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# RESEARCH + INTERVENTION

Communities and Resource Governance

Biodiversity and Resource Monitoring

Reconciliation Ecology

Environmental Education

## Thinking and acting in conservation, translocally.

There is no doubt a certain perverse pleasure in denying or refuting an old adage, but there must be both adventure and purpose in such an act. I refer to the need to revise the maxim - 'think global; act local' attributed by some to town planner Patrick Geddes, which has since been unimaginatively deployed in environmentalism across the world. The conservation space has long suffered from the triumph of 'global thinking' over 'local acting'. The idea of pristine Nature is a well-known obsession that is still rehearsed at international conservation conventions and meetings. Many of India's national parks, wildlife sanctuaries and other wild enclosures bear the scars of such 'global' thought. Influential neo-liberal conservation ideas such as payments for ecosystem services (PES) serve to further homogenise local action across the globe.

Fortunately, there are counter currents emerging from the everyday practice of conservation, which are growing in their influence through translocal means. Translocality refers to the ability of individual localities to transcend their geographical boundaries and speak to other (even dissimilar) locals without being subsumed by a global paradigm. Dakshin's work in the arena of conservation and those of our partner organisations and communities is part of such a translocal sphere. Our work has aimed at providing a critical body of work and practice in conservation from the disciplines of the social and natural sciences. We do this neither in isolation, nor through a proselytising force. Our sites and partners in conservation have guided our thought and action and (we hope) are similarly served by ours.

The idea of translocality in conservation goes beyond a semantic re-jigging of the popular cliché. It provides a useful way to represent the politics behind our conservation efforts. Firstly, in such a framework, there is an affirmation of the power inequity that lies between the global and the local. Dakshin's programmes work in this translocal space, where our research and interventions in particular sites (such as the Lakshadweep and the Andaman Islands) are consciously inter-linked. Each local site therefore benefits from the conservation experience of a wider network of colleagues, collaborators, donors and partners.

Secondly, the translocal reality of conservation means that the nodes in our network are not always similar. We work with government bodies, fishworker unions and scientists in differing degrees across sites. This necessitates an appreciation of diversity in action and thought which interdisciplinary practices can inculcate. Interdisciplinary groups are needed for effective conservation. They function best under translocal conditions and must be supported in this endeavour.

Finally, being translocal in conservation keeps you on your toes. Against a globalising juggernaut of conservation triteness, those working the translocal space of conservation, which argues for a diversity of approaches and the centrality of place, must regularly and spiritedly question such dangerous complacency.

Dakshin is delighted to present in this report, some of our efforts in keeping conservation refreshing, relevant and real.



Aarthi Sridhar  
Director, Dakshin Foundation

# COMMUNITIES & RESOURCE GOVERNANCE

India's coastal and marine regions are excellent examples of systems which are at once social, ecological and political. The Indian coastline is home to around 3.57 million fisherfolk who depend on marine and coastal resources for their livelihood. These biologically and culturally assorted ecosystems have often remained on the margins of mainstream development and environmental governance.

sea  
SEA

Tracing transformations in  
fishing technologies in Odisha

The 11<sup>th</sup> COP to the Convention  
on Biological Diversity and beyond

Empowering local fisher  
governance institutions  
for coastal regulation  
and management

State subsidies and  
small-scale fisheries:  
lessons from Karnataka

Communicating  
information  
on fisheries subsidies  
to small-scale fishers  
in Karnataka

Advocacy support  
to the National  
Coastal Protection Campaign

Community mapping of sand dunes at Panaiyur Village,  
Kanchipuram District, Tamil Nadu

Communicating environmental laws:  
development of outreach material

Governance and leadership in fishing communities  
in Ramanathapuram district, Tamil Nadu

Coasts are today the new frontier of entrepreneurial activity and industrialisation, and are fast emerging as areas of considerable social and ecological strife. Not only is the amount of coastal land available dwindling but fisheries resources have also decreased all over the globe, and the sector has witnessed several alarming crises. Many species of fish have been overharvested, and unsustainable fishing and coastal and marine pollution have destroyed productive fishing grounds. Small-scale fishers consequently find themselves economically marginalised and at the receiving end of exclusionary conservation laws.

The last decade has witnessed a number of civil society campaigns aimed at greater inclusion of fishing communities in the planning and decision-making process of coastal development, conservation and fisheries policies. Dakshin's members have played a key role in these initiatives. Our ongoing interventions under our Communities and Resource Governance Programme aim to strengthen and aid civil society networks and grassroots initiatives to help reform conservation and development paradigms. One of the major obstacles in fair negotiation over resource management is the uneven distribution of and access to critical types of knowledge and information among communities from marginalised sections. This includes knowledge and information related to law and policy subjects, information



on coastal development and planning processes and implications, and innovations in techniques and technologies that enable better management and governance.

The Communities and Resource Governance Programme undertakes research and action to generate such knowledge and make critical information accessible. Our research critically analyses laws, programmes and policies on coastal and marine development by drawing from a range of disciplines in the social and natural sciences. Through our active engagement with fisher communities, their associations and

civil society groups, we aim to enrich communities' knowledge, power and capacities to make decisions and engage with the management of natural resources with other actors. Our projects under this programme work towards strengthening a plurality of approaches that enable decision-making at varying scales, by focusing on knowledge systems, institutions and social processes at multiple local sites.



## I.I Empowering local fisher governance institutions for coastal regulation and management

There are ongoing debates about whether representation in environmental procedures, or development schemes and institutions is adequately democratic, participatory or accountable. While our coastal spaces abound with legislations that have evolved to regulate or manage activities in these areas, rarely do we see the participation of local communities in designing, operating or implementing these legislations. Years of campaigning by fisher communities has finally resulted in their inclusion in decision-making at the district level under the Coastal Regulation Zone Notification (CRZ) 2011. According to the CRZ 2011, enforcement and monitoring of its various provisions would be the responsibility of the State or Union Territory Coastal Zone Management Authorities, who would in turn be aided in this task by district level committees (DLCs) that would have as members at least three representatives from local coastal communities including local fishing communities. The right representative participating in these spaces could potentially play a vital role in ensuring the protection of coastal lands and ensure greater stability in their communities' access to resources.

Dakshin is carrying out a monitoring exercise in Tamil Nadu and Karnataka to evaluate the implementation of this provision and to identify issues faced by the fisherfolk representatives in the constituted DLCs.

### Formation of DLCs in Karnataka

Karnataka is one of the few states where DLCs have been constituted, and our aim was to assess the effectiveness of these bodies in implementation of the CRZ 2011.



We focussed on issues of inclusivity, adequate representation and democracy in electing the members to DLC and also studied their role and functions. While the CRZ 2011 states that these committees will act as facilitators, it does not specify details regarding the manner and capacity of their responsibilities. In Karnataka, their role till date has been limited to discussing and providing recommendations on various projects that come up for CRZ clearance. These suggestions

are then passed on to the State Coastal Zone Management Authority where they are considered. The DLCs however have not been conferred with any decision-making powers. During our initial survey in the three coastal districts of Karnataka, we found that the elected fisherfolk representatives on the DLCs were all popular, socially active members of their respective communities. The community members identified them as leaders readily but were unaware of a body called the DLC that was set up exclusively for CRZ 2011 implementation. A number of other gaps in the information available to the public on the CRZ 2011 were identified. The purpose of ensuring that the DLCs had members from the local communities was to ensure greater public participation and awareness on the CRZ 2011. From our interactions, this objective was clearly unmet.

Dakshin will be working further to strengthen these DLCs so that they become an effective example of decentralised coastal governance that involves both government and local communities.

### Formation of DLCs in Tamil Nadu

From information gathered through RTI applications, it is clear that the implementation of the CRZ 2011 is extremely poor in the state of Tamil Nadu. Several provisions, including



the formation of DLCs, have been left unfulfilled. Given the abysmal amount of information available in local languages, the level of awareness on the law and its effects is poor. Dakshin members have initiated discussions in various districts regarding provisions of the CRZ 2011, including the DLCs. With the help of the outreach material developed in collaboration with Namati, a partner organisation, we have been organising training workshops and discussions around this law. Currently, Dakshin is coordinating the development of a petition on behalf of the fisher unions in Tamil Nadu, demanding DLC formation.

We will also collaborate with other civil society organisations and unions to demand official guidelines on the constitution of DLCs and their roles and responsibilities. We are also developing a critique on the effectiveness of the DLC to enhance public participation and incorporate local knowledge into decision-making for policy.

*Principal investigator: Aarthi Sridhar  
Project personnel: Marianne Manuel, Arundhati Jagadish*

## 1.2 Governance and leadership in fishing communities in Ramanathapuram district, Tamil Nadu

The demand for decentralisation of governance and inclusive policy-making has been made repeatedly by civil society organisations for several decades with only a few halting steps of progress in this direction. Today, there are both internal as well as international efforts towards recognising community participation as central to the management of natural resources. In India, few studies have attempted to investigate the utilisation of these inclusive spaces and how these spaces engage with existing systems of governance. To this end, Dakshin initiated studies on governance systems among fishing communities in Ramanathapuram district, Tamil Nadu.

Unlike many other areas on the Coromandel coast, the fishing communities of Ramanathapuram district are socially heterogeneous with a variety of castes and religious backgrounds. While inter-caste or inter-religious friction between the local traditional fishermen has not been at the fore, the region is characterised by conflict between local and migrant fisherfolk, small-scale and trawl fishers over fishing resources, and fishers and the state over wildlife conservation laws. The diversity in sources of conflict is mirrored by the

range of governance institutions that exist within these communities, namely traditional institutions such as the caste panchayats, fisher unions, the more recent Eco-Development Committees, self-help groups (set up by the Gulf of Mannar Biosphere Reserve Trust) and finally, state institutions such as government line departments. Our study enquires into existing frameworks of coastal governance and the legally mandated spaces for community participation in coastal regulation. We have conducted interviews, through which we aim to understand the capabilities and agency exercised by

leaders and representatives to deal with conservation and policy related conflicts. This would provide a better understanding of traditional as well as emerging forms of leadership and representation in new natural resource governance frameworks.

From our involvement in this region, we have found that while the traditional caste panchayat or ooru panchayat does exist, its role is restricted to issues of village life such as overseeing marriages or deaths. This is a departure from their role as seen in other, more homogenous (in terms of castes involved in fishing)



districts of Tamil Nadu where the ooru panchayat also regulates and negotiates conflicts over fishing and livelihoods. In Ramanathapuram, all matters related to fishing are overseen by various fisherfolk unions. The largest of these is the Ramnad District Fishworkers' Trade Union (RFTU) whose members include individuals involved in fishing, seaweed collection, chank diving as well as fish vendors. The union's main role is to regulate members' fishing as well as negotiate with government on fisheries issues. It ensures that members receive government subsidies and aids them in times of conflict or arrest. Leaders both in the ooru panchayat and the union are democratically elected. While there is no pattern so far indicating that individuals who hold positions of leadership in the union also hold positions in their panchayat, there are definitely instances where this is seen, mostly at lower levels in the union's elected hierarchy. However this is a question that we would like to look at more closely considering that it is probably from this pool of representatives that candidates are selected.



An initial analysis of laws operating on the coast was also undertaken to identify spaces available for community participation in decision-making (refer page on the project 'Communicating environmental laws: development of material'). The Dakshin team will also carry out a preliminary analysis of the capacity-building needs of local leaders to participate in these identified legal

spaces. We also plan to undertake more detailed research on traditional governance mechanisms found among local fishing communities in neighbouring districts of coastal Tamil Nadu.

*Principal investigator: Aarthi Sridhar*  
*Project personnel: Marianne Manuel*



## I.3 Communicating environmental laws: development of outreach material

Many environmental laws can have significant outcomes for fishing communities, some positive and others negative. It is therefore crucial that leaders, activists and intellectuals among fishers have access to details regarding these laws. However, few planned experiments have been undertaken on communicating legal information to fishing communities in ways that are appropriate. Efforts at 'outreach' or communication with these communities, within India at least, are bereft of the worldviews or influences that impact fishers' engagements with law. Consequently, the fishers' perspectives and meanings associated with laws (official), rules (local), authority and justice is often steamrolled by uni-dimensional text-

heavy communication material such as pamphlets that focus on a singular understanding of the law – either for or against its provisions.

### Outreach material on the Coastal Regulation Zone, 2011

In July 2012, Dakshin Foundation in partnership with Namati and the Center for Policy Research began experimenting with creating legal information material. The goal was to provide fishing communities with the information they needed to play an informed role in resource governance. The initial project, carried out in Tamil Nadu, created material on the Coastal Regulation Zone Notification 2011 (CRZ 2011). The material is

targeted at (a) fisher leaders (union leaders, traditional leaders or formal institutional representatives) and (b) the general population of fisher communities. After several discussions with various community members and activists, it was decided to produce two types of material namely, a detailed booklet (for fisher leaders) and pocket cards (for the general population). The material was designed to make the content of the law comprehensible without influencing the user's perception of the validity or practicality of its provisions.

Given the above-mentioned dearth of information on effective communication of legal text, we felt it would be important to evaluate the

response to the material once it was distributed. As part of this evaluation we tested whether our material was an improvement on existing information and elicited feedback on possible improvements to design and content. Through this exercise we found that none of the communities we worked with had access to any information in the local language, apart from the materials we had created. There is a clear need for more legal information to be translated into local languages and to ensure that communities can access this information.

### Outreach material on the Wild Life (Protection) Act, 1972 (WLPA)

The WLPA's provisions are a major source of conflict between local fishing communities and the Forest Department in areas around marine national parks, such as the Gulf of Mannar National Park (GoMNP). The restrictions and regulations that the WLPA imposes on national parks and sanctuaries seem to have been drafted keeping terrestrial systems in mind and there are no specific provisions for marine protected areas. For example, in the case of terrestrial protected areas, the State is supposed

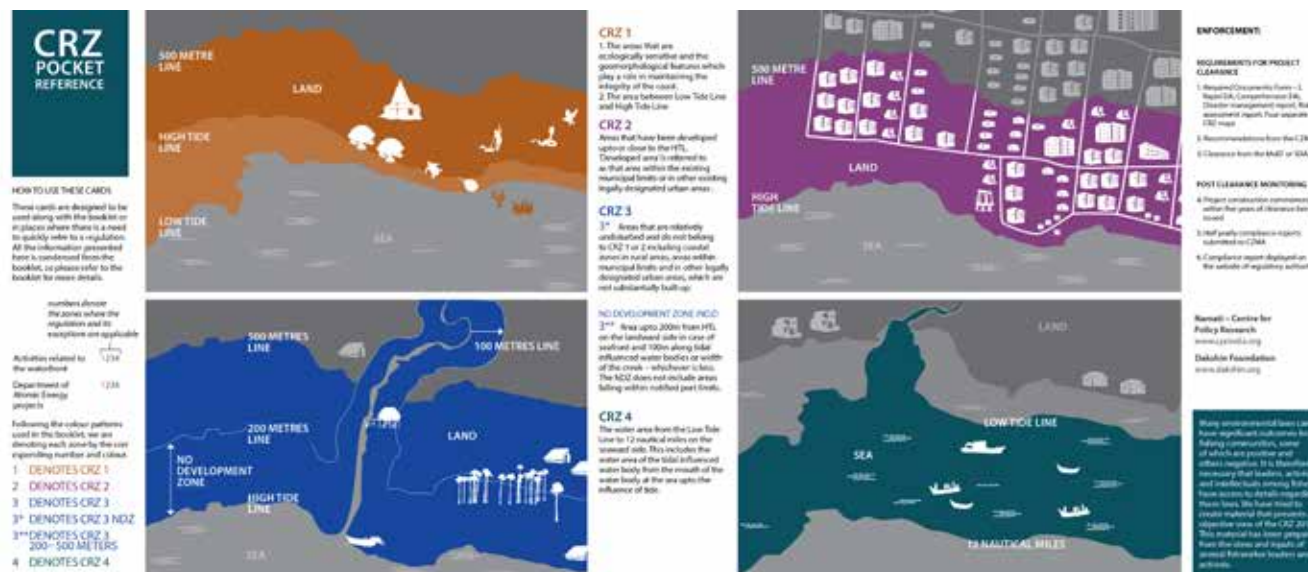
to acquire the rights to the land from the claimants (local communities with traditional rights to the area) before declaring the area as a sanctuary or national park. However in the case of coastal waters that fall within the boundary of the sanctuary or national park, there is no mention of the need to acquire the rights of communities. The only mention of coastal communities in the WLPA is the statement that occupational interests of local fishermen must be protected when coastal waters fall within the boundaries of a protected area. Hence it is important that communities understand this law and develop their own critique and demands for change.

To aid in this process, we decided to develop material in the local language that could help communities comprehend the law and start discussions on various aspects of rights and proper implementation of legal provisions. With help from the Global Greengrants Fund (GGF) and the Duleep Matthai Nature Conservation Trust (DMNCT), we produced an updated version of the bare Act and

a bilingual handbook explaining provisions of the WLPA relevant to fisher communities of Tamil Nadu. The updated version of the bare WLPA incorporates all amendments made to the law till date. This document when published will allow researchers to trace the changes in the WLPA since it was first passed in 1978 and analyse the nature of changes made since then. The bilingual handbook in Tamil and English has the information relevant to communities in Tamil Nadu organised and presented in simpler language than the legal document. It also contains a section outlining potential points of enquiry and discussion that communities could engage in with the authorities to help them develop their own dialogue around the law.

Soft copies of both WLPA and CRZ material are available on the Dakshin website for wider distribution.

*Principal investigator: Aarthi Sridhar*  
*Project personnel: Marianne Manuel*



## 1.4 State subsidies and small-scale fisheries: lessons from Karnataka

The discourse linking fisheries subsidies to over fishing and environmental degradation has gained momentum globally and influences trade relations and environmental geopolitics. It is argued that subsidies in fisheries produce unfair production distortions and contribute to unsustainable fisheries across the world. Therefore subsidies are broadly perceived as an important reason for resource over-exploitation, over-capacity and negative environmental, social and economic effects. This discourse deals principally with the large-scale mechanised sector.

When Dakshin Foundation and the College of Fisheries, Mangalore, conducted a three day workshop in 2011 on managing Karnataka's fishery resources with the active participation of both small and large scale fishers, the small-scale fishers highlighted concerns about the non-accessibility of information on various government welfare subsidies. Even though their percentage-wise contribution towards marine fish production is lower than that of the mechanised sector, small-scale fishers are the predominant fishing groups in tropical developing countries.

Bearing this in mind, we undertook a study to assess the effectiveness of fishery subsidies and to identify whether subsidies meant for small-scale fishers

had achieved their putative purpose of providing social security to fishers in the selected coastal villages in Karnataka. Our results show that the reasons for the poor responses to subsidies are inadequate communication and promotional measures by government agencies, persecution associated with their procurement, corrupt practices such as favouritism in selecting beneficiaries, and partly, difficulties in procuring necessary documents from government departments.

The study identified areas for reform in the information dissemination processes. We see that despite several shifts in global fisheries management, the idea of fisher welfare is still oriented towards populist hand-outs or traditional welfare measures of the state. Incentivising and supporting sustainable fisheries practices through subsidies could lead to better fisheries management. Introduction of new subsidies which facilitate the phasing out of small mesh size nets, high-speed engines, and destructive gear can encourage better management of depleting resources. Such new schemes should be accompanied by institutional reforms which also draw from community expertise to design and implement fisheries subsidies and make the process of availing of them more transparent.



The findings of this study were published in the Journal of Asian Fisheries Science (Vol. 27 [2014]: page 45-60) and were also presented in the international conference on small-scale fisheries governance held in Hyderabad, 2013. The study points to important areas for further investigation. It also provides insights into the operation of government subsidies and the manner in which people respond to them. We aim to expand the scope of this study to undertake a more in-depth investigation into the implications of fisheries subsidies on livelihoods and marine resources, extending our coverage to other key regions such as Kerala, Tamil Nadu and the Andaman Islands.

*Principal investigator: Aarthi Sridhar*  
*Project personnel: Sajan John, Arundhati Jagadish*

## 1.5 Community mapping of sand dunes at Panaiyur village, Kanchipuram district, Tamil nadu

The Government of India has identified Cheyyur in Kanchipuram district, Tamil Nadu, as one of the sites for a 4,000 MW Ultra Mega Power Plant (UMPP) using imported coal and super-critical technology. The coal would be brought in through a captive jetty located between the fishing villages of Panaiyur Periakuppam and Panaiyur Chinnakuppam in Kanchipuram district.

The government has delegated the responsibility of developing these projects to the Power Finance Corporation Ltd. (PFC), a public sector unit. PFC has set up a Special Purpose Vehicle (SPV) – the Coastal Tamil Nadu Power Limited (CTNPL), based in New Delhi – for such projects, including the Cheyyur project. The SPV is meant to acquire the land, perform Environmental Impact Assessments (EIAs), conduct public hearings, obtain various clearances and hand over the project to the private party who has won the bid for the project, thus saving the private party the trouble of land acquisition, impact assessment, public consultation and environmental clearances.

The EIA report, the reports of CTNPL, and the CRZ clearance that has been obtained by CTNPL for the marine terminal and coal stacking yard, declare that there are no eco-sensitive areas within 15 km of the project area. In interactions with residents of Panaiyur Periakuppam, many said that a number of the averments in various project documents contradict known facts. They specifically identified the claims of the EIA conducted by the CTNPL regarding the absence of sand dunes as an example of a misstatement. Section 7(i)(A)(c) of the CRZ Notification, 2011, classifies sand dunes as “ecologically sensitive” and accords them a high degree of protection by categorising them as CRZ-I. Further, there were no consultations with the local fisherfolk on the location of the port, and the setting up of the port could undermine their livelihoods.

And so, aided by Community Environmental Monitoring, a programme of the New Delhi-based NGO, The Other Media, residents of

the fishing villages in the vicinity of the project area approached the Dakshin Foundation, to verify the claim of CTNPL regarding the absence of coastal sand dunes in the project area.

Dakshin trained members of the Community Environmental Monitoring programme and volunteers from the fishing villages of Panaiyur Periakuppam and Chinnakuppam in scientifically mapping and creating profiles of coastal sand dunes and beaches. The results of the profiling exercise were compiled in the form of a report and used by the local villagers to challenge the EIA report submitted by the project proponents.

A translation of the report in Tamil was also circulated among the local villages.

*Principal investigator:  
Naveen Namboothri*



## I.6 Communicating information on fisheries subsidies to small-scale fishers in Karnataka

The Government of India introduced a variety of subsidies for the fishery sector soon after independence. However, there has not been any comprehensive assessment of the direct or indirect impacts of these subsidies on fisheries. In many coastal states, fishers claim to have no information on these schemes and subsidies or procedures for availing themselves of the same. Moreover, most material developed to aid fishers in understanding state welfare schemes or even coastal regulations relies on text-heavy content and design.



Dakshin, in collaboration with the College of Fisheries, Mangalore, initiated a project to develop communication material using participatory design methods and protocols. The objectives of the project were to a) understand the modes and methods of communication and transmission of information regarding fisheries schemes amongst community members; b) assess the effectiveness of externally produced communication material in terms of their relevance and appropriateness; and c) to develop, with inputs from community members, material that would provide information about various central and state fisheries schemes that are applicable to the community.

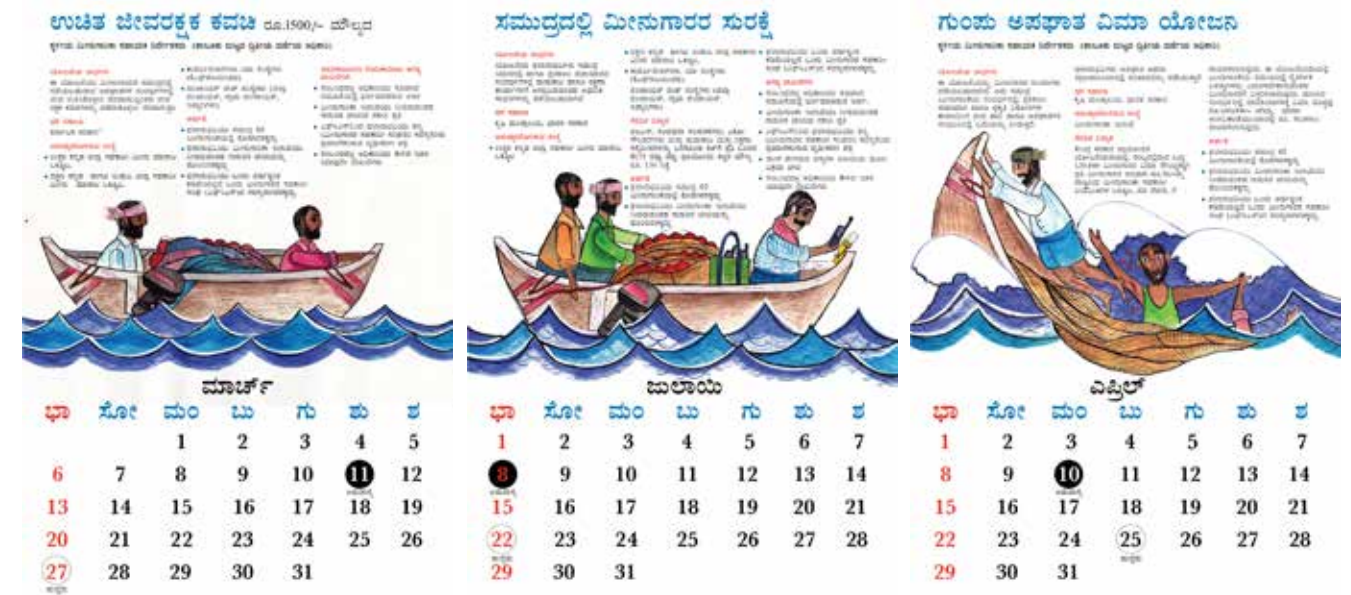
We also wanted to examine how small-scale marine fishers perceive fisheries welfare subsidies by examining their awareness of and attitude towards the same. The goal of our study was to see if the 12 subsidies aimed at the small-scale marine fisheries sector, introduced by the government of Karnataka, had achieved their purpose of providing social security to fishers of the small-scale sector. The 'success' of such an intervention can be measured in a number of qualitative and quantitative ways. We selected

a mix of methods and conducted a preliminary assessment of fisheries subsidies in Karnataka by investigating

- the degree or nature of information the fishers possessed on each subsidy;
- the extent to which small-scale fishers availed of these subsidies; and
- the efforts made for dissemination of information on fisheries subsidies targeting small-scale fishers.

The preliminary phase of the project included working in pilot coastal villages in Dakshin Kannada district. A workshop was then conducted in Mangalore with fisher community members to discuss the effectiveness of various tools to transmit information on welfare schemes for marine fishers. The initiative was expanded to include fishing villages from Uttar Kannada district as well. Four villages were selected for the project, two from Dakshin Kannada and two from Uttar Kannada.

The second phase of the project involved gathering information on existing modes of communication between the Fisheries Department and fisher communities. We interacted with fisher leaders and members of



fisher families to understand the gaps in outreach practices of the Fisheries Department. From the feedback received, prototype design templates were developed and distributed/installed and their effectiveness tested in the field. The product, a calendar showing twelve schemes with information on benefits and how to avail of the schemes, was printed and distributed with the help of the Directorate of Fisheries, Government of Karnataka.

The final phase of the project, and an important one, was assessment

of the impact and relevance of the product developed. Since the aim of the project was to empower artisanal communities with information pertaining to their welfare, a post-evaluation exercise was carried out to determine whether, and to what degree, the communication mechanism had strengthened fishers' access to particular schemes. The process of developing these materials and mechanisms was documented and will assist in replicating similar

endeavours in the future. We hope to understand and document the various factors that promote or inhibit fishers from accessing/availing of fisheries schemes and subsidies, thereby contributing to the literature on the nature and role of subsidies in sustaining fisheries and fishers' welfare in developing countries' contexts.

*Principal investigator: Aarthi Sridhar*  
*Project personnel: Sajan John, Arundhati Jagadish*

## I.7 Advocacy support to the National Coastal Protection Campaign

Dakshin is a core member of the National Coastal Protection Campaign ([www.ncpcindia.wordpress.org](http://www.ncpcindia.wordpress.org)), which took shape in 2007, after a series of collective campaigns in response to changes in coastal and marine policies. As a core member, Dakshin plans to support the advocacy efforts of the NCPC network by gathering information on the implementation of coastal legislations. The following have been our themes of focus till date:

### CRZ 2011 related issues

- Non-essential coastal activities - The CRZ 2011 permits activities for which coastal land is essential to take place in these areas. However, there are several instances of projects being cleared that do not require coastal land for their functioning, i.e. non-essential coastal activities. An RTI campaign has been initiated to look into the various 'non-essential' coastal activities taking place in the states of Karnataka and Tamil Nadu. Information will be sought on existing and proposed projects that do not require coastal land and the environmental clearances that were issued to them. This information will be used to further probe whether there is an increasing trend in providing

clearances to such projects and what conditions the government stipulates before granting clearance. A list of violations in Karnataka's Dakshin Kannada and Udupi districts has been compiled and RTIs will be filed to gain information on action taken by the government on these violations.

- CZMP preparation - RTI campaigns on CZMP preparation in the states of Karnataka and Tamil Nadu are ongoing. The government of Tamil Nadu has just completed its initial

attempt at conducting district-level public consultations in the coastal districts of Tamil Nadu to approve the draft CZMPs. Dakshin provided advocacy support to communities in various districts to protest the process of consultations on grounds of incomplete drafts being presented, and insufficient prior information and time given to the public before these meetings. The meetings in most districts were successfully postponed to an undecided date.

A meeting was held in Ramanathapuram on the 16th of



November, 2013, to discuss the CRZ and public consultations. The meeting was called by Dakshin in partnership with the Ramnad District Fishworkers' Trade Union. Participants included members of the fishing community as well as representatives from local NGOs working on community welfare issues. The participants were trained on various aspects of the CRZ 2011 using the earlier mentioned materials developed by Dakshin and its partners and a plan of action regarding the public consultations was laid out. The participants submitted a petition to the District Collector's office to reschedule the public consultations for another time, which should be decided while following the due process as laid out by the CRZ 2011. A similar meeting was conducted in Tuticorin on 1st December, 2013, in partnership with the Democratic Fishworkers Union.

Dakshin Foundation, in partnership with the International Collective in Support of Fishworkers (ICSF), has developed a bilingual handbook on the CRZ 2011 for use by NCPC and NFF members in West Bengal. This book is based on a booklet developed by Dakshin Foundation, Namati and the Centre for Policy Research

(New Delhi) on the CRZ 2011 for activists and community members in Tamil Nadu. The Tamil version has proved to be a useful tool to help communities understand the provisions of the CRZ 2011 including the importance of participating in the ongoing Coastal Zone Management Plan (CZMP) preparation process.

- Island Protection Zone (IPZ) Notification 2011 – Dakshin Foundation will be partnering with the Andaman and Nicobar Islands' Environmental Team (ANET) to investigate the implementation of the IPZ 2011. ANET is a member of the Andaman and Nicobar Coastal Zone Management Authority (ANCZMA) that was initially formed under the CRZ 1991. While the IPZ 2011 presents a significant amount of change in process and procedure when compared to the CRZ 1991, the implementing bodies responsible for executing the IPZ 2011 remain the same as under the CRZ 1991. This situation means that executing bodies need to familiarise themselves with the new IPZ 2011 so that they can



execute their new responsibilities effectively. Initial discussions have been initiated with government authorities to create material and conduct training workshops on the IPZ 2011 to help explain this new law to local communities as well as members of the ANCZMA.

Principal investigator: Aarthi Sridhar  
Project personnel: Marianne Manuel



## I.8 Tracing transformations in fishing technologies in Odisha

The history of fisheries in India is also a history of technological transformations, interventions and innovations across the coastline. A deeper understanding of such transformations can better inform marine conservation laws and rules that seek to regulate fisheries. These changes have varied social and ecological implications. The availability of ready-made gear of different sizes and material has nearly eradicated the activity of making fishing nets locally. Innovations in the design and use of fishing gear are made with a view to increase their efficiency in targeting certain species.

In 2011, we undertook a study to understand how decisions to adopt particular fishing gears were made in various fishing villages in coastal Ganjam, Odisha. Through this study we wanted to explore how fishers made decisions regarding the purchase of specific fishing nets, what made them regard certain nets as beneficial and what mechanisms they used to regulate the introduction and use of different technologies. An additional objective of the study was to document the changes in fishing technology as a means to understand the challenges to fisheries management.

This study aimed to examine the perceptions of small-scale fishers of Odisha on the east coast of India, regarding technological alterations and their willingness and ability to adapt to such change. The study also looked at the way in which fishers influence innovations in fishing technologies and the reasons behind decisions to adopt, promote, permit and prohibit certain gear. The study gains importance in the context of global shifts towards technological regulation as a means to manage dwindling fish stocks. It provides insights into the social, legal and economic implications that specific gear regulations might have on small-



scale fisheries. The study attempted to answer the following questions: Why were technological changes important for small-scale fishers in this part of Odisha? And in what manner do these modifications take place?

This study used semi-structured interviews to explore the above questions and was conducted in 2013 in four coastal hamlets of Ganjam district. A detailed documentation exercise of different fishing craft

and gear was also undertaken simultaneously to explore drivers of change and adoption of new technology. Many small-scale marine fishing communities rely exclusively on fishing for their livelihoods. Under circumstances of decreasing CPUE (catch per unit effort), rising fuel costs, and increasing operational costs, fishers experiment with and adopt newer and more easily available

technology to avoid losses. But the possibility of adapting to technological innovations appears limited and iniquitous. Our study shows that it leads to the marginalisation of fishers who are considered less adventurous or those constrained by social and economic factors. The documentation of these technological changes and fisher responses to the same will help us understand small-scale fishers' responses and choices in a dynamic technological environment. It will also help us to understand the relationship between technological determinism and possibilities for the regulation of unsustainable fishing practices.

This study was presented at the International Conference on Small-Scale Fisheries Governance: Development for Wellbeing and Sustainability organised by Too Big To Ignore (TBTI) in association with Centre for Economic and Social Studies (CESS) in Hyderabad in December, 2013.

*Principal investigator: Aarthi Sridhar*  
*Project personnel: Muralidharan M, Arundhati Jagadish*

## 1.9 The 11<sup>th</sup> COP to the Convention on Biological Diversity and beyond

The Convention on Biological Diversity (CBD) is a legally binding agreement committing governments to protecting their natural resources. The Convention was open for signature on 5th June 1992, and currently over 160 countries are signatories to the same. The CBD sets forth guidelines and targets to meet its objectives of conservation and sustainable use of biodiversity, and fair and equitable sharing of benefits arising from the use of genetic resources. The Conference of Parties (COP) to the CBD meets annually to take stock of past events and make decisions that will ensure that the CBD's objectives are met.

In 2012, the eleventh COP to the CBD was held in Hyderabad, India. Given the legally binding nature of the Convention, it provides a useful mechanism by which NGOs and local groups can try and influence international and national policies. The added advantage of having India host the COP in 2012 allowed Indian civil society groups, that had hitherto been absent from this space, the opportunity to come together and air their views.

Dakshin Foundation, along with the Foundation for Ecological Security (FES) and the International Collective in Support of Fishworkers organised a side event on Women in Biodiversity.

The event attempted to address the following questions:

- Do on-ground accounts of gender relations and the lives of women reflect the effectiveness of the CBD initiatives?
- What role can civil society and governments play in strengthening leadership and empowering women to play more meaningful roles in decision-making for resource management?

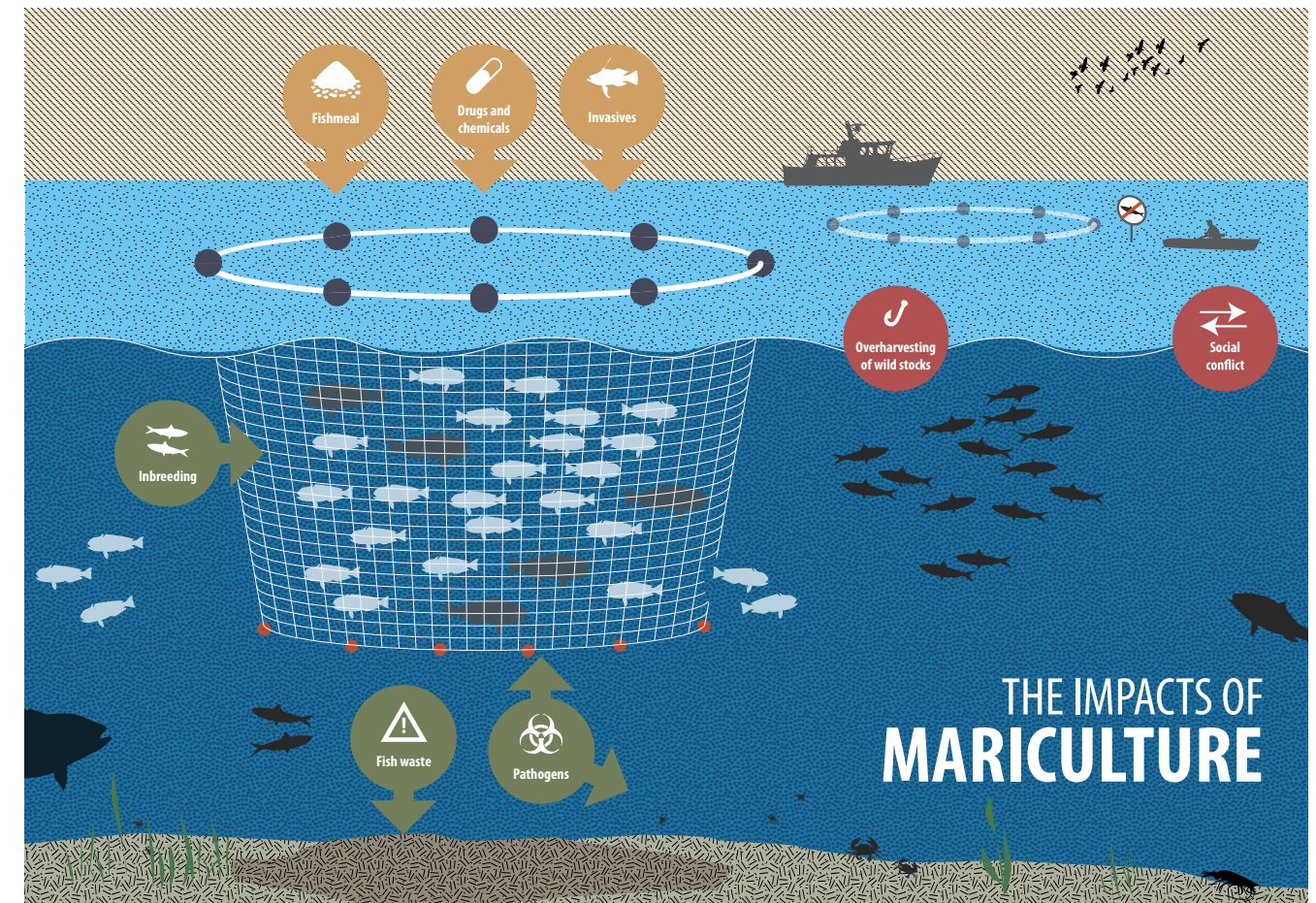
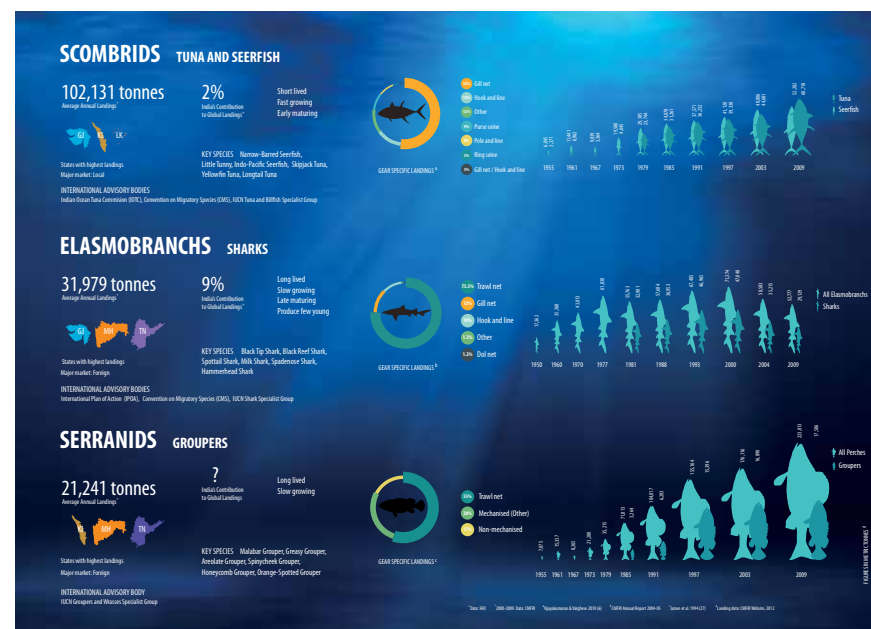
Dakshin Foundation in association with Foundation for Ecological Security (FES) also produced a series

of position papers on various fishery management and conservation issues. The position papers were distributed at various side-events, on web-based platforms and also distributed to civil society members who were unable to attend the conference.

### Position papers for the Convention on Biological Diversity

*Biological invasions of marine ecosystems: concerns for tropical nations*

This paper covers issues in both coastal and marine systems within the country and the status of regulations for monitoring the same.



*Taking it from the top: managing apex predator fisheries in India*  
This paper reviews trends in predator fisheries and analyses gaps in existing catch data. It explores the management needs for such fisheries with a focus on tuna, shark and grouper fisheries.

*Mariculture and food production: sustaining the promise*  
This paper highlights the concerns with mariculture development on social and ecological systems. It also provides a review of developments in

the country thus far.

*Monitoring with logic and illogic: a case for democratising observation in fisheries*  
This paper critiques the existing official fisheries monitoring mechanisms followed in India making a case for involving fishing communities in undertaking monitoring.

*Managing fisheries in an ocean of bycatch*

This paper looks at the issues pertaining to the developing tropics: bycatch in industrial versus small-scale fisheries, bycatch commercialisation and issues pertaining to data and monitoring of bycatch.

*Principal investigator: Aarthi Sridhar*  
*Project personnel: Marianne Manuel, Mahima Jaini, Sahir Advani*



# BIODIVERSITY & RESOURCE MONITORING

Over the last few decades, the science of ecology has aimed to develop methods to monitor and track wildlife populations, natural resources and biodiversity. The objectives of such monitoring have varied from conservation concerns to sustainable utilisation. While the science has become increasingly refined, the outcomes are not always relevant, as the communities involved in managing or utilising biodiversity, either wildlife managers, or local resource dependent communities, are not always involved in these monitoring programmes. In fact, many communities do not have either the tools or motivation for engagement with monitoring biodiversity.

Long-term monitoring  
of sea turtles at  
the Rushikulya mass nesting  
rookery, Odisha

Mobilising communities for  
sustainable and equitable  
fisheries governance in  
Lakshadweep

Fisheries management  
and community monitoring  
in the Andaman Islands

Monitoring and conservation  
of leatherback turtles and their habitats  
in the Andaman and Nicobar Islands

This programme aims to engage communities in the management of resources through developing community-based resource monitoring. The larger goal of the programme is to familiarise communities with the tools of modern management, namely scientific data, so that they may be empowered to engage in dialogue about managing their resources with the State and other actors. The immediate objective of the programme is to develop simple monitoring protocols that communities would find easy to use, and to build consensus towards the usefulness of the information gathered. We have initiated such resource monitoring programmes for the tuna and baitfish fisheries in the Lakshadweep islands, and are currently engaging with the grouper fishery in the Andaman Islands. We are also in dialogue with communities in Odisha, Tamil Nadu and Karnataka towards initiating monitoring programmes.

In addition, our research also aims to address the need for long-term population data for critical ecosystems and endangered species, in both mountain and marine ecosystems. Long-lived and late maturing species such as sea turtles require particularly long-term datasets to determine population trends. We are working



at index sites for olive ridley turtles in Odisha and leatherback turtles in the Andaman Islands to collect data relating to both population trends, as well as the impacts of climate change. In both areas, we are working with and training both local communities as well as Forest Department staff to carry out monitoring. In addition, we are working with and training a network of NGOs along the mainland coast, to standardise data collection protocols towards better conservation and management of these species and habitats.

In addition to the benefits of engaging communities in management, our long-term monitoring of select taxa and ecosystems aims to advance our understanding of the patterns and processes that maintain ecosystem function and increase resilience to anthropogenic stress and climate change.

## 2.1 Long-term monitoring of sea turtles at the Rushikulya mass nesting rookery, Odisha

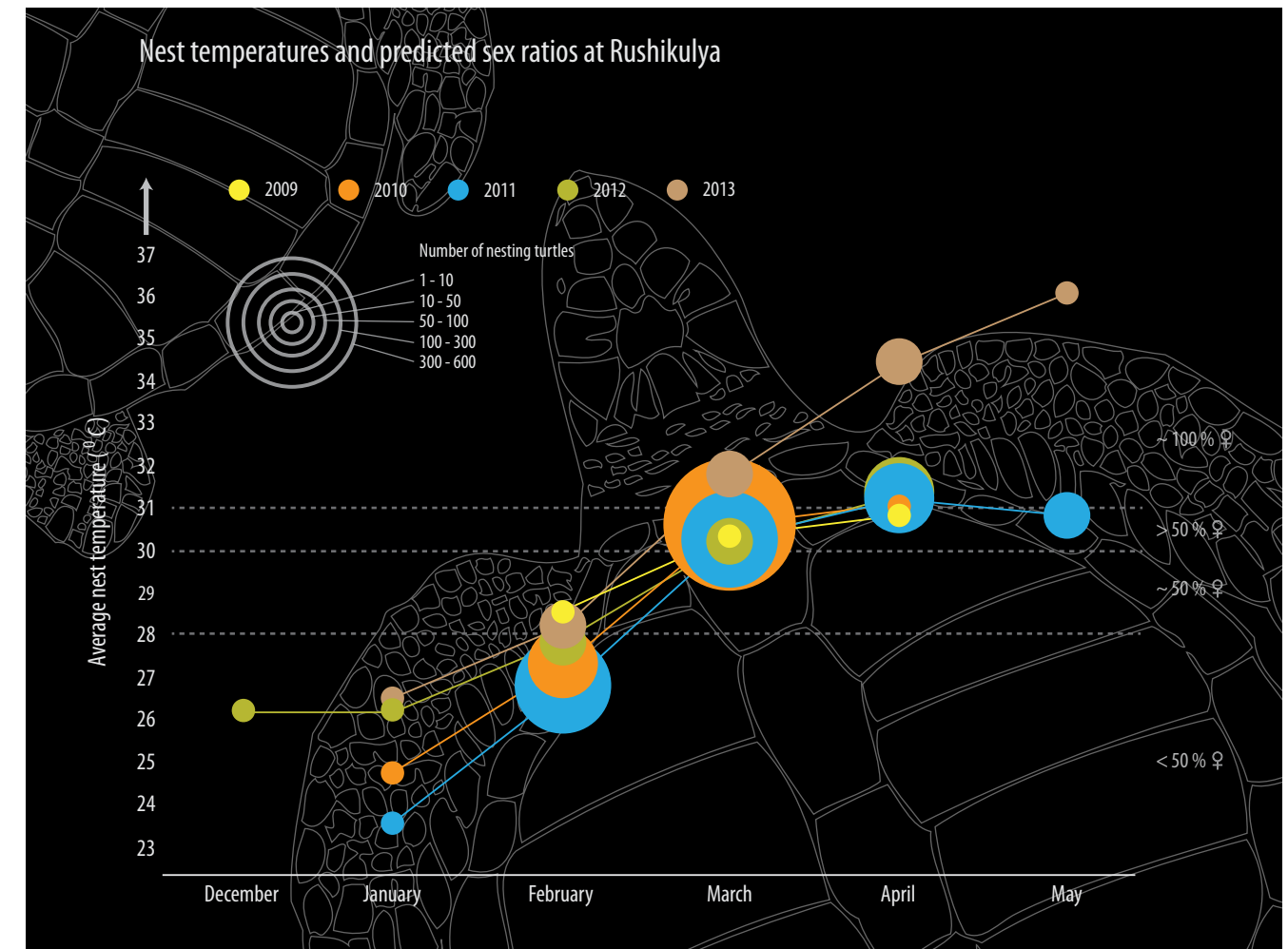
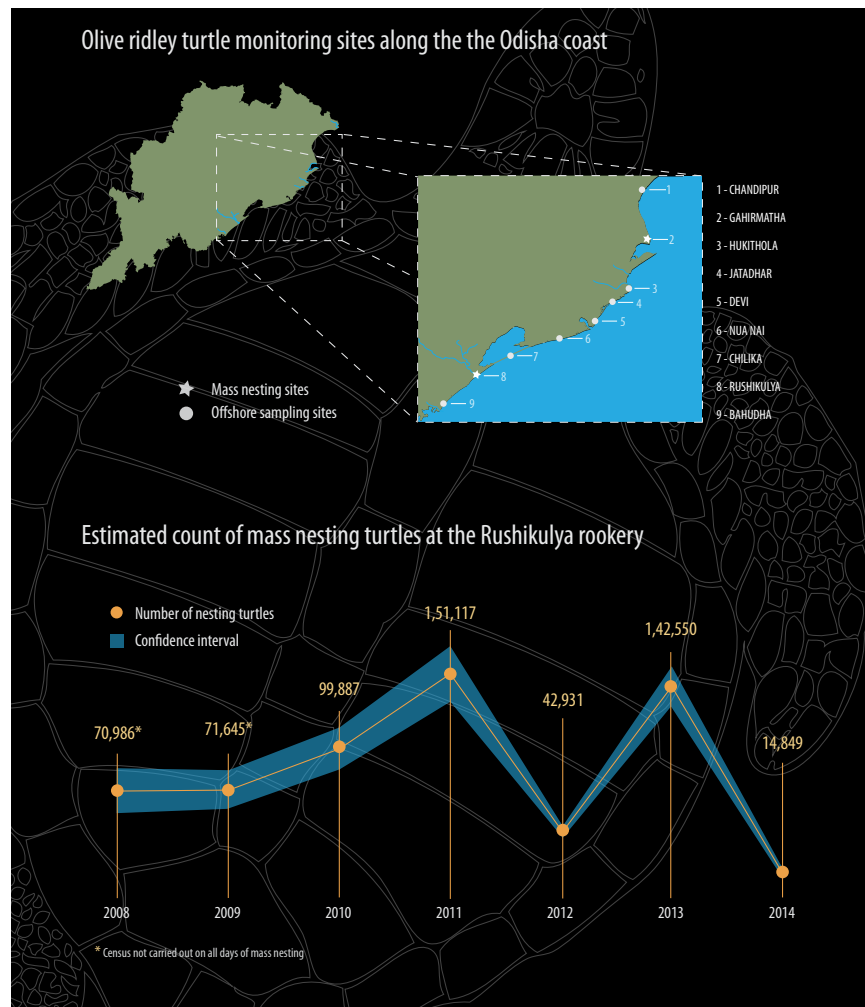
Rushikulya, in southern Odisha, is one of the two major mass nesting rookeries for olive ridley turtles in Odisha. These sites represent the only major mass nesting beaches for ridleys outside Central America.

The Rushikulya rookery was brought to the attention of the conservation community in 1994 and has since been subject to a number of regulatory actions by the government, research projects by scientists, and conservation interventions. Dakshin

Foundation's researchers have been associated with this area for the past decade, conducting biological research and training community-based conservation organisations, local youth groups, and Forest Department staff. This site has been monitored regularly since 2007 when a comprehensive long-term monitoring project was initiated with the following broad objectives:

- To monitor sea turtle populations through a census of mass nesting events, mortality and hatching success;
- To monitor environmental change by monitoring temperatures and beach profiles;
- To train local organisations and Odisha Forest Department staff in undertaking long-term scientific monitoring of the turtle population, shoreline changes, and climate change impacts.

Regular monitoring of the nesting beach has been carried out for the last seven years. A census has been carried out during all mass nesting events during this period using a standard technique that is consistent with other sites worldwide. Our research has also focussed on the possible impacts of climate change on hatchling sex ratios, since sex is determined by incubation temperature in sea turtles.



Approximately 30 nests are relocated to a hatchery each year to monitor incubation temperatures (using data loggers) and to collect dead hatchlings for sexing.

In 2010, offshore monitoring of turtle congregations was initiated using transect-based methods. In-water surveys provide information about the location and movement of turtle congregations, and an alternate metric for assessing long-term trends

in populations. By January 2014, this project was extended to 9 locations (see illustration) across the Odisha coast to better understand the pattern of turtle distribution along the entire coast.

In addition, Dakshin researchers interact regularly with the local Forest Department and conduct training programmes for their field staff on methods for carrying out mass nesting censuses and maintenance of

hatcheries. We have also developed a pictorial manual to assist field and Forest Department staff in carrying out the census.

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*Project assistant: Amrit Kumar Mishra*  
*Field staff: Bipra Charan Behera, Mahinder Nayak, Dhambru Behera, Shankar Rao, Madhusudhan Behera, Surendranath Behera*



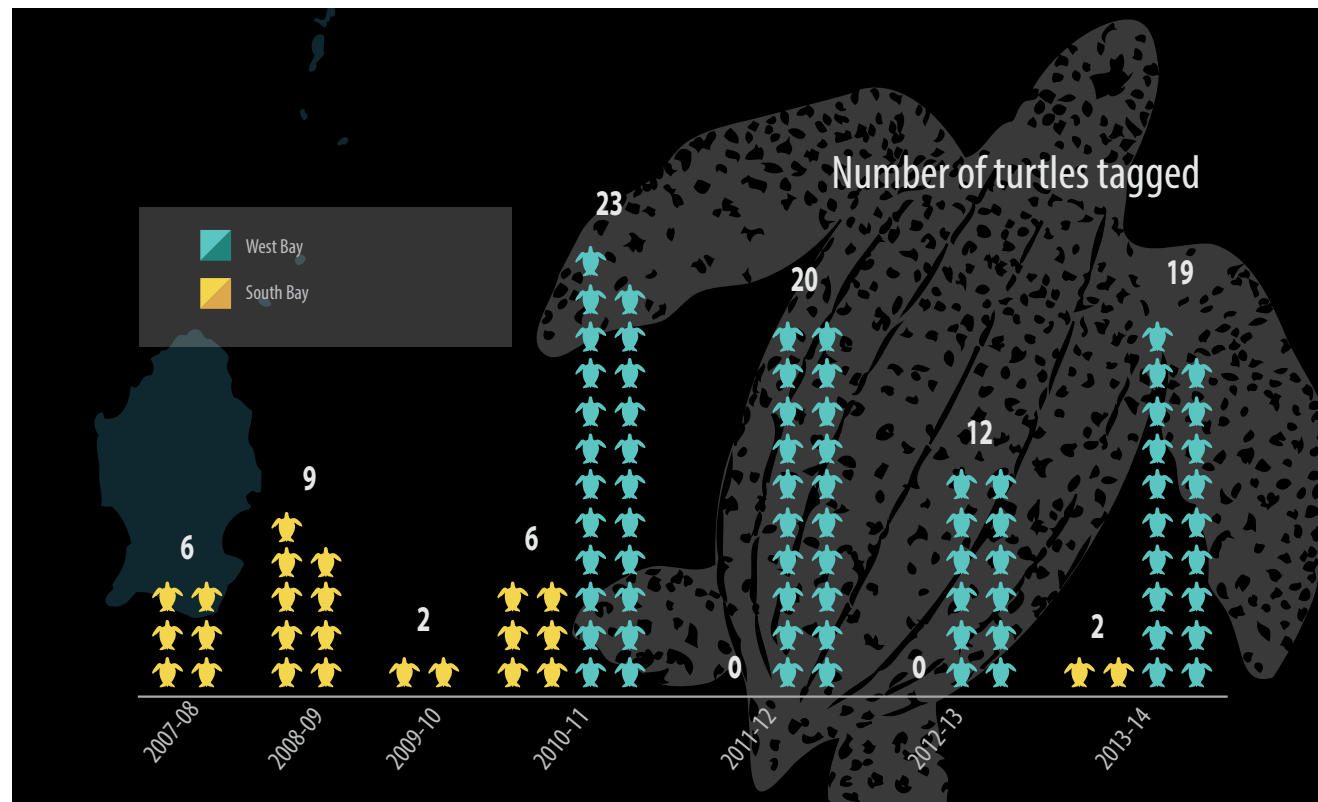
## 2.2 Monitoring and conservation of leatherback turtles and their habitats in the Andaman and Nicobar islands

The leatherback is listed as Vulnerable by the IUCN and under Schedule I of the Indian Wild Life (Protection) Act (1972). There has been great concern over the drastic declines in the nesting populations of this species in some parts of the world, especially the Pacific. Very little is known about the status of leatherback populations from the Indian waters, barring the

recent work by the Andaman and Nicobar Islands' Environment Team (ANET) on Great Nicobar Island, and the collaborative efforts of ANET, the Centre for Ecological Sciences (CES), Madras Crocodile Bank Trust (MCBT) and Dakshin Foundation on Little Andaman Island.

Many of the prime nesting sites of the Andaman and Nicobar islands were

badly affected by the December 2004 earthquake and subsequent tsunami. Not much is known about the impacts of this event on the populations of leatherbacks here. The project was initiated in January, 2008 to monitor leatherback turtle nesting on Little Andaman Island. The South Bay beach has been monitored from 2008 to 2014. Every year, a camp has been established and daily monitoring of



leatherback nesting has been carried out roughly between the months of January and March. Over the last four seasons (2010-2014), an additional camp has been established on the West Bay beach of Little Andaman Island. In addition, the habitat has also been monitored by collecting data on the profiles of the nesting beaches in South and West Bay to understand the effect of physical changes to the nesting beaches on leatherback nesting.

In 2010, a satellite telemetry study of leatherback turtles was initiated with support from the Indian Space Research Organisation (ISRO) and the Space Technology Cell, Indian Institute of Science, Bangalore, and since then 10 satellite transmitters have been deployed. The results of the study are available online at [www.seaturtle.org](http://www.seaturtle.org). Over the years, the monitoring programme has also had a strong



focus on developing networks for conservation in the region and a long-term education and outreach programme to sensitise government authorities and local communities to conserving sea turtles and their habitats. We plan to extend the leatherback monitoring programme to cover the island groups of the Nicobars in coming years.

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*Project personnel: Adith Swaminathan*  
*Field staff: Saw Thesorow, Saw Burney, Saw Colombus, Saw Kenik, Saw Momong, John Lakra, Sushil Lakra, Sabien Horo, Saw Isac*



## 2.3 Mobilising communities for sustainable and equitable fisheries governance in Lakshadweep

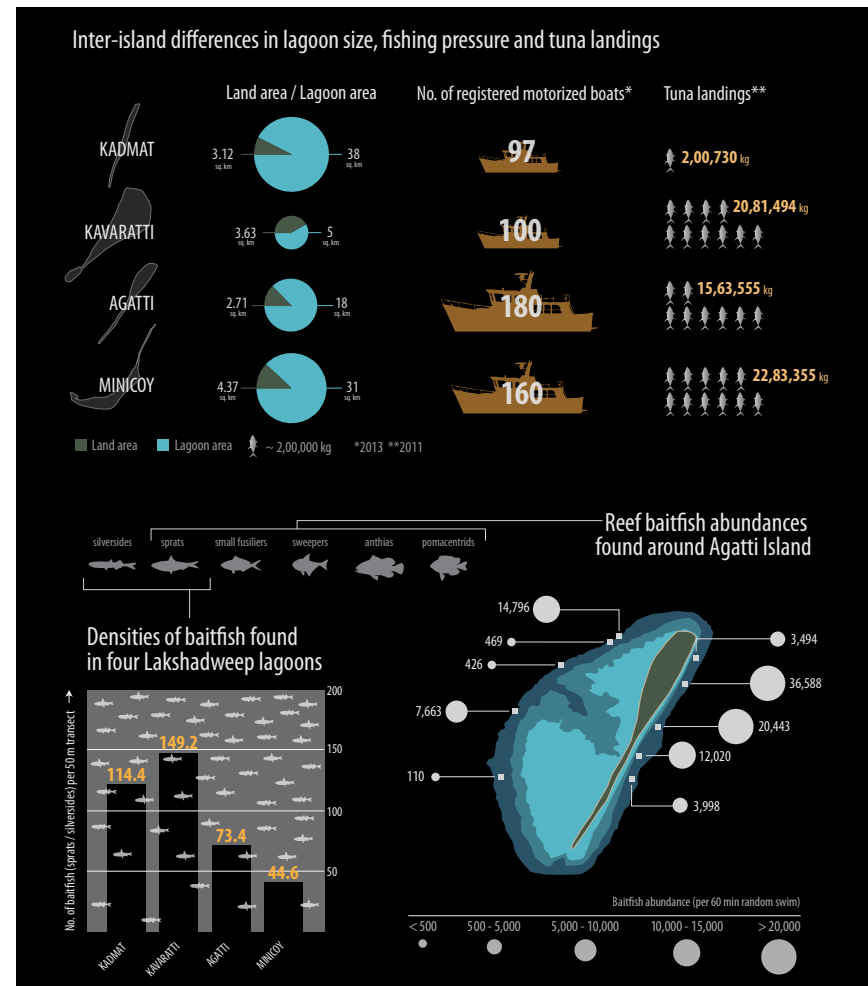
India's only coral reef atolls, the Lakshadweep islands, boast of crystal clear waters, tranquil island living and diverse marine life. These ecologically sensitive geological wonders host a population of over 70,000 in a meager combined land area of 32 sq. km. Living closely connected to both land and sea, the islanders derive income primarily from coconut cultivation and fish harvest.

Tuna constitutes over 80% of Lakshadweep's total marine harvest and a majority of the harvest is carried out using the pole and line fishing technique, a small-scale commercial method that has low habitat impact and high species selectivity. The fishery uses small planktivorous fish from island lagoons and reefs as live-bait to harvest oceanic skipjack tuna (*Katsuwonus pelamis*); thus targeting the lower trophic levels in the reef ecosystem and higher trophic levels in the open ocean system, avoiding the sensitive slow growing, late maturing top predators of the reef. However, recent changes in tuna stock abundance and associated fishing practices threaten the sustainability of this fishery.

This project is an interdisciplinary collaborative study to document the socio-ecological dimensions

of Lakshadweep's primary fishing industry. Currently, declining tuna catch, coupled with baitfish unavailability is threatening a shift in fishing pressure from open ocean tuna stocks to reef fish. The project has three main objectives: to assess baitfish stock, evaluate

fisher perspectives regarding the pole and line tuna fishery, and, initiate a community-based catch monitoring programme, in the hope of facilitating a shift from the practice of exploitation to sustainable utilisation among resource users.



Funded by Rohini Nilekani and Rufford Small Grants for Nature Conservation, this project began in mid- 2012. Over the past two years we have conducted in-water surveys of baitfish populations and socio-economic interviews of fishers in the islands of Agatti, Kadmat, Kavaratti and Minicoy. Fisher interviews have revealed significant declines in tuna catch volume and size over the past decade, and this has been accompanied by the spatial expansion of fishing grounds. The factors most often cited for declines in tuna catch include changes in currents, especially since the 2004 tsunami, increase in external fishing pressure and tuna tagging. There was little to no concern regarding baitfish abundances. However, regional and site-specific differences in baitfish abundances are evident from both fisher interviews and in-water surveys. Our ecological surveys found a limited relationship between baitfish abundance and fishing pressure, indicating the role of environmental factors as drivers of these lower trophic level planktivorous fish species. Our ongoing ecological surveys are aimed at teasing apart these factors.



The recent declines in tuna landings and the limited access to profitable markets pose significant threats to fisher livelihoods. Accompanying these downward trends are increases in unsustainable fishing practices including the use of Fish Aggregating Devices (FADs) to enhance tuna catch as well as the switch to commercial reef fishing. FADs contribute to growth overfishing as they tend to attract smaller skipjack. Catch from FADs most often comprises of undersized skipjack along with high levels of bycatch of juvenile yellowfin, rainbow runners and mahi mahi. Despite recognising this as a detrimental practice, fishers and fisheries managers alike promote this strategy as it provides fishers guaranteed catch and security in this era of rising fuel prices and variable landings. In the absence of tuna, fishers have also started targeting highly sensitive reef fish such as groupers and snappers, and mechanisms to export these high value fish are opening up. If left unchecked, these changes can have serious and long-lasting impacts on both open ocean and reef ecosystems.

Our proposed community-based catch-monitoring programme hopes to shed light on these developments and help fill existing data gaps, while increasing stakeholder participation. Fishers in the island of Kavaratti helped design catch monitoring books, which are now in circulation in Agatti, Kadmat and Kavaratti. We hope to involve community members in data processing and sharing, while maintaining strong community data ownership rights. The trajectory of this intervention is yet to be realised, but so far the interactions with fishers have been positive and engaging.

Over the last two years our work in the Lakshadweep islands has evolved from being a largely ecological investigation to one which now includes and relies on community participation and feedback. By involving fishers directly in the design and implementation of this monitoring programme, we perceive this work to be a strategy complementary to environmental education. Our research data as well as that collected by the community could potentially be used in community-based governance and policy making. Our challenge now lies in developing this programme in a low-cost and low-tech manner in order to maintain its long-term viability.

Principal investigator: Meera Anna Oomen, Naveen Namboothri, Kartik Shanker  
Project personnel: Mahima Jaini, Swetha Nair, Savita Vijaykumar



## 2.4 Fisheries management and community monitoring in the Andaman Islands

The Andaman and Nicobar Islands have rich marine resources encompassing multiple habitat types that support a range of fisheries across the length of the islands. The islands are also home to multiple indigenous communities that have relied on marine resources for subsistence for centuries. Over the last 50 years, people from different parts of India have settled in these islands and this has led to the present diversity of traditional and modern fisherfolk communities in this region. Following practices learnt from the Indian mainland, each community employs different fishing crafts and nets to target distinct groups of marine resources. The islands are thus characterised by multi-faceted fisheries, each demanding a unique management approach.

These islands have witnessed boom and bust cycles of multiple fisheries predominantly catering to external markets. The collapse and subsequent closure of the shellfish and bêche-de-mer fisheries were important landmarks in the history of these islands' fisheries management. The latter fishery catered solely to foreign markets, and even today a significant proportion of the landed fish stocks are exported to Southeast Asia. The enthusiastic promotion of newer technologies such as the live

fish trade, shark fin fisheries, long lining and the unchecked growth of specialised fishery like grouper trade, now threatens to dominate most of the islands' fisheries. The sector is managed with poor, often outdated and non-contextual management regulations with no effective monitoring of resource extraction trends. Furthermore, there is poor documentation of the status and impact that new fishing practices have on marine ecosystems and fisher livelihoods. This paucity of information available limits the design of appropriate management

interventions. Existing fisheries regulations are not sensitive to the nuances of the islands' multiple fishing cultures and practices. The need to develop a monitoring programme for the islands' fisheries has been expressed by many agencies concerned with these ecosystems.

In light of the above short-comings concerning fisheries monitoring and management in the Andaman Islands, Dakshin Foundation initiated a programme in December 2012 to monitor marine resource use and governance structures of the fisheries of the Andaman Islands. Our goals

are to generate information on the socio-ecological aspects of fisheries in the Andaman Islands, develop sustainability guidelines through better monitored and managed fisheries, and uncover local and regional scale linkages in fisheries governance. Through interactions with fishing communities in these islands, Dakshin intends to explore the possibility of initiating community-based resource monitoring of fish stocks. This initiative will also complement our efforts of working with the local administration and fisheries department in developing a fisheries management plan that is practical, accurate, and addresses issues of social and ecological equity.

The fisheries monitoring programme of the Andaman Islands has grown in the course of the last two years in terms of its research focus and the individuals involved in the studies. Funded by grants received from the Rufford Small Grants Foundation and the Ravi Sankaran Inlaks Fellowship, Dakshin staff have been studying the lucrative grouper fishery of these islands and are exploring the trade linkages between local and foreign markets for fish commodities. They have also been studying the governance system of fisheries management, focusing on the recent decentralisation of authority in distribution of aid and benefits to fishers. The programme has also

hired field assistants from local fishing communities to aid in interviews and awareness generation exercises. Presently, there are internships being offered to assist in data collection of fish landings and exports, investigations of the reproductive biology of targeted species, and scuba diving to collect estimates of fish populations. The direction of the research and related activities of the Andaman fisheries monitoring programme is being periodically reviewed by the project team.

The Andaman fisheries monitoring programme, through its research and interactions with local communities and authorities, has resulted in some promising outputs. In collaboration with the Andaman and Nicobar Islands' Environmental Team (ANET), Dakshin has developed a monitoring protocol and profile of the fisheries in the Andaman group of islands. Compiled in January 2013, the document has helped characterise the fisheries in terms of the geographical and ecological zones of influence exerted by different fishing communities, following historical and current patterns of utilisation of key groups of species. This profile, while providing an initial glimpse into spatial

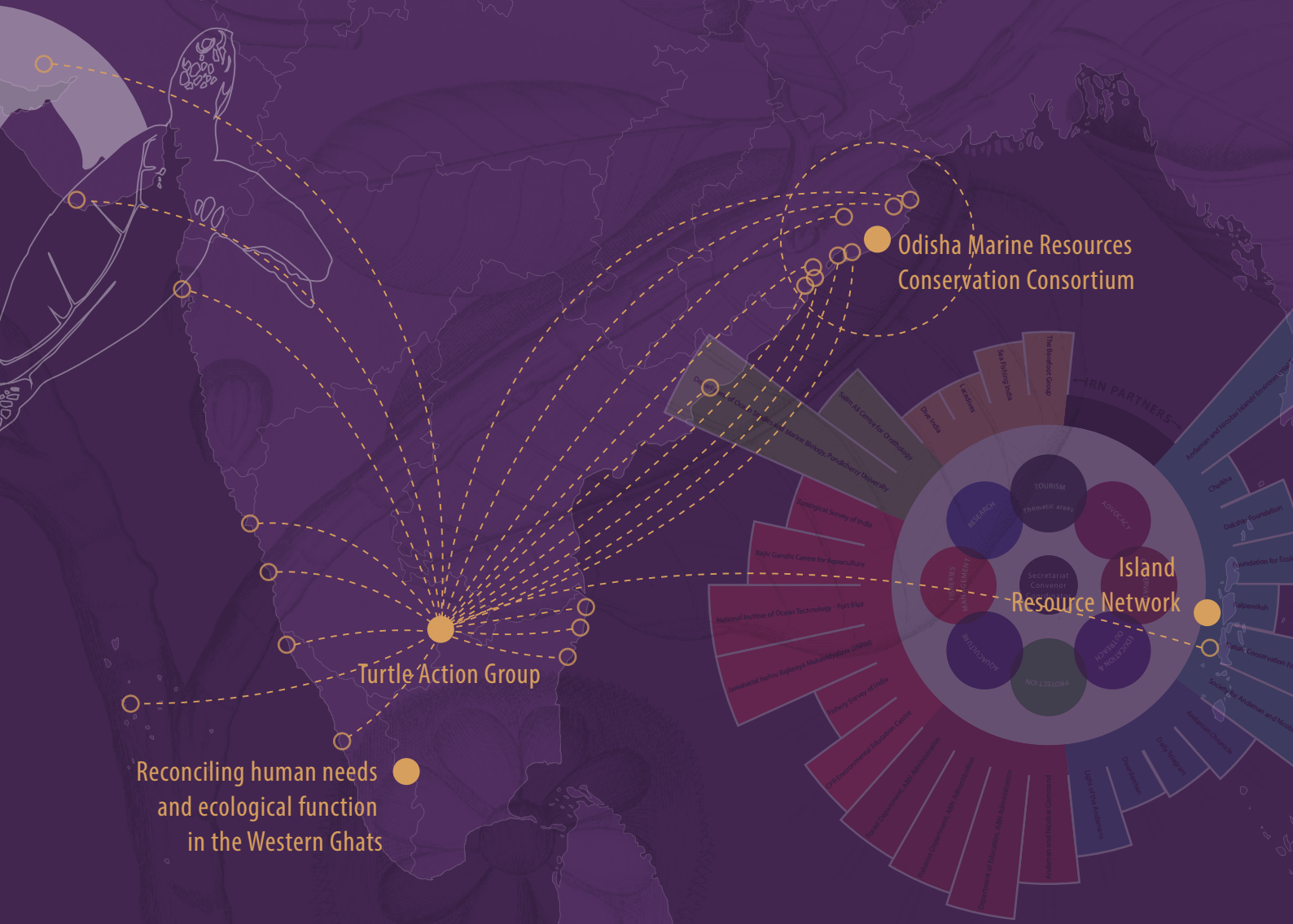
and historical trends of fisheries in these islands, is meant to be organic and will continue to be updated biannually to reflect current trends and recent findings pertaining to this dynamic system. Additionally, a paper documenting the drivers of historical changes in the fishery of Wandoor, South Andaman, was presented at an international conference on small scale fisheries governance in Hyderabad in December 2013. In partnership with ANET, Dakshin is also engaging in talks with the Fisheries Department and the local administration to discuss plans to develop a sustainable tuna fishery in the islands as well as promote the marketing of the grouper fishery. We aim for these discussions to focus on incorporating concerns of social and ecological equity in fisheries management and development policies for the Andaman and Nicobar Islands.

*Principal investigator: Naveen Namboothri, Kartik Shanker*  
*Project personnel: Sahir Advani, Savita Vijayakumar*



# RECONCILIATION ECOLOGY

The needs of biodiversity and people are entwined in terrestrial and marine hotspots. In ecological hotspots such as the Western Ghats or diverse marine systems such as the coral reefs of the Andaman islands, high levels of natural wealth and human pressure make both conservation as well as development choices difficult. Within these land- and seascapes, although conservation is often embedded in complex social, political, economic, historical, cultural and ecological contexts, other than conventional ecological factors are seldom given precedence when planning interventions.



Although people are part of these land- and seascapes, the drivers of biodiversity loss or maintenance are rarely examined from the point of view of social, economic or resource-use histories, and other context-specific factors that have combined over time to make up these regions. Understanding social-ecological systems, especially those that have the potential to undergo profound transformations, therefore calls for a reconciliation of frameworks, combining and analysing data across disciplines, approaches and time scales. Dakshin's 'Reconciliation Ecology Programme' supports not just academic enquiries into these frameworks but also seeks to actively demonstrate potential practical applications in these complex biodiversity rich land- and seascapes.

The most critical aspect of building a conservation culture is the facilitation of a paradigm shift from one of exploitation to that of sustainable utilisation, with appropriate reforms in tenure arrangements. Towards this we use an approach of reconciliation to arrive at biodiversity benefits and work with various collaborative platforms and multiple actors to find



common ground over conservation concerns. The absence of constructive dialogue between various actors and networks, and the poor flow of information between and among them is another major obstacle in informed negotiating for resource management. Therefore, a primary focus of our reconciliation ecology programme is towards strengthening

platforms for effectively sharing and exchanging knowledge and experiences, facilitating dialogues and improving capacities for negotiating conservation and development. The focus areas of this programme are typically sites where Dakshin has long-term commitments for research as well as intervention.



## 3.1 Reconciling human needs and ecological function in the Western Ghats

The Western Ghats have been designated as one of the ten 'hottest' hotspots globally on account of the region's high levels of species diversity and endemism. However, the region is also one of the most densely populated biodiversity hotspots on Earth. Human activities, primarily agricultural expansion, have resulted in the modification of natural landscapes. Although fairly large patches of natural forests remain within the protected area (PA) network, connectivity between

protected areas is poor and the potential for including additional areas into this network is limited. Located between two major protected area complexes in the southern Western Ghats, the Ranni Forest Division in Kerala is a typical Western Ghats landscape with extensive forests fringed by large monoculture plantations and small agricultural holdings. On account of its location and extensive forest cover, this area has been identified by various regional assessments as a priority corridor area

for the conservation of significant populations of large mammals and endemic species belonging to various taxonomic groups. To this end, this region is being investigated for inclusion in the PA network and to develop informal conservation arrangements. A purely ecological evaluation of this area is insufficient if one were to plan conservation action in a region such as this, as it supports the livelihoods of a number of tribal groups, agriculturalists and marginalised settlers.



The history of settlement in this region that is of interest to the present study begins in the late 1940s. An extensive period of food grain shortage following India's independence from colonial rule, along with regional, caste and community denominations, gave rise to a unique settler identity and livelihood ethic which was fostered by common experiences and obstacles which the settlers surmounted as a group (e.g. abject poverty during the initial years, conflict with wildlife, etc.). Over a period of time, the Forest Department, which emerged as the custodian of these lands, persuaded some settlers to move elsewhere, and others who remained were given title deeds with numerous restrictions. The intervening period also witnessed the implementation of far-reaching forest related legislation which was protectionist in scope, and decades after their arrival in the area, a number of settler families are yet to receive title deeds to their lands. More recently, in an effort to preserve these forests, there has been a tendency by conservationists to downplay factors such as historical use of forests in the area. Compared to large landowners (or lessees) with cash crops such as rubber, whose fortunes are determined largely by non-local forces and cushioned by corporate



investment, small-holder settler livelihoods are locally determined and dependent on their overcoming uncertain land tenure, agrarian distress, local political upheavals and extended periods of human-wildlife conflict.

At this site, Dakshin's work will focus on a number of questions that have the potential to inform conservation

choices in human modified landscapes along the forest fringe. Our research will aim to first analyse the production of this forest region in terms of place through a critical period in time which witnessed decolonisation, deforestation and increased pace of capitalist activities. This phase of the study will also deal with the cultural and non-material aspects of place-making and their role in the development of perceptions and attitudes. Together, these aspects will inform an interdisciplinary enquiry into the current drivers that determine levels of biological diversity and trends relating to conservation. Although of a long-term nature, the eventual goal of this study will be an attempt at designing an appropriate reconciliatory framework which is locally relevant and democratically acceptable.

*Principal investigator:*  
Meera Anna Oomen

## 3.2 Turtle Action Group: a network for coastal and marine conservation

The Turtle Action Group (TAG) is a consortium of organisations and individuals who work along the Indian coastline, throughout the mainland coast and offshore islands, on marine turtle and coastal conservation. Since 2009, TAG has been involved in bringing its members together to facilitate dialogue between groups from different parts of the country working on a range of issues and in a variety of contexts.

The main focus of TAG is to promote effective conservation of sea turtles and their habitats through collective and collaborative action. In addition, the initiative also seeks to strengthen the capacity of community-based NGOs in the various coastal states. Members of TAG include community-based organisations, environmental groups and non-governmental organisations. TAG's activities are overseen by a core committee of representatives and an advisory board. The selection of representatives

from across states on the east and west coast and the islands ensures adequate and uniform emphasis to activities carried out across all sites. Currently, TAG has 27 NGO members from across the coastal states of India, including the Andaman and Nicobar and Lakshadweep islands.

TAG's objectives are to

- establish appropriate channels of communication between partner organisations to facilitate the effective sharing of information;



- build capacity and interest of local communities and students in coastal conservation through their involvement in monitoring programmes and training workshops; and
- monitor the status of marine turtles at key nesting sites along the Indian mainland coast and islands with the involvement of network partners, through the promotion and use of standardised data collection and monitoring techniques.

From 2009 to 2014, the network's activities have been supported through grants from the Marine Turtle Conservation Fund of the US Fish and Wildlife Service (USFWS).

### Annual TAG Workshop

An annual meeting is held every year where TAG members meet and share their work and experiences. The first TAG Annual Meeting was held in January 2009 in Chennai, followed by a second meeting in February 2010 in Bhubaneswar, Odisha. The third and fourth meetings were held at Kumta, Karnataka in November 2010 and Mamallapuram, Tamil Nadu in November 2011, respectively.

The fifth annual TAG meeting was held at Jamnagar, Gujarat from 12th – 13th January 2013. It was organised by the Prakruti Nature Club (a member of TAG) in coordination with the organising team at Madras Crocodile Bank Trust, Chennai and Dakshin

Foundation, Bengaluru. Partial financial support was provided by the ICZM Project of the Gujarat Ecology Commission, through the Marine National Park, Jamnagar. Corporate sector firms like Reliance Petroleum and Refinery, Essar and Tata Chemicals hosted lunch and dinner for the two-day event. This marked the first occasion that TAG collaborated with the Forest Department and other government organisations to organise the workshop. At this workshop, emphasis was laid on building capacities and creating awareness amongst local community members for protecting sea turtles. It was also decided that forthcoming activities of the network should focus more on building capacities of individual member organisations through training workshops, enhancing the education and outreach component of TAG's activities and enabling TAG to generate data that will contribute to scientific studies on marine turtle population trends and impacts of climate change through individual contributions from member organisations.

### Small Grants

As part of the USFWS funded project, funds are disbursed annually as small grants through Madras Crocodile Bank Trust to TAG members. The small grants programme was initiated in 2009. Till date, five rounds of small grants have been disbursed.

The total amount disbursed through the 2009-2010 small grants was INR

283,000 (1 USD ~ 60 INR). During 2010-2011, a small grant application and review process was initiated, and 10 TAG member organisations were awarded grants amounting to a total of INR 265,000. During 2011-2012 and 2012-2013, four TAG members were selected on the basis of their commitment with regard to their ongoing work and timely report submission, and were awarded a total of INR 120,000 during each year. During 2013-2014, an amount of INR 140,000 was disbursed as small grants to five grantees to support their outreach work.

We believe that increased capacities of independent groups will ensure greater benefits to the network as a collective and allow for the creation of smaller, local networks that seek inputs from these groups. Financial support to individual member organisations in the nature of small grants can help sustain their interest and participation in the network, in addition to achieving the overall conservation objectives of the network. In the future, we plan to focus more on capacity building at the grassroots level and emphasise conservation education and outreach programmes especially in local languages, thus making TAG more effective at the local as well as national level.

*Principal investigator: Kartik Shanker  
Project personnel: Amrita Tripathy, Muralidharan M*



### 3.3 Island Resource Network: collaborative conservation in Andaman and Nicobar Islands

The Andaman and Nicobar Islands support an excellent diversity of tropical marine species and ecosystems that in turn support a diverse human population, comprising of indigenous tribal groups and a diverse settler population hailing from various states of mainland India and Burma. This unique ecological and anthropological diversity makes the sustainable utilisation of these resources a complex and formidable challenge. There is a need to develop participatory approaches that draw from a variety of disciplines and resources in order to develop a coordinated response to the multiple objectives of natural resource management in these islands.

Various government ministries, departments, non-governmental organisations and research institutions function in these islands with the mandate of managing its coastal and marine resources. Over the years, these agencies have developed substantial expertise, resources and technologies for research and resource management, albeit mostly in isolation. In order to facilitate a coordinated response to the diverse objectives of coastal and marine resource management, there is a need to create informal spaces for effectively sharing and exchanging knowledge and

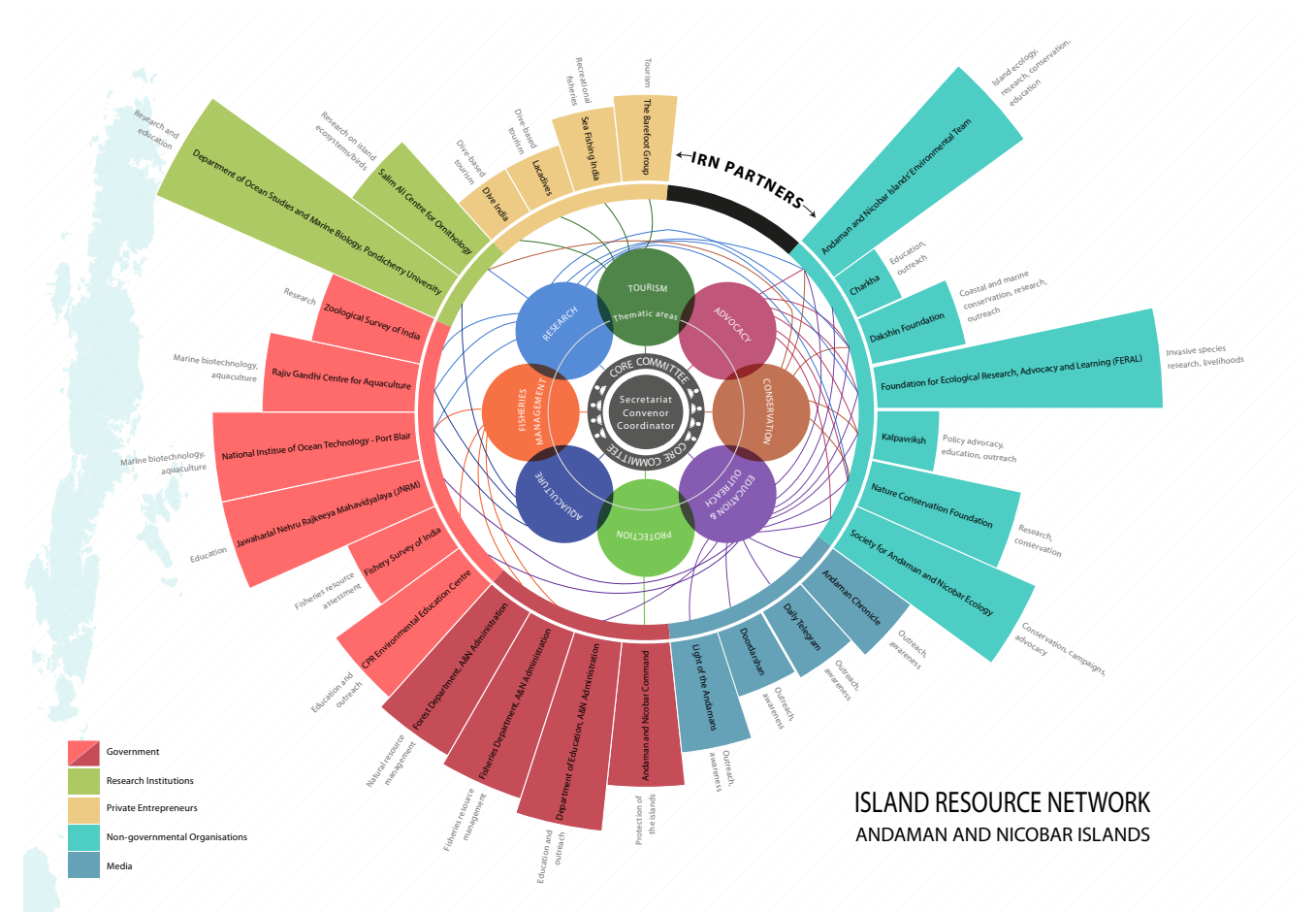
experiences, showcasing activities and achievements, facilitating dialogue and building on capacities. Knowledge generated from such interactions could directly feed into coastal and marine management and policy decisions. On 24th March 2012, the ANI Forest Department, Dakshin Foundation and ANET facilitated such a dialogue in the form of a workshop titled 'Collaborating for marine conservation and resource management in the Andaman and Nicobar islands. The workshop resulted in the creation of an informal network of partners (proposed to be called the Island Resource Network) with varied expertise and resources to engage with the multiple objectives and demands of sustainable resource management in the islands. Given that the ANI's challenges demand multi-disciplinary expertise, the IRN is appropriately placed to provide such support to conservation and sustainable development initiatives. It is necessary to recognise the Island Resource Network (IRN) as a formal coordinated network of island-based expertise.

#### ANI Administration and the IRN

The ANI Administration plays a crucial supportive and facilitative role in the functioning of the IRN which is comprised of government and non-

government actors. Proposed actions to be taken up by the IRN for the year 2013-2015 are as follows:

- Identify focal areas and thematic groups of experts (e.g. fisheries, coastal development, CRZ, species and ecosystem management, resource monitoring, education and outreach).
- Develop operational mechanisms by which the network could engage with its various objectives.
- Set up a core committee for the network that will meet regularly (at least four times a year) and ensure that such activities are carried out in a timely and effective manner.
- Based on the issues and requirements on hand, the core committee will set up relevant task forces. These task forces will draw from the expertise and resources available within the IRN to conduct specific research, conduct expert field visits and develop reports, policy and advocacy documents, which will be uploaded onto the IRN website.
- Set up a secretariat; hire a



coordinator and two assistants who will liaise between the partners of the network, to ensure that the objectives are met and tasks are carried out in a timely manner.

- The coordinator and assistants will help put together a profile of organisations, expertise,

resources, etc. for each member of the IRN.

- The coordinator and the assistants will also (help) organise annual meetings for the network partners to meet, share and discuss issues and concerns.

*Principal investigator:*  
Naveen Namboothri  
*Project personnel:* Sahir Advani, Savita Vijaykumar



## 3.4 OMRCC- Odisha Marine Resources Conservation Consortium

In Odisha, Dakshin's members have been involved in documenting the impacts of conservation measures on fishing communities while also advocating and creating middle ground necessary for implementing appropriate marine conservation measures. In 2004, the Odisha Marine Resources Conservation Consortium was set up to address conflicts over marine conservation measures, support collaborations for conservation and build dialogue between multiple stakeholders over issues of potential conflict. The OMRCC comprises of traditional fishworkers' unions of Odisha, conservation organisations, development NGOs, turtle biologists, and individuals interested in sea turtle conservation and sustainable fisheries in Odisha.

Our collaborative efforts in the last few years have also included the production of two documentaries on various challenges to conservation (See "Chronicles of Oblivion" and "Shifting Sands") as well as a book on the different marine fishing practices in the state (See "Marine Fishing Craft and Gear of Odisha"). Dakshin, along with OMRCC will organise public screenings of both documentaries at Purunabandha and Khar Nasi villages. We will also invite members of local



government bodies to the screenings of the films in order to initiate dialogue between the government and local communities on the issues raised in the films.

As a member of the core committee of the consortium we plan to raise the issues posed by the Odisha Traditional Fish Workers' Union (OTFWU) and submit an official statement on the fishing rules and regulations imposed at Gahirmatha Marine Sanctuary as well as the other important turtle nesting sites on the Odisha coast. Dakshin Foundation's publication on fishing practices in Odisha, which showcases the diversity in the techniques, craft and gear used by coastal communities, will also be distributed to local

government bodies to help inform the discussions on previously imposed blanket bans on particular types of nets.

Dakshin is currently working on developing the OMRCC website ([www.omrcc.org](http://www.omrcc.org)) with updates of recent activities and publications. The OMRCC website will serve as a resource on marine conservation and fisheries-related information in Odisha. We also plan to have periodic meetings with its active members to further develop the various initiatives that have been started since the formation of the OMRCC.

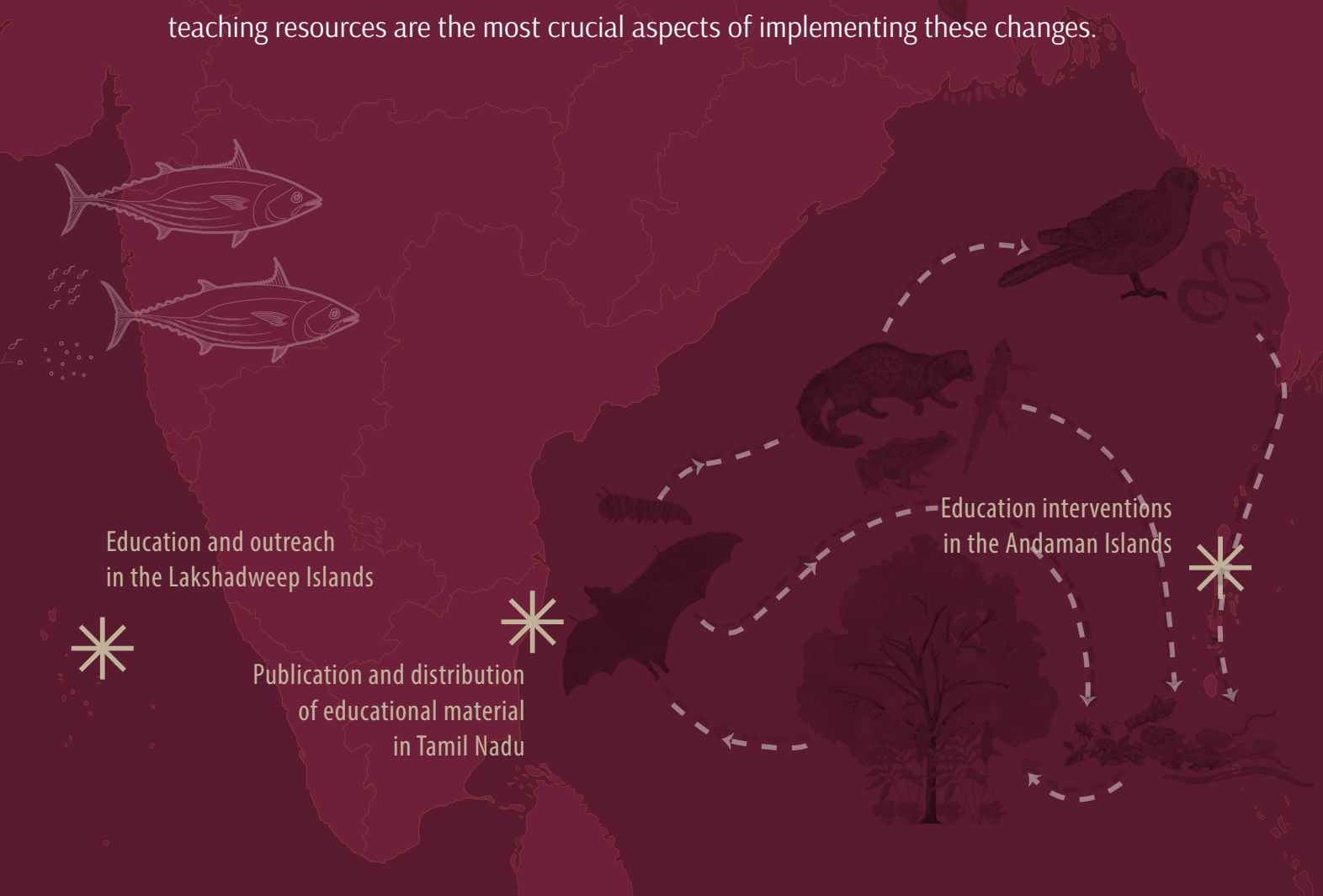
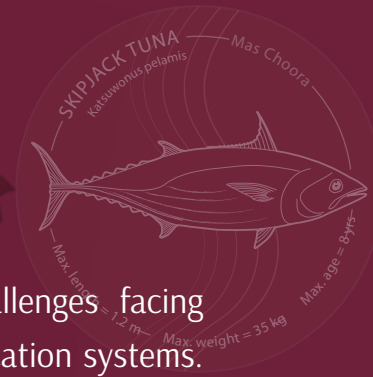
*Principal investigator: Aarthi Sridhar, Kartik Shanker*  
*Project personnel: Muralidharan M*





# ENVIRONMENTAL EDUCATION

Developing societal awareness of the various environmental challenges facing humankind is fast becoming an important component of formal education systems. One of the most effective means to achieving this is to inculcate environmental awareness at the earliest levels of education. India has recently recognised the importance of environmental education and consequently, several efforts have been initiated to develop and incorporate EE into the curriculum, and reorient formal environmental education in schools. Developing a suitable curriculum and mobilising teaching resources are the most crucial aspects of implementing these changes.



Attempts have been made at a national level to incorporate EE into mainstream curricula of schools. However, these efforts do not integrate local contexts and issues into the curriculum. Non-contextualised education fails to enable the students to build connections with their immediate surroundings. Further, inception of such national-level curricula needs to be backed with sufficient resource allocation, training and capacity building of the teachers to engage with the curricula and with sufficient supplementary educational tools.

Many environmental NGOs carry out high quality environmental education programmes, but in isolation and at small scales. Drawing on the strengths of a range of educational systems, both formal and non-formal, Dakshin's Environment Education Programme aims to mainstream context specific and place-based EE into the curricula of schools in India.

By working closely with local partner organisations as well as the administration, Dakshin's environmental education programme aims to:

- develop context-specific and locally relevant text books as well as supplementary resource materials for incorporating a strong EE component into the existing curriculum
- work closely with local partners as well as the administration in implementing EE as a dynamic and evolving programme through feedback from important stakeholder groups
- scale up and mainstream EE, including involvement of the state government, large scale production of materials, translation into local languages and contexts and
- conduct frequent teacher training programmes thereby empowering them to successfully engage with the curriculum.





## 4.1 Education interventions in the Andaman islands

Dakshin Foundation and the Andaman and Nicobar Islands' Environmental Team (ANET) have initiated a programme to make place based environmental education an integral part of school curricula in the Andaman and Nicobar Islands with the support of the Directorate of Education, Andaman and Nicobar Administration. The broad activities proposed are to:

- Develop a plan for incorporating a strong environmental education component into local school curricula;
- Design appropriate strategies for conducting teacher-training programmes in the islands;
- Develop a long-term environmental education (EE) strategy in partnership with the Directorate of Education;
- Review and revise current environmental education syllabi to make it more context-specific;
- Update, redesign and reprint the popular environmental education book *Treasured Islands* for the Andaman and Nicobar Islands in English and Hindi;
- Develop supplementary material

for the book that will enhance effectiveness of the programme;

- Work through a common platform to share resources from various institutions and departments that are involved in environmental education.

Various research institutions, departments and local tourism agencies operate in the Andaman and Nicobar Islands. Identifying the potential to tap into the existing resources and technical expertise of these various stakeholder groups, Dakshin Foundation and ANET organised a workshop that enabled



them to garner support from various dive operators and research institutions towards supporting environmental education and community outreach programmes in the islands.

In response to the Directorate of Education's (DoE, Andaman and Nicobar Islands) interest to reprint *Treasured Islands*, an environmental education resource book specific to the islands. Dakshin Foundation and ANET decided to develop a comprehensive EE programme for middle schools of the Andaman and Nicobar, update the book and make it more teacher-friendly, thus making



it a tool for place based learning. This was achieved through extensive consultations with educators, teachers and officials at the DoE. The Srishti School of Art, Design and Technology, Bengaluru designed the third edition of *Treasured Islands*.

To successfully implement an environmental education programme that emphasises "place based education", Dakshin Foundation and ANET conducted detailed discussions with key stakeholders in education,

namely teachers (school and college), and members of the community. Schools spanning nine educational zones in the Andaman and Nicobar Islands were surveyed to gather feedback on the revised edition of *Treasured Islands* and to understand how teachers perceive environmental

education.

*Principal investigator: Kartik Shanker, Naveen Namboothri*  
*Project personnel: Paroma Sengupta, Mrinalini Siddhartha*





## 4.2 Education and outreach in the Lakshadweep Islands

The Lakshadweep archipelago consists of a diverse network of coral atolls, rich in their cultural and ecological heritage. Our work in this island group involves the development of community-based monitoring programmes for the sustainability of commercial fisheries. At the same time, as marine researchers working within the region, we have a social responsibility towards sharing information regarding Lakshadweep's marine resources as well as transient visitors to the islands. While the documentation of Lakshadweep's traditional ecological

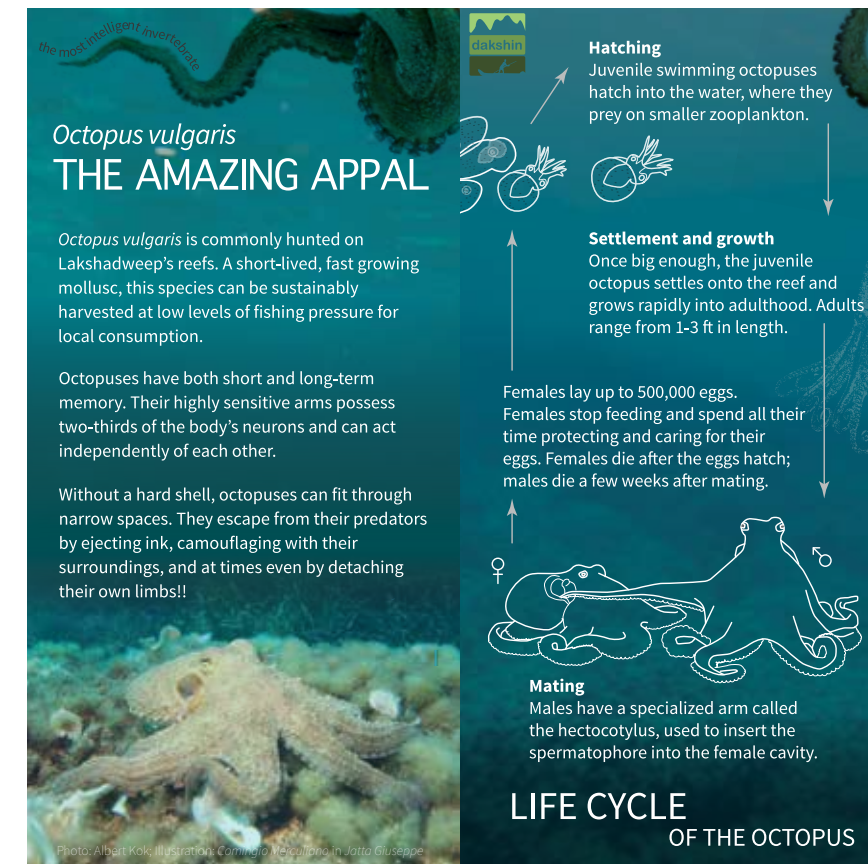
knowledge is ongoing, the rapidly changing and highly sensitive coral reef environments call for greater awareness about these issues.

Since the schools in the Lakshadweep islands follow the Kerala State Board of Education syllabus, little or no information is imparted to students regarding their own immediate marine environment. Similarly, very little environmental and cultural information is shared with island visitors. Over the past two decades, various NGOs have engaged with the local community in small-scale educational and outreach programmes. Our program is the first

of its kind to specifically delve into the ecological aspects of harvested resources.

In October 2013, we developed informational bookmarks, stickers and posters regarding the life history strategies of commonly harvested Lakshadweep marine resources. Despite being solely produced in English, the materials had a far ranging reach from fishermen to the old and young of the community. They have been shared with environment and fisheries department officials in each of the inhabited islands; and opportunistically with the communities we interact with on a daily basis.

In March 2014, we conducted a small programme with 8th grade students in Agatti where our main objective was to share ecosystem and organism level information regarding Lakshadweep's marine resources with the students. We used footage from the BBC Blue Planet and Planet Earth documentaries along with our outreach posters, bookmarks and stickers to highlight the uniqueness of the Lakshadweep archipelago. With help from a highly motivated local teacher, we managed to conduct this programme during school vacation and the turnout was rather positive. Students were interested and attentive, and this was evident during



our concluding quiz session. They were familiar with the harvested species but information beyond that was lacking. It was a learning experience for both parties indeed, and we hope to conduct more programmes like this in the near future.

We have requested the Lakshadweep Department of Environment and Forests for additional funding to improve, translate and distribute these materials to all middle and high school students in Lakshadweep. A small portion of the budget has been set aside to design and distribute educational postcards to island

resorts, guesthouses and tourist attractions, for use by tourists and visitors. We hope that our small contribution will add to the effort of agencies in the past, enhancing local knowledge, instilling islanders with a sense of pride, and inculcating island stewardship while celebrating Lakshadweep's environmental and cultural heritage.

*Principal investigator: Naveen Namboothri, Kartik Shanker*  
*Project personnel: Mahima Jaini, Swetha Nair*





## 4.3 Sand in my hands - Tamil Edition



Sand in my Hands, a children's activity book about sandy beaches and sand dunes, was conceptualised, produced and published by The Coastal and Marine Programme (CMP) at ATREE and Handesign after the 2004 tsunami.

In the aftermath of the tsunami, sandy beaches and sand dunes began to receive more attention than before and there have been several requests over the last few years for a Tamil version of the book. This version is now in the final stages of production. The next step is to run a pilot exercise for the book over a range of schools in selected regions within the larger target area of Tamil Nadu and Pondicherry. Sand in my Hands is best suited for the age group 9-12. It helps students learn through interactive, hands-on learning and outdoor-based activities. Teacher orientation and training on how to use the book is another vital part of the implementation process. Dakshin

Foundation aims to create a positive and lasting impact in the field of environmental education and towards this we work with government bodies and civil society groups with experience in the field of education.

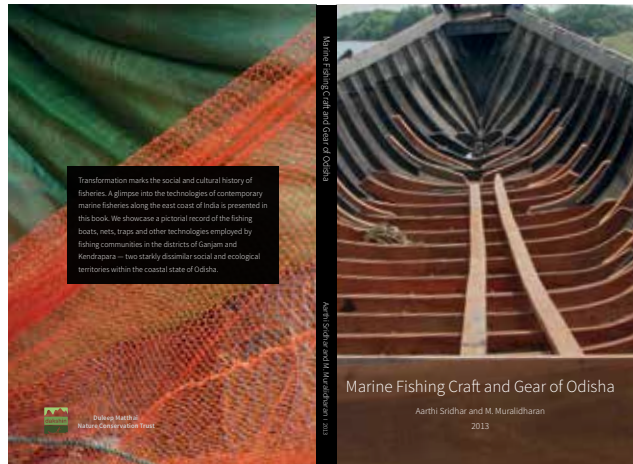
*Principal investigator: Aarthi Sridhar*  
*Project personnel: Mrinalini Siddhartha*





## 5. Publications

### 5.1 Marine Fishing Craft and Gear of Odisha



Marine fishing in Odisha has a relatively obscure history, although its other maritime traditions spanning several centuries are well recorded. Few Indian coastal states have such a diversity of coastal ecosystems and communities as Odisha does. In this book, we feature artisanal (non-motorised), motorised and mechanised boats that are used today in the districts of Ganjam and Kendrapara.

The book begins with a section that covers fishing craft, first from Ganjam and then from Kendrapara, followed by a section showing fishing gear used in both these districts. We present a simple collection of photographs and brief descriptions of craft and gear, which we hope will help arouse greater interest in the history and culture of fisheries in contemporary Odisha.

*Authors: Aarthi Sridhar and Muralidharan M*

### 5.2 Shifting Sands



This 10-minute film depicts the significance and potential of coastal shoreline monitoring with local communities. At present, shorelines monitoring is a centralised and fund-intensive activity undertaken by the Central Government and its agencies. This film highlights the shortcomings within these methods, making a case for regular, field-based and community-based monitoring activities.

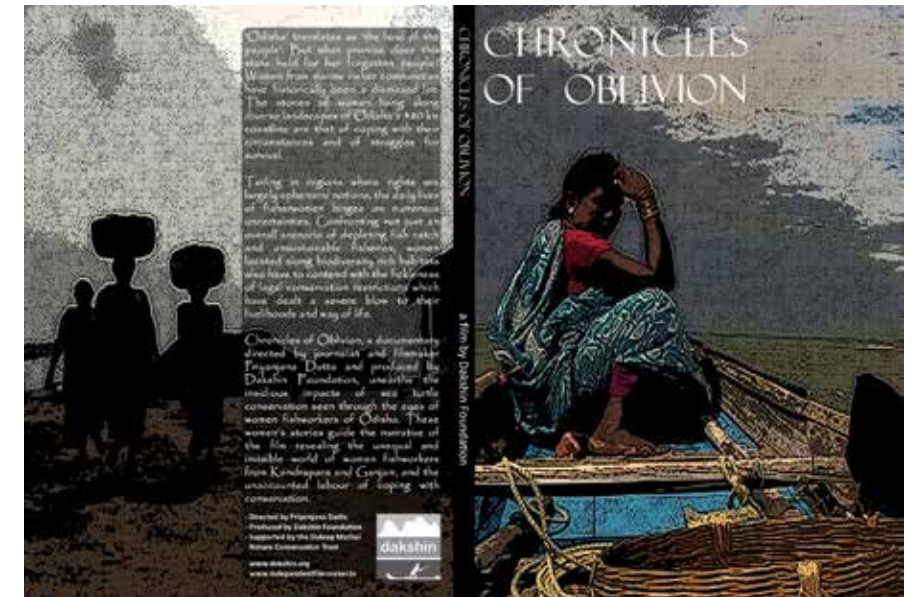
*Directed by: Priyanjana Dutta*

*Research: Aarthi Sridhar, Muralidharan M, Sajan John*

### 5.3 Chronicles of Oblivion

'Odisha' translates as 'land of the people'. But what promise does this state hold for her forgotten people? The lives of the women from Odisha's marine fishing communities are ones of coping with circumstances and of struggles for survival. Toiling in regions where rights are ephemeral notions, the daily lives of fisherwomen hinge on numerous uncertainties. Confronting not just the larger scenario of depleting fish catches and unsustainable fisheries, women located along the biodiversity-rich habitats also have to contend with the fickleness of legal conservation restrictions which have dealt a severe blow to their livelihoods and way of life.

Chronicles of Oblivion is a 29-minute documentary produced by Dakshin Foundation with the support of the Duleep Matthai Nature Conservation Trust. The film explores the impacts of current marine conservation practices seen through the eyes of the fisherwomen of Odisha. Through the film, the women give us glimpses into their invisible world and the unaccounted labour that goes into their everyday struggles.



#### Awards

The documentary shared the 'Best Documentary Film' in the Livelihoods category at the 7th CMS Vatavaran Environment and Wildlife Film Festival and Forum held in February 2014. The film also won the award for Best Editing in the category of Technical and Creative Excellence among Indian films. It was also selected for screening at the Jeevika: Asia

Livelihood Documentary Festival 2013 organised by Centre for Civil Society and at the festival 'Fishworkers of the world' in Lorient, France held in March 2014. We have also received requests to send the film for screening to the environmental film festival FICA in Brazil.

*Directed by: Priyanjana Dutta*  
*Research: Aarthi Sridhar, Marianne Manuel*

## 5.4 Indian Ocean Turtle Newsletter

The Indian Ocean Turtle Newsletter (IOTN) is a biannual international newsletter dedicated to marine turtle conservation. This newsletter was initiated to provide a forum for exchange of information on sea turtle biology and conservation, management and education and awareness in the Indian subcontinent, Indian Ocean region, and south/southeast Asia. The newsletter also intends to cover related aspects such as coastal zone management, fisheries and marine biology. It also serves as a channel for new findings and developments in marine turtle research and management techniques developed elsewhere to reach a regional audience. At the same time, it communicates the results of sea turtle research and conservation related activity in the Indian Ocean region to the global community. The target readership of this newsletter includes government departments, voluntary organisations, research institutions and individuals who include marine biologists, ecologists, Forest Department officials, researchers and students.

We have produced 18 issues of this newsletter till date and are currently working on the 19th issue. The



newsletter is distributed free of cost to a network of governmental and non-governmental organisations and individuals in the region. All articles are also freely available in PDF and HTML formats on the website – [www.iotn.org](http://www.iotn.org). We have nearly 1,300 hard copy subscriptions from over 50 countries and over 1,500 online subscriptions. The hard copy of the newsletter is printed by Medknow Publications and Media Pvt. Ltd., Mumbai. The production of the newsletter is supported through grants from the International Sea Turtle Society and

the Marine Turtle Conservation Fund of the US Fish and Wildlife Service, with administrative support from the Madras Crocodile Bank Trust.

*Editor - Andrea D Phillot, Lalith Ekanayake*

*Founding editor - Kartik Shanker*

*Assistant editor - Amrita Tripathy*

## 5.5 Current Conservation

Current Conservation communicates conservation-related issues and science in an accessible manner to a wide audience. In the seven years of its existence, the magazine has gone through various transitions from a newsletter to a visually engaging magazine. It carries the latest in research concepts and news from both the natural and social science facets of conservation, encompassing ecology, wildlife biology, conservation biology, environmental history, anthropology and sociology, ecological economics, and related fields of research. The articles are illustrated with uniquely stylised artwork, infographics and photographic images from contributors across the world. With writers and contributors from diverse disciplines including researchers, scientists, students and popular writers, each issue carries as much variety in content.

A quarterly publication, the magazine consists of feature articles, opinions, research summaries, book reviews and photo-essays. The targeted audience includes interested members of the general public as well as researchers and scientists. The website was recently redesigned and all our issues are freely available along with additional content only available online.

Current Conservation is published by an informal alliance of organisations to promote interdisciplinary research in conservation and to foster communication among scientists, students, resource managers, educators and policy makers. Managed by six members on the editorial team, the magazine has scientists and researchers from all over the world on its advisory board. In addition to the previous donors i.e. Dakshin Foundation, Duleep Mathai Nature Conservation Trust, Foundation for Ecological Security and National Centre for Biological Sciences, Current Conservation has received support from Indian Institute of Science, Madras Crocodile Bank Trust and The Gerry Martin Project.

Current Conservation Magazine is one of the only platforms where artists and scientists come together to communicate scientific research and conservation related ideas. Writers and illustrators are encouraged to contribute to the magazine and communicate social and ecological research relevant to conservation.



*Editor - Kartik Shanker*

*Senior editor - Ankila Hiremath*

*Managing editor - Suneha Mohanty*

*Junior editors- Caitlin Kight, Hari*

*Sridhar, Sandhya Sekar*



## 5.6 Environmental Law Omnibus ([www.envlaws.org](http://www.envlaws.org))

Citizens in India have periodically called into question the relevance of environmental law. Poignantly enough even the Supreme Court of India observed in 1996 that India would be the least polluted country in the world should the mere enactment of environmental laws be a sufficient condition for the same. Our work on environmental laws takes this sentiment seriously, seeking to investigate the operation of such laws in society, and its implications for people and nature.

We created an online resource, the Environmental Law Omnibus, in 2006 to host, share and simplify content on a range of environmental laws in operation in India. Official websites in India continue to provide poor, unreliable and intermittent access to legal documents such as legal orders,

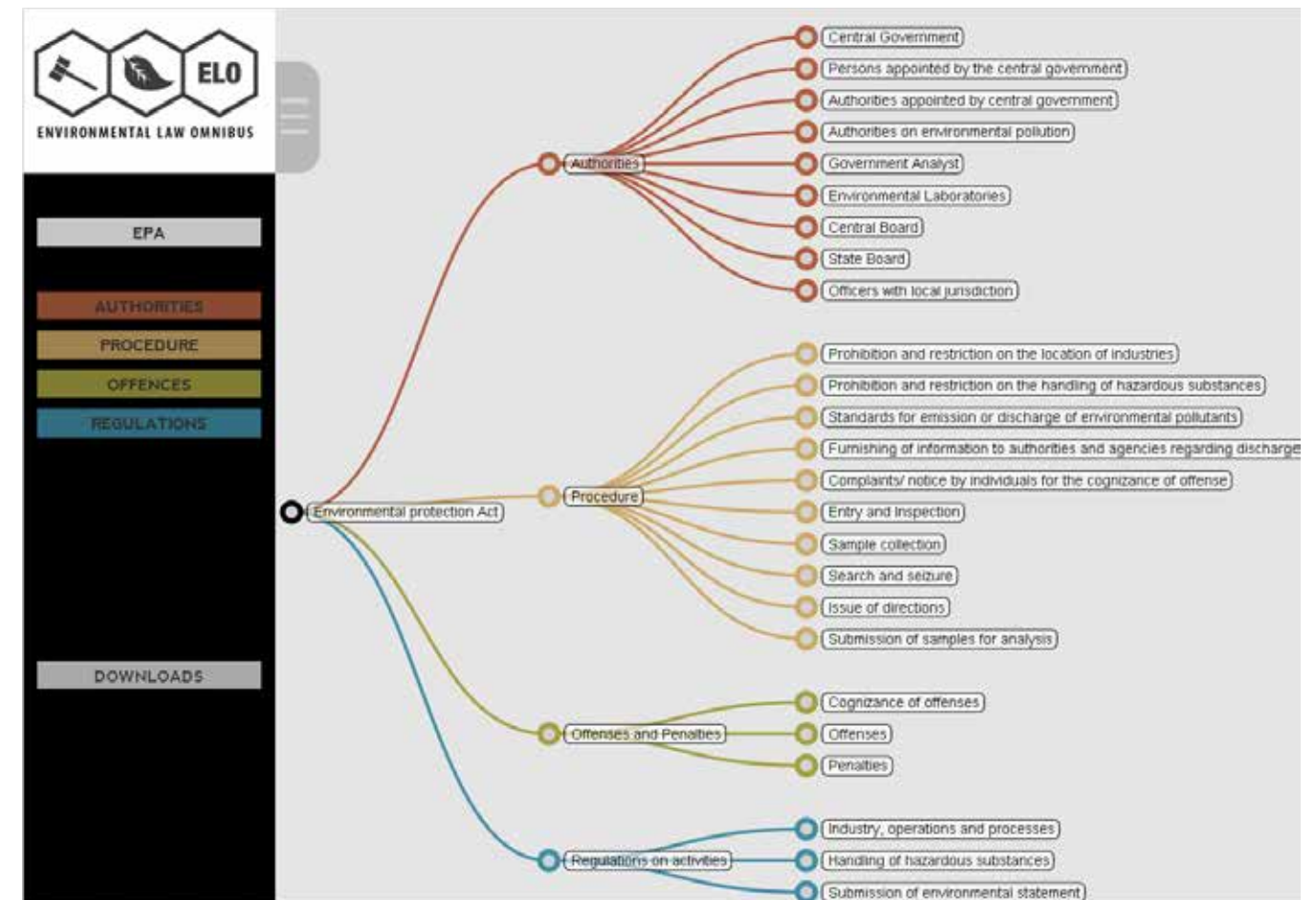
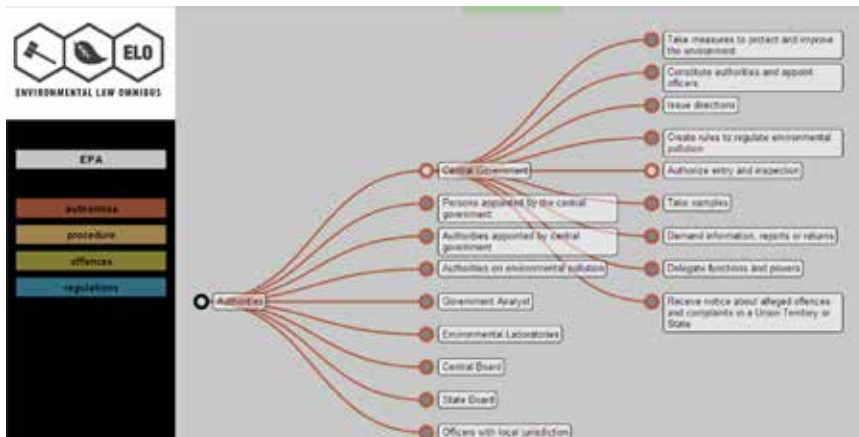
office orders, notifications and often consolidated versions of laws.

There is a rich discourse on environmental law in India covering legal histories, implementation, legal philosophies, application and landmark judgments. Much of this discourse is captured in the form of articles, reports, publications, and interviews. In the year 2013-2014, we revised the design of the Environmental Law Omnibus (ELO) to provide space to capture these discourses. Rather than serve as a mere repository of legal documents (which we continue to do), the website is now designed to also represent the diversity of opinion on environmental laws in India.

ELO is a rich repository for anyone interested in a critical view of

environmental law and its functioning in India. The site has the following components:

- Environmental Law Guide – a section that contains flowcharts and simplified provisions of various laws, both functionally and structurally. The guide is interactive in nature and takes the user step by step through the laws.
- Cases – this section presently contains court judgements from the time of independence till date on select environmental laws from High Courts and the Supreme Court.
- Commentaries on laws – this section contains solicited or collated commentaries by the editorial team and also comprises of invited articles on the operation of different laws and their provisions. A compilation of this kind is invaluable to the subject material available on environmental laws and will fill a much-needed gap in making the diversity of opinion on individual laws available at one source.
- Interviews – a special section that contains interviews with scholars, practitioners, lawyers, community representatives, activists – people who have utilised, studied, argued against and for a place for



environmental legislations in the country.

- Articles – various specific legislations and popular articles on the subject of environmental law and their interface with various social situations in India. These publications are available as freely downloadable PDFs.
- Links to other relevant websites.

We have included a feature that highlights articles and cases related to specific laws in an easy to search format.

ELO will be actively promoted in colleges and schools in India as an interactive tool that makes information on laws accessible in a user-friendly way and hence aid in better understanding of the same.

We are exploring partnerships with various groups to enable us to improve the design of the platform. We are also

currently developing an internship programme for law graduates to work on the ELO site as trainees.

*Editors: Aarthi Sridhar, Kanchi Kohli, Manju Menon, Ritwick Dutta*  
*Assistant editors: Arundhati Jagadish, Marianne Manuel*

## 5.7 Sea Turtles of India



Sea Turtles of India ([www.seaturtlesofindia.org](http://www.seaturtlesofindia.org)) is a website about sea turtles of the Indian subcontinent. This website contains comprehensive information on turtles – distributions of different species, their ecology, identification guides and information on their life history. The website also contains information on research and conservation activities carried out in various parts of the sub-continent.

The 'Resources' section of the website is a repository of literature and research on sea turtles. Apart from a bibliography of research articles on turtles (with over 700 references), it also has popular articles, manuals, books, reports and outreach material.

The site contains a section dedicated to the Turtle Action Group (TAG) with information about its members and activities. The website also now hosts

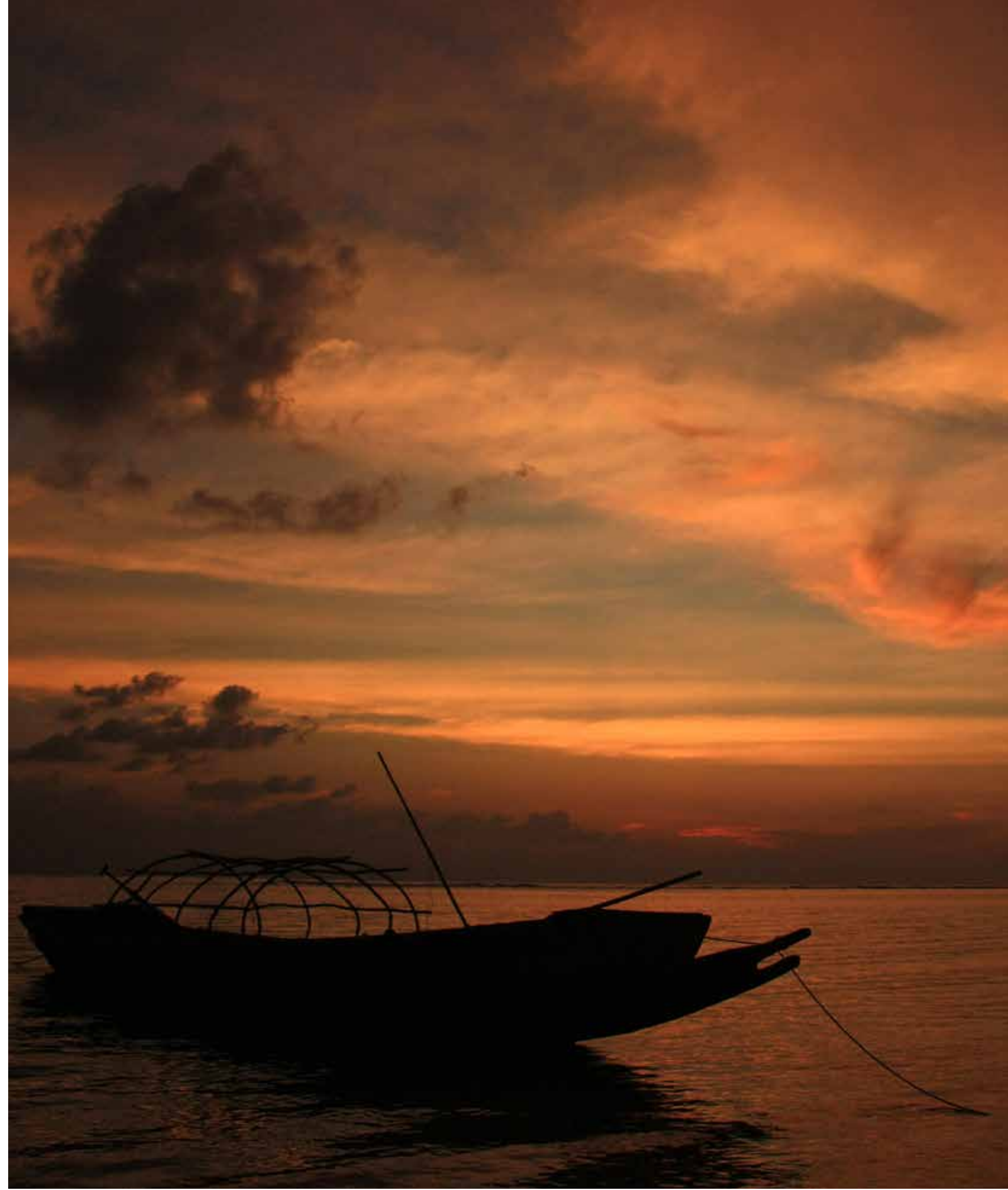
a blog 'Talking Turtles' which features marine turtle related articles, stories, perspectives and opinion pieces. The aim of this blog is to bring the world of turtles closer to our readers through articles about sea turtle ecology and conservation, the landscapes and seascapes they inhabit, and the people who work with them. Most of the articles posted on the blog are written by people working on sea turtle conservation and deal with their experiences in the field. Contributors to the blog include scientists, journalists, conservation practitioners, activists, students and sea turtle enthusiasts.

The website is maintained by Dakshin Foundation. The production of this website was supported by the Marine Turtle Conservation Fund of the US Fish and Wildlife Service.

*Editor: Kartik Shanker*

*Assistant editors: Amrita Tripathy, Muralidharan M*

*Website maintenance: Kaushik Subramaniam*





## 6. People

### Trustees

Aarthi Sridhar



I head the programme on Communities and Resource Governance. Our projects enquire into the shaping of environmental governance mechanisms and their place in society. I have worked on facilitating dialogue and collaboration between actors in conservation over the last decade. These have resulted in some interesting debates, workshops, campaigns and also the opportunity to experiment with civil society to improve environmental decision-making. In the last couple of years my team and I have been associated with making documentaries and communication material on environmental laws that communicate the politics of environmentalism in coastal spaces. I am also currently enlisted in a doctoral programme at the Centre for Studies in Science Policy at Jawaharlal Nehru University, New Delhi.

I am Associate Professor at the Centre for Ecological Sciences, Indian Institute of Science, Bangalore and Founder Trustee of Dakshin Foundation. I work on the distribution of diversity at various levels of organisation, from genes to ecosystems, and at various scales from local communities to macroecological regional scales. We combine field ecology, phylogenetic information and ecological modelling to understand evolutionary and biogeographic patterns in fish, amphibians, reptiles, birds and plants, as well as marine invertebrates. I have worked on the biology and conservation of sea turtles for over 15 years, with ongoing projects on olive ridley turtles in Orissa, and leatherback turtles in the Andaman and Nicobar Islands. With Dakshin, I am involved in projects that seek to build conservation partnerships with local communities through community based monitoring and management programmes. I have also helped establish networks for marine conservation and serve as Editor of Conservation and Society and Current Conservation.

Kartik Shanker



Meera Anna Oommen



I am interested in conducting pure as well as applied research related to biodiversity conservation and planning, particularly with respect to the development of interdisciplinary frameworks relating to reconciliation ecology in modified land- and seascapes. I am carrying out a long-term study related to planning conservation in forest fringe landscapes in the southern Western Ghats and I am also involved in the development of community-centred, long-term monitoring programmes for harvested marine systems of the Lakshadweep archipelago and the Andaman Islands. Additionally, my recent research has focused on traditional and local ecological knowledge in India, particularly in relation to the hunting and harvesting of wildlife. This research also involves a preliminary attempt at the development of an ethnology of the wild boar in India from the perspective of local knowledge.

I am a marine biologist by training and a SERB-Young Scientist at the Centre for Ecological Sciences, Indian Institute of Science. At Dakshin I oversee projects of the Biodiversity Resource Monitoring Programme. My interests lie in the applied aspects of marine science that can assist in conserving and better managing marine resources. My research focuses on understanding vital processes and functions of ecosystems that are essential in maintaining their health. In my pursuit to reconcile academic research with the challenges of sustainable development and resource depletion, I am keen on empowering communities to engage in monitoring and conservation programmes. This I believe will facilitate a paradigm shift from unregulated exploitation to one of sustainable use. I am also involved in infusing the concept of "place based education" to mainstream education.

Naveen Namboothri



## Project personnel

Adhith Swaminathan



I have been fascinated by the marine environment, and sea turtles in particular, since the age of 10. Over the last 17 years I have been a part of the Students' Sea Turtle Conservation Network (SSTCN), India's oldest non-profit organisation working towards the conservation of sea turtles along the coast of Chennai. With what started off as a passion, I went on to pursue a career in studying and conserving sea turtles and the marine environment. I have been working on a leatherback monitoring project based in Little Andaman Island since 2010. The project was initiated in 2007 to study the nesting recovery of leatherback turtles post the tsunami and earthquake of 2004, which devastated the islands. Since 2007, almost 100 leatherback turtles have been tagged and since 2010 the project has also involved satellite tagging of a few turtles each year to study of the migratory route undertaken post nesting.

I am interested in studying the role of formal and informal institutions in environmental resource governance. Currently I am exploring the role of these institutions in coastal resource governance with a special focus on the role of district level coastal zone management committees in Karnataka and the effectiveness of welfare schemes for small-scale fishers in the state. My past work includes documentation of fishing craft and gear of south Odisha and the study of the technological changes that have taken place in small-scale fisheries of the region.

Arundhati Jagadish



Chetan Rao



My primary research interest lies in understanding ecology and evolutionary biology of reptiles and their conservation. My fieldwork currently pertains to the reproductive ecology of Olive Ridley sea turtle populations at mass nesting alongside some other sites on the Odisha coast. I am investigating parameters and patterns behind sea turtle congregations along the coastline and for this purpose we surveyed 9 sites looking for offshore turtle congregations. Simultaneously I am involved with the long term monitoring of sea turtles at the mass-nesting rookery in Rushikulya, which includes maintenance and monitoring of a hatchery to estimate hatching success and calculate hatchling sex ratio and monitoring of nesting females, both sporadic and mass nesters on the beach.

Mahima Jaini



I joined Dakshin Foundation in 2012 to pursue my interests in the interdisciplinary field of marine conservation. Unlike the data-rich marine ecosystems of the West, researchers are posed with serious data and personnel deficiencies in India. While my primary interests lie in the study of the ecological mechanisms and processes behind observed patterns in marine systems, my current work is focused on documenting the prevalent trends and initiating a community-based fisheries monitoring programme for Lakshadweep's live-bait pole and line tuna fishery. Other than research, I also have a keen interest in education and over the past few years have been involved in formal and informal, experiential and theoretical teaching.

Since joining Dakshin, I have worked on several projects under the Community and Resource Governance Programme. My work involves research and advocacy around various coastal issues, mainly focusing on increasing community participation in decision-making under various coastal laws as well as issues around fisheries management. I have also helped develop outreach material to communicate legal information to communities in their local languages. I am also developing a project to understand the dynamics between the various governance institutions, leaders and representatives that are present in the fishing communities around the Gulf of Mannar Biosphere Reserve, their capacity to deal with various conflicts and their level of participation in the spaces provided by existing coastal policies.

Marianne Manuel



Mrinalini Siddhartha



My interests lie in environmental and conservation education. I am passionate about educating the needy and developing and implementing new, unorthodox teaching methods in schools around the country. I would also like to get involved in more marine conservation, eco-restoration and community interactions and development. At Dakshin, I have been involved in developing a detailed environmental education programme for state level schools in the Andaman and Nicobar islands; revising content of an island-specific environment education teachers' handbook - "Treasured Islands!" and in developing new activities and supplementary material for the same. I coordinated the translation of the Tamil edition of the children's activity book on sandy beaches and dunes, "Sand in my Hands", and developed a strategy for its distribution and use.



Muralidharan M



I have been working on the olive ridley sea turtle populations in Odisha since 2008. My work has so far focused on monitoring the nesting population of ridleys in Odisha at the Rushikulya rookery. I am interested in animal-habitat interactions, especially with regard to turtles and their nesting beaches. I am also interested in working with traditional fishing communities and studying their interactions with the turtles and in trying to develop more participatory activities in conservation. In 2013, my colleague Aarthi Sridhar and I published a book on traditional marine fishing practices on the Odisha coast. I am currently involved in outreach and training for coastal and marine conservation, with an emphasis on Odisha. I will also be involved in organising regional level training workshops for the members of the Turtle Action Group (TAG) in the different coastal regions of India.

Since 2012, I have been working on Dakshin's olive ridley (*Lepidochelys olivacea*) population assessment project at the Rushikulya mass nesting site in southern Odisha. I have been working as the field and base camp co-ordinator. My duties involve maintenance of a hatchery, nest relocations, arribada census and beach and off-shore monitoring. I am interested in studying the differences between hatching successes in hatcheries and in the wild and its causes; and the disorientation in hatchlings due to artificial lighting along the mass nesting site. I am also presently working on laboratory-based sex determination of hatchlings using histological procedures. Apart from my research, I also help local NGOs and the Odisha Forest Department conduct capacity building workshops for enthusiastic local volunteers and forest guards working on turtle conservation.

Paroma Sengupta



My interests lie mainly in developing content for place-based education, and bridging the gap between the learner and the curriculum. I believe that content for place-based learning should be in the vernacular thus making it accessible to students of various backgrounds. I am also interested in using storytelling, puppetry and theatre as media for environmental education. Currently at Dakshin Foundation, my project involves developing a comprehensive environmental education programme for the Andaman and Nicobar islands, as well as updating a resource book for environmental education specifically for the islands. I am also conducting an island-wide survey on perceptions about environmental education amongst key stakeholders such as teachers and the larger community.

Nupur Kale



Sahir Advani



I am interested in determining sustainable solutions to coral reef associated fisheries, especially those of apex predators such as sharks and groupers. Broadly, my work involves profiling the fisheries of the Andaman group of islands to establish critical areas for research and conservation of this multifaceted system. For specific aspects of this research, I have received funding from the Rufford Small Grants Foundation and the Ravi Sankaran Inlaks Fellowship Programme. Focusing on the grouper fishery of the Andaman Islands, I aim to collect information on historical and present landing and export trends for a few species of groupers, information on the reproductive biology of a lucrative species of grouper, and fishery independent grouper population estimates through scuba diving surveys.

I have been with Dakshin Foundation since 2011 and I am interested in exploring the potential for participatory approaches in marine resource monitoring and management. As a beginning, I was involved in the creation of communication material on various fishery subsidies for the small-scale fishers of Karnataka. My research interests are participatory fishery resource management, community-based endangered species conservation and endangered species management. I strongly believe that better understanding of issues and involvement of local stakeholders can mitigate conflicts and help in formulating effective management strategies.

Savita Vijaykumar



I am interested in understanding the relationship between public policy specific to conservation and governance processes at the local and national level. In my role as policy analyst in the Andaman and Nicobar islands I aim to interface and build dialogue between conservation practitioners and policy makers in various state and national level committees for informed decision-making. My aim is also to facilitate the establishment of an 'Island Resource Network' an inter-departmental, multi-stakeholder platform that allows for sharing of resources, conflict resolution and better coordination between all parties towards sustainable development of the islands. For the past year I have also been researching fisheries governance in the islands, the distribution of state level inputs and issues present in the process of allotting and availing of schemes and subsidies.

Sajan John



## Project associates

### Amrita Tripathy



My interests pertain to plant-animal interactions, especially floral morphology, pollination traits, migration patterns, evolutionary biology and molecular ecology. I am also interested science communication and conservation education. I work as the coordinator of the Turtle Action Group and also administer the turtle projects funded by the Marine Turtle Conservation Fund. I am also the editorial assistant for the biannual Indian Ocean Turtle Newsletter. My work involves administrative tasks, managing small grants, organising annual TAG meetings and helping with outreach and conservation workshops, and maintaining the Sea Turtles of India website and Talking Turtles blog. I also help in the maintenance of Dakshin's web-based resources for turtle conservation.

I am a web developer interested in open source technologies and the politics surrounding it. Given my propensity towards engaging with social and environmental issues, I've also worked with grassroots activists and NGOs for nearly five years now. I believe community driven engagement with any ecosystem is crucial in understanding the politics of it, in order to come up with collaborative solutions. I believe my role as a programmer is to build such community driven portals on the internet. My work with Dakshin involves maintaining and building web platforms such as the Dakshin website, the Environmental Law Omnibus, the Sea Turtles of India data portal and website, the IOTN website and the Current Conservation website.

### Suneha Mohanty



With a masters in biotechnology followed by three long years of confinement in a laboratory studying sub-cellular activity, I switched over from the microscopic world to the macroscopic one which rekindled the lost love for art. Straddling both worlds of science and art, I am interested in science communication and simultaneously exploring the world of art and design. As the managing editor of Current Conservation magazine, my responsibilities include designing and overseeing the overall visual appeal of the magazine along with managing other administrative aspects.

### Kaushik Subramaniam



### Advisory Board

Dr. Ajith Kumar, Centre for Wildlife Studies and Wildlife Conservation Society, Bengaluru  
 Prof. Daniel Brockington, Institute for Development Policy and Management, University of Manchester, UK  
 Prof. Heather Goodall, Centre for Cosmopolitan Civil Societies, University of Technology, Sydney  
 Dr. Kavita Isvaran, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru  
 Prof. Mahesh Rangarajan, Nehru Memorial Museum and Library, New Delhi  
 Dr. Nitin Rai, Ashoka Trust for Research in Ecology and the Environment, Bengaluru  
 Prof. R. Sukumar, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru

### Accounts officer

Kavitha Manjunath

### Design consultants

Arjuna Shankar  
 Seema Shenoy

### Collaborators and partners

Andaman and Nicobar Islands' Environmental Team  
 Centre of Advanced Study in Marine Biology, Annamalai University  
 Centre for Ecological Sciences, Indian Institute of Science  
 College of Fisheries, Mangalore  
 Directorate of Education, Andaman and Nicobar Islands  
 Foundation for Ecological Security  
 Lakshadweep Marine Research and Conservation Centre  
 Madras Crocodile Bank Trust  
 National Coastal Protection Campaign  
 National Centre for Biological Sciences, Bengaluru  
 Nature Conservation Foundation  
 Odisha Marine Resources Conservation Consortium  
 Turtle Action Group  
 United Artists Association  
 University of Technology, Sydney  
 University of Wollongong

### Funding partners

Rohini Nilekani, Bengaluru  
 Duleep Matthai Nature Conservation Trust, Anand  
 M.M.Muthiah Research Foundation, Chennai  
 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), New Delhi  
 Madras Crocodile Bank Trust, Mamallapuram  
 National Centre for Biological Sciences, Bengaluru  
 Namati- Centre for Policy Research, Environmental Justice Programme, Delhi  
 Foundation for Ecological Security, Anand



Balance Sheet as at March 31, 2014

DAKSHIN FOUNDATION  
No. C-305, Samvriddhi Gardenia Aparments,  
88/3, Bytarayanapura, Near Sahakarnagar,  
A Block, Bangalore - 560 092

I	Sources of Funds	As on 31-3-2014	As on 31-3-2013
1	Fund		
	a Corpus Fund	—	—
	b General Fund	—	—
	c Utilised Fund	—	—
2	Loan	—	
3	Current Liabilities	—	
	a Project Fund		31.75
	b Others	—	
	Total	—	31.75
II	Application of funds		
1	Fixed Assets		
	a Project Asset		
	Dakshin General Asset	—	
2	Current Assets, Loans & Advances		
	a Deposits	536.92	355.76
	b Project Funds	50.00	5.00
	c Advances	32.28	26.20
	d Cash and Bank balances	213.51	20.96
	Total	832.70	407.91

(Rupees in thousands)

Income and Expenditure account for the Year ended March 31, 2014

DAKSHIN FOUNDATION  
No. C-305, Samvriddhi Gardenia Aparments,  
88/3, Bytarayanapura, Near Sahakarnagar,  
A Block, Bangalore - 560 092

Particulars	As on 31-3-2014	As on 31-3-2013
Income		
a Project Income	4,532.17	3,227.37
b Donation and Other Income	277.36	304.61
c Interest	50.14	60.78
Total	4,859.68	3592.76
Expenditure		
a Project Expenses	4,390.67	3,220.19
b Travel & Conveyance	0.79	3.94
c Printing & stationery	13.27	78.07
d Administration Expenses	142.02	156.07
e Depreciation	30.51	9.73
Total	4,577.25	3468.68
Surplus/(Deficit)	282.42	124.08

(Rupees in thousands)

# Auditors’ Report

G.Anantha & Co.,  
Chartered Accountants  
‘Srinidhi’, No.36 & 36/1,First Floor,  
Mallikarjuna Temple Street, Basavanagudi  
Bangalore – 560 004  
Phone No - 080 - 41204245 / 080-26622432  
Fax No. 41204245

## INDEPENDENT AUDITOR’S REPORT

To the Board of Trustees of DAKSHIN FOUNDATION

### Report on the Financial Statements

We have audited the accompanying financial statements of DAKSHIN FOUNDATION, which comprise the Balance Sheet as at March 31, 2014 and the statement of Income and Expenditure on that date hereto.

### Management’s Responsibility for the Financial Statements

Management is responsible for the preparation of these financial statements that give a true and fair view of the financial position and financial performance of the Trust in accordance with the accounting principles generally accepted in India. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

### Auditor’s Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing generally accepted in India. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor’s judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Entity’s preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

In our opinion and to the best of our information and according to the explanations given to us, the financial statements of DAKSHIN FOUNDATION for the year ended March 31, 2014 are prepared, in all material respects, in accordance with the accounting principles generally accepted in India.

Place: Bangalore  
Date: 10 June 2014

for G. ANANTHA & Co.,  
Chartered Accountants,  
FRN 005160S  
Rani .N.R  
Partner  
M.NO. 214318