such as discharging the water contaminated by the mining process. Where will it be discharged is the moot question. Nonetheless, direct and indirect impacts on and nearby communities remain very real possibilities even with these practices in place.

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10 <http://www.greenpeace.org/international/en/press/releases/New-report-Deep-sea-mining-high-risk/>

11 For information on Environment Defense Fund see <http://www.edf.org/>

4. Case Studies

Sustainability of the Lakshadweep Pole and Line Tuna Fishery: Emerging challenges and changes

The Lakshadweep archipelago located off the southwest coast of India encompasses coral atolls, shallow banks and submerged reefs. The total land area of this system amounts to a meager 32 kms, but the exclusive economic zone of its surrounding seas is four orders of magnitude greater. The primary fishery is the pole and line tuna fishery that targets oceanic Skipjack tuna (*Katsuwonus pelamis*) thereby reducing fishing pressure on the highly sensitive reef predators. It is this reduced fishing pressure on the reef ecosystems that is thought to sustain Lakshadweep's reef health despite global stressors like climate change and ocean acidification.

Unfortunately, this fishery now faces significant threats of declining stocks, rising costs and depreciating market value. Skipjack tuna, despite being fast growing and early maturing, might be facing high levels of fishing pressure by international purse seiners¹², leaving very little for the traditional pole and line fishers. In response to resource declines, fishers have started adopting unsustainable practices such as the use of Fish Aggregating Devices (FADs) and longlining.¹³ FADs are artificial structures moored to the ocean floor that serve to attract fish in the structure-less deep sea. Unfortunately they tend to attract mostly juveniles, so fishing at these structures can result in growth overfishing and high by-catch of non-target species. Fisheries departments and fisher unions in Lakshadweep promote FADs as they provide the safety of a fixed location and the surety of catch. In a data poor system like the Lakshadweep islands, uncertainties in Skipjack stock health make the use of FADs a risky proposition.

The pole and line fishery utilizes a variety of different planktivorous fish species as live-bait from island lagoons and reefs. However, over the past few years fisher folk have noticed a decline in live-bait resources

12 A type of commercial fishing that involves the use of seine nets, weighed nets with surface floats, that are drawn in by boats in such a manner that the bottom closes in. Usually used to catch large schools of pelagic fish.

13 Commercial technique utilizing long fishing lines with baited hooks set at regular intervals on branching lines, set adrift or on anchor and used to target surface (neustonic), midwater (pelagic) or bottom (benthic) species. Longlining is prone to the accidental catch of non-target species like turtles, seabirds, sharks etc.

but little to no data is available on this. The ecological impact of the removal of these lower trophic levels remains unclear due to their high level of turnover and inherent variability. With limited monitoring and management, a sustainable future for the Lakshadweep pole and line fishery is difficult to imagine.

On the other hand, due to the growing demand for reef fishes like groupers and snappers, and declining price for Lakshadweep tuna, fishers are beginning to switch from the sustainable pole and line fishery to the highly detrimental reef fishery that might provide higher short-term economic returns. Ecologically, groupers and snappers play an important role in reef ecosystems as top predators. Their slow growth and late maturity make groupers and snappers highly susceptible to even moderate levels of fishing pressure. Unregulated reef fisheries can have serious ecosystem-level consequences for these sensitive atolls.

Sustainable certifications can help improve markets, sustain livelihoods and buffer a transition to more detrimental practices like reef fishing and longlining. Dakshin Foundation is working, in collaboration with WWF India and the International Pole and Line Foundation, to strengthen the Lakshadweep fishery via sustainable seafood certifications like that received by the Maldives pole and line fishery. Currently most of Lakshadweep's Skipjack is exported as dried fish called mas, a commodity that is constantly depreciating in value and is commonly consumed in Sri Lanka, Japan and S.E. Asia, countries unconcerned with seafood labels. In order to benefit from a certification, Lakshadweep tuna needs to reach European and American markets. At the same time we need to keep in mind that opening up avenues for the export of fresh or frozen seafood products could pose a direct risk to the reefs unless they are exclusively developed for tuna. In order to achieve certification, one requires not only community support but also improvements in monitoring and management.

Dakshin foundation has established connections with people from the pole & line community who have now joined the work. It is a homogenous community consisting of Malayali muslims. As of now, catch monitoring books have been issued to 34 different boats in the island of Agatti, Kavaratti & Kadmat and one book in Minicoy. Dakshin Foundation has been working with this community to understand the socio-ecological dimensions of its rare low impact and highly

skilled tuna fishery. Our in-water surveys of baitfish populations reveal high levels of variability, most likely driven by environmental factors, but the impact of a new technique of harvesting bait fish populations at time of spawning still needs further study. Interviews with fisher folk reveal great discontent regarding rising costs, poor market access and limited departmental support. Since January 2014, we have been working with community members to self-monitor catch data. This community-based catch monitoring program was initiated in the islands of Agatti, Kadmat and Kavaratti, and has been well received. As for other local initiatives - there are few fisher unions in place in certain islands - but their main interest is in deploying more fish aggregating devices (FADs). Also unfortunately, currently women are not playing a role in the monitoring work and tend to also have a limited role in the fishery (except in Minicoy where they are heavily involved in processing).

In the near future, we are looking to strengthen our ecological and community-based fisheries monitoring programs to generate long-term data, improve fisheries management and reinforce sustainability through eco-labeling rewards.

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Women self help groups in marine conservation in coastal villages of Ganjam district of Odisha

For sixty year old Konda Kamma of Markandi, life has revolved around her house and the sea. Every morning she walks more than 10 km to collect fish from the sea and sell it in the market and to traders. This fetches her around Rs. 2500 to Rs 3000 per month. Her husband who was a fisherman drowned in the sea when he was on a fishing spree about four years back. Her sons – both school drop-outs - have migrated, earlier to the neighboring state of Andhra Pradesh and currently to Kerala and Mumbai, in search of jobs; "I have never been away from Berhampur," she says. "Sometimes I ask my sons to take me with them so that I can see what the cities look like. Moreover I can get some good medicine for my backache there. They don't have good medicines here." Kamma has been complaining of terrible back pain for three years now. Saraswati, her daughter, studies in class 8 at the village school. "I like to go to

school but there are not many girls in my class. They are all getting married one by one and my mother too is looking for a groom for me. Studies are no use for us as we cannot get office jobs in small villages. Moreover elders say that if girls study much, it will be difficult to find them grooms in our community.”

Most of the five thousand households residing in the fifteen fishing settlements dotting the coastline have been fighting poverty, unemployment, illiteracy and health issues everyday and have similar stories to tell. Nearly five thousand households make up the 15 villages. More than 80 % of the total population of 25 thousand in these fifteen villages is fighting poverty and unemployment, as stated in the Anganwadi Workers’ report, 2011.

The Cyclone Phailin, packing heavy rains and wind speed of 200 kilometers per hour, slammed into the Ganjam district of Odisha on October 12 2013 leaving behind a massive human tragedy. Besides rendering thousands homeless, the rains triggered by the storm brought a massive loss to marine fishing communities.

IEWS is one of the grassroots organizations working in the area. It has promoted a Self Help Group federation called “Divya Jyoti Mahila Vikash” which has been actively generating awareness on marine conservation and environment security to secure the livelihoods security of this community. The women’s SHG federation is actively engaged in plantation of casuarina¹⁴ trees to minimize the disastrous effects of cyclones in marine coastal villages. IEWS has also been supporting, coconut plantation and kitchen gardens to promote secondary livelihoods among marine fishing communities in the coastal villages of Ganjam district.

Women play an active role in the day-to- day activities of the coastal fishing communities but unfortunately their contribution to the fisher sector remains unnoticed. Fisher women are actively engaged in fish processing and marketing after the fish harvest. They bear the double burden of work for the market and for the household. The fisherwomen of Ganjam district are illiterate and they do not have any other skill than selling fish. Increasing competition for scarce fish

resources makes it difficult for women to procure fish. Fish vending is a difficult occupation in the absence of transport facilities, which compel women to walk 10 to 15 km a day with heavy loads of fish on their heads. Lack of alternative income generating opportunities in the coastal area reduces the opportunity cost of labor to the point where they continue to be employed within the fishery industry in spite of very limited returns. The economic inadequacy leads fisherwomen in Ganjam to obtain money from moneylenders who in turn exploit them with usurious credit, which keep them perpetually indebted.

Occupational convenience forces fish workers to live in the narrow stretch of coastal land. They live in impoverished thatched and mud walled houses. Transport and communication facilities, though good in a few villages like Gopalpur and Arijpalli because of their importance as tourist centres, are otherwise inadequate in the villages. Fisher women in the area are mostly illiterate and child marriage is still a reality in this community.

The wives of the fishermen take charge of the catch once it is landed. They carry the fish in baskets, on their heads over distances of 10–15 Kms and sell it from door to door. In the fishing season, fisherwomen spend 9-12 hours per day in fishery-related activities, besides attending to the regular household activities. Women are involved in all the shore-based post-harvest activities such as handling, sorting, grading, gutting, drying and marketing. More than 70% of fisherwomen in the area are engaged in fresh fish marketing. Women in Boxipalli, Venkatraipur, Deegipur, Golabandha and Sonapur are also involved in dry fish marketing. The fisherwomen in the area not only work in the fish trade but also work as daily wage laborers whenever work is available. IEWS promoted 9 self help groups (180 members) in Markandi village working towards social and economic empowerment.

14 However, Casuarina is not without problems. Please refer to Box 9 of our previous issue on marine biodiversity Volume 3, Issue 2, August 2010 of People in Conservation.





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