

Collaborating for marine conservation and resource management in the Andaman and Nicobar Islands

A workshop organised by:

Andaman and Nicobar Island's Environmental Team (ANET)
Andaman and Nicobar Department of Environment and Forests
Dakshin Foundation
Madras Crocodile Bank Trust

March 2012



Funding support:



THE DULEEP MATTHAI
NATURE CONSERVATION TRUST



Citation: Advani, S., T. Khan, G. Mallapur, N. Namboothri, A. Sridhar, and C. Stevenson. 2012. Collaborating for marine conservation and resource management in the Andaman and Nicobar Islands. Workshop Report. Andaman and Nicobar Island's Environmental Team and Dakshin Foundation. 26 pages

Acknowledgements:

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Table of Contents

Why the workshop?	2
Marine conservation issues in the Andaman and Nicobar Islands	2
Status of knowledge and information sharing	3
Objectives of the workshop	3
Profile of organisations working in this region	4
Central government agencies	5
Andaman and Nicobar Administration's Departments	6
Research Institutes	7
Non-governmental organisations	7
Stakeholders / Private Entrepreneurs	8
Agencies involved in Environmental Education in the ANI	9
Media agencies	9
Workshop Programme	10
Session 1	11
Group Discussion 1	15
Session 2	17
Group Discussion 2	18
Closing remarks and points of action	20
Annexures	22
Annexure 1 - Contact Details of Invited Participants and list of Core-Committee Members	22
Annexure 2 - Schedule of Events	26



Why the workshop?



Marine conservation issues in the Andaman and Nicobar Islands

The Andaman and Nicobar archipelago contains the most diverse marine and coastal ecosystems in the Indian Ocean, which include seagrass meadows, coral reefs, mangrove forests and extensive sandy beaches. While harbouring a variety of endemic species, these ecosystems are also prone to adverse impacts from development, pollution, and unsustainable resource extraction. The unregulated growth of the tourism sector, a mainstay of the islands' economy, and parallel development of infrastructure and facilities in the islands have led to substantial degradation of its adjoining marine ecosystems. Increasing population (both floating and resident), has led to subsequent increase in pollution. Overexploitation of marine resources like fish and shells has had a detrimental effect

on the economic and ecological functions of ecosystems. Lack of proper regulations on exploitation of resources such as fish, which are harvested annually for local consumption and export markets, have raised serious concerns about the sustainability of these stocks. Coral reefs are under various degrees of threat from anthropogenic stressors like siltation, sand mining, pollution, natural factors such as the tsunami of December 2004 and global factors like ocean acidification and El Niño related sea temperature rises.

A combination of both natural and anthropogenic activities has substantially degraded the marine and coastal ecosystems of the islands. This in turn will have a negative effect on the livelihoods of stakeholder groups that rely on them. These ecosystems are intricately connected to the livelihoods of a varied stakeholder group like fisherfolk, dive

operators, and the tourism industry. While fisherfolk depend on a healthy fish stock for their livelihoods, the tourism sector and the private entrepreneurs such as dive operators rely on the beauty and aesthetic value of the islands' marine habitats to attract tourists from across the world.

Status of knowledge and information sharing

There is considerable overlap of jurisdictions, mandates, responsibilities and roles of various ministries, departments, institutions and organizations when it comes to effectively managing and sustainably utilizing the coastal and marine resources of the Union Territory of the Andaman and Nicobar Islands. A few of these mandates are conflicting, invariably leading to duplication of efforts or inadequate cooperation between departments. Additionally, there is a frequent lapse in communication and information sharing between various departments and organizations involved in marine resource conservation and monitoring.

There also seems to be a prominent disconnect between a large part of the local communities and the ecosystems they live in. Environmental education, though a part of the syllabus at local schools, use text books from the Indian mainland that has little relevance at a local level. General awareness about marine resource management and sustainability issues among the general public is poor, highlighting the need for locally-relevant outreach and awareness programmes.

Thus there is an apparent need to initiate dialogues towards forming a network of organizations, departments, institutions, media and civil societies that will:

- a. facilitate information flow and sharing of resources and capacities
- b. ensure that the activities of the network members will complement and support each other's efforts

- c. facilitate a coordinated response towards conservation and sustainability issues of marine resources in the islands
- d. ensure knowledge generated from interactions of the members will feed back into management and policy level decisions
- e. develop a self-sustaining environmental education, awareness and outreach programme for the islands that is not just locally relevant but with inputs and support from network members

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". It was held on the 24th of March 2012, at Van Sadan, Port Blair and several organizations, both government and non-government, with a stake in marine conservation participated in this workshop.

Objectives of the workshop

- Sharing between participants on their contributions to research, conservation and management of coastal and marine resources in the ANI.
- Identification of target areas where collaborative approaches can be devised for marine conservation in the ANI.
- Discuss the possibility of developing a platform for facilitating sharing resources, capacities, and information between participants.
- Devise mechanisms to enhance coordination between participants towards specific conservation related activities.

Profile of organisations working in this region

The following is a list of organizations from mainland India and the Andaman and Nicobar Islands that are working towards marine conservation and resource management in this region. These include both government and non-government institutions as well as various stakeholder groups.

- Andaman and Nicobar Centre for Ocean Science and Technology (ANCOST), Port Blair
- Andaman Chamber of Commerce and Industry, Port Blair
- Andaman and Nicobar Coastal Zone Management Authority, Chatham, Port Blair
- Andaman and Nicobar Command (ANC), Port Blair
- Andaman and Nicobar Islands Environmental Team (ANET), Wandoor.
- Andaman Chronicle, Port Blair
- The Barefoot Group, Havelock
- Central Agricultural Research Institute (CARI), Garacharma
- Charkha, Port Blair
- CPR Environmental Education Centre, Port Blair
- The Daily Telegrams, Port Blair
- Dakshin Foundation, Bangalore
- Department of Education, Andaman and Nicobar Administration
- Department of Environment and Forests, Andaman and Nicobar Administration
- Department of Fisheries, Andaman and Nicobar Administration
- Department of Ocean Studies and Marine Biology, Pondicherry University, Port Blair Directorate of Shipping Services, Port Blair Dive India, Havelock
- Doordarshan, Port Blair
- The Echo of India, Port Blair
- Foundation for Ecological Research, Advocacy, and Learning (FERAL), Pondicherry
- Fisheries Survey of India (FSI), Port Blair
- Jawaharlal Nehru Rajkeeya Mahavidyalaya (JNRM), Port Blair
- Lacadives, Wandoor
- The Light of Andamans, Port Blair
- Nature Conservation Foundation (NCF), Mysore
- Marine Police Force
- Salim Ali Centre for Ornithology and Natural History (SACON)
- Sea Fishing India, Port Blair
- Society for Andaman and Nicobar Ecology (SANE), Port Blair
- Kalpavriksh, Pune
- Zoological Survey of India (ZSI), Port Blair

Central government agencies

Andaman and Nicobar Centre for Ocean Science and Technology (ANCOST)

ANCOST is a division of the National Institute of Technology (NIOT), Chennai which is an autonomous institution under the Ministry of Earth Sciences (MoEs). ANCOST is charged with the task of providing technical expertise and increasing institutional capabilities in the management of ocean resources and the environment of the Andaman and Nicobar Islands. Among the varied research activities undertaken by this institution are the Island Resource Information System (IRIS) and the Coastal Ocean Monitoring and Prediction System (COMAPS) both of which are essential for the management of the ocean systems of these islands. ANCOST also plays a role in the promotion and installation of fish cages and fish aggregating devices in these waters. The institution is frequently a consultant on marine engineering and EIA studies.

Andaman and Nicobar Command (ANC)

The Andaman and Nicobar Command was established in 2001 and is an amalgamation of forces from the Indian Army, Air Force, Coast Guard and the Navy. Their primary role is to ensure the defence of the islands from land, air and sea. Along with this they are tasked with protecting the EEZ and providing disaster aid and relief. They are also responsible for marine pollution control in this region and the detention of poachers.

Central Agricultural Research Institute (CARI)

Based in Garacharma, South Andaman, CARI is responsible for research, development and promotion of agricultural and aquaculture activities in the Andaman and Nicobar Islands. Through research, CARI advances judicious utilization of natural resources alongside economic gains of stakeholders. Creating gene banks of viable agro and animal resources is

one of the unique tasks that this institution is charged with. Socio-economic surveys of the fishing community have also been conducted by this institution.

Fisheries Survey of India (FSI)

The FSI undertakes regular surveys of the fishery resource potential of the Andaman and Nicobar EEZ. Their exploratory surveys have provided estimates of both demersal and pelagic fish resources of these waters. They are currently promoting the sustainable exploitation of pelagic tuna resources through long lining gear. Researchers from other institutions are also welcome to participate in the regular cruises of their research vessel MFV Blue Marlin.

Marine Police Force

A sub-division of the A&N Police Force, the MPF is responsible for providing coastal security upto a distance of 12 nautical miles. Of the 22 police stations, 21 are declared as Coastal Police Stations and along with the Indian Reserve Battalion (IRBn) enforce law and order on the 572 Andaman and Nicobar Islands. They are responsible for apprehending poachers and foreign intruders encroaching upon Indian territory. This work is often carried out in tandem with the Department of Environment and Forests and the ANC.

Zoological Survey of India (ZSI)

ZSI conducts surveys of the various faunal groups of the Andaman and Nicobar Islands. They have undertaken intensive taxonomic classification of marine organisms along with several surveys and monitoring of coral reefs. They have produced faunal inventories of the Mahatma Gandhi Marine National Park, field guides to commercially important reef fish, and an ichthyofaunal record of Andaman and Nicobar mangrove ecosystems among other publications.

Andaman and Nicobar Administration's Departments

Among the various departments within the Administrative structure of the ANI, the following have been identified to have a significant role to play in marine conservation. These overlaps may be direct as in the case of the Department of Fisheries, or in some cases indirect but extremely pertinent considering the economy through trade, tourism and development is closely linked to the waters of these islands.

Andaman Chamber of Commerce and Industry (ACCI)

The ACCI is responsible for the implementation for the policies, procedures, and economic development of the Andaman and Nicobar islands. They have an interest in mutually and legally furthering the Andaman economy in an environmentally friendly manner, while keeping the safety and welfare of the business community in mind. Economic activities like tourism, shipping, and export are included within the activities that they manage.

Andaman and Nicobar Coastal Zone Management Authority

The Andaman and Nicobar Coastal Zone Management Authority was constituted in 1998 as part of the Environmental (Protection) Act (EPA), 1986. The Authority has the power to take measures to protect and improve the quality of the coastal environment and prevent, abate, and control environmental pollution, while also ensuring that the provisions and rules of the EPA 1986 are adhered to. The regulation of all development activities listed within the recently passed Island Protection Zone (IPZ) Notification 2011 also falls under the mandate of the Authority along with the task of appraising the draft Integrated Coastal Regulation Zone (ICRZ) Plan and the Integrated Islands Management Plan (IIMP) prepared by the Andaman and Nicobar administration under the IPZ notification 2011.

Directorate of Shipping Services

The responsibility for maintaining, manning, and operating all the vessels owned by the A&N Administration lies with the Directorate of Shipping Services. The operation of a large fleet of vessels brings with it a whole set of environmental issues relating to ballast water, pollution, damage to reefs by collision etc. This causes the DSS to be an important entity in marine conservation initiatives in the A&N islands.

Department of Education

The Department of Education is in the process of reviving its conservation education programme. Increasing environmental education awareness among the children of these islands has long been a priority for this department. However, there is a need for the curriculum to address more island specific issues, a task the Department is currently undertaking in consultation with the Department of Environment and Forests and NGOs like ANET and CPR Environmental Education Centre.

Department of Environment and Forests (DoEF)

With 86% of the area of these islands protected in some form and managed by this Department, the DoEF has a significant role to play in the conservation of the marine ecosystem. They are responsible for the enforcement and management of the two large marine national parks of the Andamans – Rani Jhansi Marine National Park and the Mahatma Gandhi Marine National Park. The department has also been monitoring the islands' turtle nesting beaches and manages a turtle hatchery at Cuthbert Bay. Management of mangrove systems and promoting research on coral reefs, dugongs, etc. are some of the other marine related activities of the Department of Environment and Forests.

Department of Fisheries

This department issues licences to fishers and fishing vessels, maintains fishery related statistics, and enforces regulations for both fishing and the shell fishery. Maintenance of fish export records and collection of royalties for the same is also performed by the Department of Fisheries. Fishers in these islands can take advantage of subsidies, incentives, and welfare measure that are offered by the Department only to licensed fishers. In terms of research/monitoring, the department has reported frequently on the alarming growth of the export industry for perches.

There are a number of governmental and non-governmental institutions working in the realm of research and conservation. While some of these agencies have their head offices on the mainland, together with local agencies they contribute significantly to the research output of the ANI.

Research Institutes

Department of Ocean Studies and Marine Biology, Pondicherry University

The Department of Ocean Studies and Marine Biology has provided support for several postgraduate theses studying the marine ecosystems of these islands. With upgraded facilities in 2004, this department has sophisticated laboratory facilities for field investigations of marine biology. Developing a sustainable management plan, a coastal disaster management plan, and a database of oceanographic parameters are some of the department's ongoing initiatives.

Jawaharlal Nehru Rajkeeya Mahavidyalaya (JNRM)

Affiliated to Pondicherry University, JNRM is the only degree college in the Andaman and Nicobar islands. With well-trained faculty members, JNRM offers undergraduate degrees in fields as diverse as Zoology and Botany to Tourism and Travel Management.

Salim Ali Centre for Ornithology and Natural History (SACON)

Whilst SACON has undertaken a considerable amount of research in the Andaman and Nicobar Islands on edible nest swiftlets, they are also involved in marine conservation activities. Currently, researchers from SACON are monitoring post-tsunami coastal ecosystem recovery in the Nicobar Islands. Additionally, this organisation was also instrumental in establishing the DNA clubs, or the Department of Biotechnology's Natural resource Awareness clubs, in several schools of the A&N islands.

Non-governmental organisations

Andaman and Nicobar Islands' Environmental Team (ANET)

A division of the Madras Crocodile Bank and Trust (MCBT), ANET has been the archipelago's leading non-governmental environmental agency for the last twenty years. By interacting with several local institutions, ANET has created a centre for mutual exchange of information and has fostered an interdisciplinary understanding of the islands. The organisation is also an active participant in the development of various island management plans along with the Department of Environment and Forests and other administrative bodies. As a research base for visiting researchers from varied institutions, ANET interacts closely with several organisations and facilitates research efforts. The facility also has run several education and awareness campaigns for schools around the Mahatma Gandhi Marine National Park and has plans to work closely with the Department of Education in developing an effective teachers training program.

Dakshin Foundation

Dakshin Foundation is a non-profit NGO, which has been promoting marine conservation and sustainable resource management

along the Indian coastline. Through interdisciplinary research and conservation interventions, Dakshin Foundation aims to promote ecologically and socially appropriate approaches to conservation and management in coastal and marine ecosystems in India. The organisation has been foremost in establishing and maintaining, the Turtle Action Group (TAG), a network of institutions involved in turtle conservation in India. They were also the organisers of the International Sea Turtle Symposium (ISTS) in Goa in 2010. In the Andaman and Nicobar Islands, Dakshin is monitoring leatherback turtle nesting sites and through a series of awareness campaigns is promoting sea turtle conservation in the region. Dakshin is also embarking on community-based fisheries monitoring in the islands in collaboration with ANET.

Foundation for Ecological Research, Advocacy, and Learning (FERAL)

Extensive research on invasive species in the A&N islands has been carried out by FERAL. Additionally, socio-economic interviews of fishing communities close to the Mahatma Gandhi Marine National Park have also been undertaken by researchers from this NGO.

Nature Conservation Foundation (NCF)

Based in Mysore, researchers from this organization have conducted innovative research on the marine fauna of these islands. Documentation of seagrass beds, dugong populations, robber crab distribution in the Nicobar Islands, and traditional fishing ground management systems are just a few of the projects undertaken by researchers from this organisation. Currently, NCF with support from the DoEF is monitoring coral reef health around these islands.

Society for Andaman and Nicobar Ecology (SANE)

SANE has always had an active interest in conserving the ecology and rights of indigenous people of these islands. In partnership with Kalpavriksh and the Bombay Natural History

Society, SANE was responsible for filing the PIL with the Supreme Court for the closure of the Andaman Trunk Road and removal of forest encroachments. SANE, along with Kalpavriksh and some other organisations, was also responsible for the ban on timber extraction and the phasing out of sand mining operations.

Stakeholders / Private Entrepreneurs

The Barefoot Group

Since its inception in 2003, the Barefoot group has been one of the largest resort groups within the islands. Based out of Havelock, their various properties are developed with a priority to preserve the natural flora, fauna and to educate tourists on the island's biodiversity. In addition to providing plenty of local employment, the Barefoot Group has supported conservation and local education initiatives by providing resources such as boats, staff and setting up the 'Seacology' centre.

Dive India

Located on the island of Havelock, this dive operation is active in promoting marine conservation and environmental awareness. Uniquely positioned in a role where they dive the reefs of the Rani Jhansi Marine National Park nearly every day and where they support and facilitate research; this dive centre helped in alerting the scientific community about coral bleaching caused by the 2010 El Niño event.

Lacadives

Lacadives is currently working in close partnership with ANET to facilitate scientific diving research around South Andaman, especially the Mahatma Gandhi Marine National Park. Through its awareness programmes, Lacadives has also been promoting marine ecological education among visitors and students to the islands.

Sea Fishing India

SFI is an eco-friendly sport fishing operation. Through their catch and release system, they have no detrimental effect on the marine ecosystem, while still providing local employment opportunities and drawing in foreign clientele. They have a vast knowledge of seasonal and diurnal migratory patterns of pelagic fish, and are open to collaborating with research agencies offering their resources in terms of tagging and monitoring. They have also offered to help enforcement agencies in terms of reporting any encroachment or poaching activities.

Agencies involved in Environmental Education in the ANI

Charkha

Charkha is an NGO that is promoting the formation of Eco-clubs in local schools as part of their plan to develop communication networks among remote communities. Through field and classroom activities they have been increasing students' knowledge about local flora and fauna and in this way sensitizing them to issues in the A&N islands. Charkha facilitated the establishment of the Andaman Eco Network that served as a platform for school authorities to present their problems to the Administration.

CPR Environmental Education Centre

Established by the Ministry of Environment and Forests (MoEF), CPREEC has been striving to increase awareness and knowledge of school children about environmental education. This organization has been working closely with the Department of Environment and Forests, A&N, to create and sustain Eco-clubs in the local schools.

Kalpavriksh

Kalpavriksh was instrumental in the production and publication of *Treasured Islands*, a teachers' training manual for environmental education in the Andaman and Nicobar Islands.

Published in 1999, *Treasured Islands* is now in need for an update, and in collaboration with the Department of Education, efforts are being made to produce a newer teachers' training manual for environmental education that A&N specific.

Media agencies

Due to the large numbers of languages spoken in the islands, there are several regional newspapers produced, that are either daily newspapers or periodicals. There are also two broadcast media agencies, namely All India Radio (AIR) and Doordarshan (DD). Collectively these function as the most widespread mode of outreach to the people of the islands. The Andaman Chronicle, The Daily Telegrams, the Echo of India, and the Light of Andamans are some of the papers that disseminate environmental awareness information to the public.



The primary focus of the workshop was to explore ways in which various organisations, institutions, departments, and entrepreneurs could work together and strengthen existing efforts towards effective resource management and environmental education in the Andaman and Nicobar Islands. The workshop was conducted on the 24th of March, 2012 at Van Sadan, Port Blair. It was inaugurated with a brief address from each of the three special invitees. Shri. Shakti Sinha, the Chief Secretary of the Andaman and Nicobar Administration, spoke a few words about the need for such a collaborative effort, where government officials, researchers, academicians, and environmentalists are discussing marine conservation issues on a common platform. Shri. Shamsher Deol, the Director General of Police, and Shri. D.V. Negi, the Principal Chief Conservator of Wildlife, supported this initiative and provided some examples of collaborations between departments and some heartening advice on promoting marine conservation activities in the Andaman and Nicobar islands. An introduction to the workshop followed soon after, provided by Dr. Naveen Namboothri of Dakshin Foundation and Mr. Umeed Mistry from Lacadives.

The workshop was divided into two sessions. Each session consisted of a series of presentations from certain participants followed by a group discussion and a wrap up session. The presentations were meant to provide an overview of activities specific to marine conservation and/or resource management conducted by each participant's organization. Participants were encouraged to include any circumstances where a lack of interaction with another department led to success/problems in achieving their goal and situations where work has been replicated as a result of inadequate information sharing. Suggestions to promote better collaborations with other departments and organizations were also welcome. The facilitated group discussions were meant to promote a beneficial exchange of ideas, with participants voicing

views and concerns that affected their actions towards marine conservation. Identifying different ways in which participants could interact and complement each other's work was another aim of the group discussion.

At the end of each group discussion, a wrap up session was held, where notable points that were discussed were highlighted and summaries about certain topics were delivered. At the end of the day closing remarks drew attention to the day's activities, the outcomes of the workshop, and to discuss the plan of action to ensure that the outcomes of the workshop could be sustained for a longer duration. The detailed schedule of events, which includes the names of presenters and their departments, along with the topic of each session are provided as Annexure 2.

Session 1

The Research, Monitoring, Management, and Enforcement scenario in the Andaman and Nicobar islands

Chair: **Mr. Ajai Saxena**, Secretary Tribal Welfare and Industries and Additional PCCF, Department of Environment and Forests
Co-Chair: **Dr. Naveen Namboothri**, Founding Trustee of Dakshin Foundation

Dr. Senthil Kumar, DCF (Wildlife) from the Department of Environment and Forests, was the first presenter. Dr. Kumar has a significant role to play in the management of the Mahatma Gandhi Marine National Park and Loha Barrack Crocodile Sanctuary among numerous other responsibilities. He began by providing an overview of conservation initiatives in the Andaman and Nicobar Islands, and made a note of the large coral diversity of these islands. He stated that there exists a well-established Protected Area Network, made possible through a consolidated zoning concept. There also exists a Coastal Security Scheme which has a budget of 62 crores and the establishment of a Forest and Wildlife Crime Bureau has been proposed along with this.

Currently there is real time intelligence sharing and coordination of wildlife related offences between the DoEF, Police Marine Force, and the Andaman and Nicobar Command. Dr. Kumar also provided examples of instances where the Department has collaborated with or facilitated the research of other institutions. Some of the examples he mentioned are:

- Monitoring of post-tsunami coastal impacts, a project undertaken by SACON, with funding from the DoEF.
- Assisting the leatherback turtle monitoring camp on Little Andaman run by Centre for Ecological Studies, IISc.
- Collection of cores from uplifted coralline flats by the Centre for Earth Sciences, IISc.
- Studies of the seagrass ecosystem and dugong populations by researchers from NCF.
- With ZSI, the DoEF has recorded the current status of Trochus and Turbo shells, prepared a management plan for the Lohabarrack Crocodile Sanctuary, and established permanent coral reef monitoring plots.
- A collaboration with NIOT has resulted in the installation of coral reef data buoys and sharing of the data collected with CARI, ZSI, and the Department of Science and Technology.
- In consultation with MCBT, the DoEF has undertaken the capacity building of staff on crocodile management in captivity.

Dr. Kumar also mentioned the initiative for Sustaining Island Ecosystems under Climate Change Program. As part of this a mangrove restoration or engineering project has been proposed as coastal management strategy. Additionally, the installation of a system of coral data buoys and artificial reefs has also been suggested in order to document the impact of climate change on island ecosystems. To conclude, Dr. Kumar suggested that some of the future plans could deal with the clustering

of protected areas into a network for effective management. The formation of a Research Advisory Committee to facilitate research, the dissemination of research findings and compilation of publications through an ENVIS node were some of Dr. Kumar's other suggestions.

Commandant B.K. Singh, who is the Chief Operations Officer (EEZ) of the Indian Navy in the ANI was the next presenter. He described the unique nature of these islands in terms of their faunal wealth, tourism opportunities, and rich historical culture. The structure of the Andaman and Nicobar Command was explained along with details concerning the high volume of shipping traffic in these waters. He elaborated on the role of the ANC in maintaining territorial integrity, and protecting the economic resources of the EEZ like marine life, oil and natural gas, minerals, revenue from trade etc. The new exploration licencing policy blocks and the Command's role in marine pollution control were briefly mentioned. Comdt. Singh stated that some of the major challenges faced by ANC include cracking down on poaching, gun and drug smuggling, piracy, and illegal immigration. The Tat Suraksha exercise was also mentioned, where the Command interacts with police, civil security agencies, and local authorities to maintain coastal security under the motto of "United we respond". Interacting with the local populace especially fishermen to promote surveillance and coastal security is another measure taken by the ANC in their Jan Pehchaan operation. Comdt. Singh also mentioned that the Command plays other roles in ensuring the conservation of the island ecosystems through beach clean ups and tree planting campaigns.

Dr. N.V. Vinithkumar, Officer in Charge, of the Andaman and Nicobar Centre for Ocean Science and Technology (ANCOST) began his presentation by raising the technological requirements of the Andaman and Nicobar Islands. These include the generation of

energy through both conventional and non-conventional measures, water purification, food supply, marine engineering, and marine pollution control and management. In his opinion, ANCOST could provide technological solutions to most or all of these problems. Research programmes undertaken by ANCOST include marine microalgal biotechnology, development of potential drugs from sea, and Coastal Ocean Monitoring and Prediction System (COMAPS). ANCOST also carries out socially beneficial activities like the promotion of sea cage culture, installation of fish aggregating devices and artificial reefs, and providing training for NIOT developed technologies. This institution also maintains high frequency radar that acts as a tsunami early warning system. Dr. Vinithkumar also mentioned that ANCOST is developing a GIS database of the islands' bio-resources and maintains a coastal biodiversity database. It is also involved in the production of seeds for aquaculture systems, development of sea cage technology, promoting mud crab fattening systems in the islands, and conducting rapid environmental impact assessments. In his conclusion Dr. Vinithkumar also mentioned that the resources of ANCOST were available to other researchers.

Mr. G.V.A Prasad, is a Senior Scientific Assistant, at the Fisheries Survey of India (FSI), who have an active role in assessing fish stocks of these Andaman and Nicobar waters. Mr. Prasad spoke at length about the tuna fishery resource potential of the Andaman and Nicobar Islands being under-utilized and the need to support tuna fishery in the islands. Along with tuna, the major fish resources of these islands include mackerels, sardines, carangids, silver bellies, perches, anchovies, hilsa, mullets, elasmobranchs, seer fishes, shrimps, and crabs etc. These are caught using a variety of nets and hooks and are deployed from crafts that range from small dinghies to large mechanized long liners. The FSI adopts eco-friendly systems to capture fish for stock assessments. These include drift long lining

with light sticks for sword fish, deep long lining for big eye tuna, and bottom set long lining for perches. According to their estimates the Andaman and Nicobar EEZ has a fish resource potential of 1,48,000 tonnes. Out of 34 species recorded in FSI's tuna longlining surveys, 4 species of tuna, 5 species of billfish, and 17 species of pelagic sharks. Bottom set long lining surveys resulted in 47 species of perches and other reef fish being caught. These surveys also described productive fishing grounds in both Andaman and Nicobar waters. The results of such surveys can be used to inform fishers and management authorities about productive marine areas that are worth targeting and monitoring.

An impromptu, heartfelt, and informative talk was given by **Commandant Satwant Singh** of the Maritime Rescue Coordination Centre (MRCC), Andaman and Nicobar Command. He spoke at length about the Coast Guard's marine pollution control plan, specifically relating to oil spills. The Coast Guard is entrusted with the task of being the first responder to oil spills in the A&N waters. Given the large volume of shipping traffic, which includes large oil tankers, and the ongoing plan for offshore drilling, he mentioned that it was a cause for concern that in the event of a large oil spill the current infrastructure would not be adequately prepared for the environmental repercussions that would follow. This point prompted a discussion and several new questions from participants regarding ANC's existing knowledge base on wind patterns, current patterns, and data on vessels plying these waters. This highlighted the potential for an interaction between the ANC, Department of Fisheries, and the Department of Environment and Forests.

Mr. Arif Mustafa, Assistant Director, Department of Fisheries, Andaman and Nicobar islands, began his presentation by talking about the Department's primary activities which include the annual issuance of licences to fishers and fishing vessels,

creating infrastructure beneficial to fishers, offering economic incentives, and providing welfare activities. Mr. Mustafa talked briefly about the incentives and subsidies that fishers in the islands could avail of, before explaining that the fishery resources could be broadly divided into oceanic and coastal realms. He also mentioned that there is currently a vast difference between resource potential and the amount harvested, a difference of nearly 1,00,000 tonnes of unexploited fishery resources. The estimated value of fish and fish products exported from these islands is about 50 crores annually. However, the royalty received on these goods is only about 25 lakhs per year. Mr. Mustafa also shed light on the shark fishery where approximately 47 tonnes of shark liver oil, 588 tonnes of flesh, and 14 tonnes of fins were exported in 2011. However, there is still a considerable percentage of unreported landings of shark products on these islands. He also mentioned the emerging sport fishing sector in the Andamans, which currently has a fleet of 26 vessels. Additionally, the history of the fishery legislation of this region was stated along with descriptions of investigative studies that the Department of Fisheries has undertaken in the past. One of the more recent publications, in collaboration with researchers from CARI, concerned the fisheries of exportable perches from the western fishing zone of South Andaman. Mr. Mustafa warned that this fishery, if not regulated and monitored effectively, would cause certain fish species to be extirpated from these waters. The beneficial effects of and the locations of the 10 fish aggregating devices installed in these water was also touched upon. Mr. Mustafa concluded by stating that number of poachers in these waters was a cause for concern and that their apprehension should be made a top priority.

Mr. Tyagi, the Superintendent of Police, spoke on behalf of the Police Marine Force. He first highlighted the close proximity of these islands to Myanmar, Thailand, and Indonesia, compared to mainland India. The

A&N police is responsible for crime control and law and order maintenance as part of internal security. In terms of coastal security, securing the coastline and preventing foreign intrusion within 12 nautical miles of the coast are the two major tasks in their mandate. There are currently 21 out of 22 police stations that are declared as Coastal Security stations. The Indian Reserve Battalion (IRBn) assists the A&N police in maintaining internal and coastal security. According to Mr. Tyagi, some of the major challenges faced by the PMF in maintaining security are due to the islands topography and remote nature. In terms of topography, the vast coastline, dense forests, and large distances between habitations cause problems with well distributed surveillance. The rough seas, scattered islands that are only accessible by sea, and poor communication facilities in remote areas lead to issues with regular patrols. Additionally, intrusion by foreigners involved in encroachment, poaching, and smuggling activities is the major hurdle that the Force has to tackle. The detainment period for intruders has also been increased recently, from a year to 6 years with a fine of Rs 20,000. Mr Tyagi concluded by mentioning that the future plans for the PMF include the establishment of ten new Marine Operational Centres, distributed along the length of the islands, that will be the base for 10 large patrol vessels.

Ms. Aarthi Sridhar from Dakshin Foundation made a presentation on coastal regulations for the islands, comparing events and reforms for the islands with the developments on the mainland. She mentioned that the Island Protection Zone was issued on 25th January 2011. She outlined the various developments that led to the reform process making an important point that for the effective implementation of this legislation, the participation of the public was absolutely essential. Within the new IPZ Notification, she highlighted certain key concepts and their implications for the islands. Firstly, coastal stretches were redefined as the Island Coastal Regulation Zone (ICRZ) which

now stretches between 500 m above the high tide line at intertidal areas and 12 nautical miles out to sea. In creeks and backwaters it extends only 100 m from the high tide line. The remainder of the area is covered by the Integrated Islands Management Plan (IIMP), which needed to be produced by the A&N Administration on 6th January 2012. The notification mandates that assistance from research organisations be obtained for developing IIMPs which pertain to existing and proposed developments, conservation schemes, and local infrastructure like schools and hospitals. Ms. Sridhar also mentioned that the A&N Administration was meant to publicise the plan and accept suggestions from stakeholders within a 30 day period from the date of publication. The plans were meant to be published in at least 2 newspapers and on the Administration's website, with hard copies available at the offices of the Chairman and Member Secretary CZMA, District Collector, and Pollution Control Committee. She stated that this notification was the precursor to the old CRZ Notification 1991 which still has several pending cases of violations. She concluded stating that the integrity of coastal ecosystems and livelihoods depended on effective legal and governance frameworks and the participation of the public in these laws, as mandated, needs to be encouraged and facilitated.

Group Discussion1

After the presentations, a facilitated group discussion was held involving all the participants. Several topics were discussed pertaining to the need for collaborating and sharing information to benefit marine conservation efforts.

The discussion began with **Ms. Aarthi Sridhar** asking participants whether they could suggest potential areas for participants and their organisation to complement research, monitoring, or management activities of other

departments. **Mr. Paremal Bose**, ACF of the Coastal Zone Management Authority stated that according to the Integrated Coastal Zone Management Scheme of the World Bank, three Indian states are currently beneficiaries (Orissa, Gujarat, and West Bengal), and that the Union Territory of the Andaman and Nicobar Islands has prepared a concept note to apply for the same. A budget of 450 crores is granted to beneficiaries to manage oil pollution, marine life preservation, and other marine conservation activities, that come under coastal zone implementation. Mr. Bose added that according to the World Bank regulations, the funds would only be released to two or more involved organisations, and not one institution alone. In other words, if organisations concerned with marine conservation and coastal zone management were to collaborate, funding to implement conservation measures would be available.

Additionally, **Mr. Samit Sawhny**, Managing Director of the Barefoot Group, highlighted the untapped potential of dive operators contributing towards research, monitoring, and enforcement. He suggested that dive operators, if given a simple set of data requirements, could help regularly monitor reef health during their dives. Additionally, when out at sea, they could report any illegal activities to enforcement agencies and alert them to the presence of poachers or smugglers. **Dr. Senthil Kumar**, the DCF (Wildlife), complemented this by stating that the Daily Telegram newspaper regularly publishes toll free numbers for informing enforcement agencies.

Mr. Arif Mustafa, the Assistant Director of Fisheries, raised the important subject about the existence of several gaps in field research in the fisheries of the islands. According to Mr. Mustafa, there are several problems that need to be addressed with comprehensive research, such as determining sustainable quantities of harvested fish, the fishing grounds, and the benefits to the fishermen. With the booming

export of fish products, research of this nature is indispensable.

Participants were then asked if there were any concerns regarding availability of information and research findings in the ANI. **Mr. Dennis Giles**, Editor of the Andaman Chronicle, was quick to respond that results of research studies were not being made available to the common people. He asked if scientific information could be provided to the media in a simplified form for easier dissemination. Even basic replies to media questions would make the task of reporting scientific findings a lot easier, in his opinion. **Mr. Sajan Gopalan**, the Director of Doordarshan, said that the print media had a strong presence in the islands, but had limited circulation. He suggested that, in addition to the print media, existing systems like Doordarshan and All India Radio could be utilised and developed to promote better dissemination of marine conservation information. **Mr. Ajai Saxena** supported this suggestion by providing the example of the recent series of A&N specific conservation articles that were carried by The Hindu newspaper. He asked if such awareness initiatives could be undertaken by local media organisations. In order to carry this point further, **Ms. Aarthi Sridhar** posed the question of whether a system or mechanism could be developed to promote interactions between the media and research organisations for effective dissemination of information. **Mr. Zubair Ahmed**, Editor of The Light of Andamans, suggested that a newspaper for circulation in schools be created to promote environmental awareness among the islands' children. The content for this would however need to be simple and from a reputed source with prior experience in environmental education. **Mr. Sajan Gopalan** suggested the creation of a website with regular updates of research activities, while **Mr. Dennis Giles**, suggested press releases from each organisation on a regular basis. Adding to this, **Ms. Aarthi Sridhar** recommended the creation of a common database of media organisations,

where conservation information in the form of press release can be sent. She suggested that the Press Information Bureau, Information, Publicity, and Tourism Department (IPNT), or the Department of Environment and Forests could be used for such purposes.

Dr. Vinithkumar, the Officer in Charge of ANCOST, was of the opinion that regular scientific programs may be a worthwhile option, and suggested that a website could be created where scientific videos were shared. This website could also provide links to the websites of all the institutions in the A&N working towards marine conservation. **Mr. Dennis Giles** retorted to this by cautioning that the information on departmental websites may often be technical and that a simpler format of information is needed. **Mr. Giulio Di Anastasio**, the General Manager of the Barefoot Group, supported this statement by mentioning that in order for the message of marine conservation to reach the general public, the topics need to be few and simple. He gave the example of his organisation, Barefoot that executes small scale programs with the locals of Havelock using simple conservation messages. **Ms. Aarthi Sridhar** summarized these points by stating that researchers need to simplify their mode of communicating research findings in order to achieve conservation goals.

Faculty from JNRM, **Mr. Abdul Salaam** and **Dr. Christopher Roy** drew attention to the possibilities of involving the college in marine conservation. If trained adequately, students from the college could volunteer and add value to scientific projects. Additionally, JNRM could publish conservation magazines and manage their distribution in the islands.

When the issue for a common platform for information sharing was raised, **Mr. Bhupinder Singh Bhalla**, the Secretary of Education, stated that there was a need for a new portal or platform. This portal would need to be managed by one agency such as the

Department of Environment and Forests. Such a portal, dealing only with marine conservation issues, could also be part of a larger portal that may already be in existence. The portal would allow for the open access of information with due credit given to the supplying organisation. **Mr. Umeed Mistry** of Lacadives supported this statement, by reaffirming that copyright and ownership of intellectual property was a necessary concern, but added that such a concern should not limit the exchange of information, if every party gives credit where it's due. **Dr. Naveen Namboothri**, from Dakshin Foundation, added to this by stating that currently there is no baseline information available from each department, nor is there a platform for information sharing. In the A&N islands, information sharing and networking between the various departments are both important to achieve conservation goals. **Dr. Vinithkumar**, brought to attention some of the information databases that ANCOST manages or is a part of. The BioGIS is an open domain for information on biological distribution in these islands. The Indian National Centre for Ocean Information Services or INCOIS, is another database that provides information on oceanic parameters of Indian waters, but requires registration to acquire access. Information from databuoys installed in the Marine National Parks and in other areas is also available through ANCOST. The exchange of information is two ways, but needs validation of data, cautioned Dr. Vinithkumar. **Ms. Aarthi Sridhar**, summarized by stating that by creating a collaborative platform of people from various institutions, members of such a platform would be able to post needs, questions, and share information. Departments could also advertise funding requirements or opportunities. Individuals from different institutions would be made aware of these opportunities and could apply on this common platform.

Session 2

The role of private entrepreneurs and non-profit groups in marine conservation and an appraisal of conservation education and outreach

Chair: **Mr. Bhupinder Singh Bhalla**, Commissioner cum Secretary, Department of Education

Co-Chair: **Ms. Sunita Rao**, Member of Kalpavriksh and Adjunct Fellow at ATREE.

The first presenter for Session 2 was **Mr. Vikas Nairi**, a Dive Instructor at Dive India. He emphasized that dive operators, through their regular interaction with coral reefs are an excellent resource to be utilised by management and enforcement agencies as well as research and monitoring institutions. The staff at Dive India witnessed the 2010 mass coral bleaching and subsequent degradation of the reef first-hand. They helped alert the global scientific community about this event by collaborating with researchers from local research institutions. Mr. Nairi also provided the example of how unchecked tourism development led to the degradation of a commonly dived site at Havelock. Sea moths, a charismatic family of fish, were once plentiful at a dive site close to the Havelock jetty. With the advent of faster boats entering the area, the increased wave action degraded the sandy slope and this in turn has resulted in very few sea moths being observed at the site nowadays. He concluded by observing that divers have an active role to play in marine conservation and can aid in the release of marine animals entangled in nets, remove garbage from reefs, etc.

Dr. Bhatt, the D.O. Science from the Department of Education, spoke at length about the department's new plans to implement environment education in local schools. Environmental education has been integral part of the curriculum since 2005. The current environmental curriculum has been developed

by the NCERT and involves environmental awareness building for younger students, with a shift to environmental projects for students in higher classes. In order for the implementation of environmental awareness in the islands to be more meaningful, a core committee has been created under the direction of Mr. Bhalla. This committee includes members from the Department of Environment and Forests, CARI, and NGOs like Charkha, ANET, and CPREEC, along with some staff from the Department of Education. Dr. Bhatt informed everyone about the first step of the committee which is to select teachers that are sensitive to environmental issues and will promote environmental awareness among their students and the local community. Havelock and Neil Island have been selected as the initial sites to put this plan into action due to their susceptible environment.

The last presentation of the day was from **Ms. Sunita Rao**, a member of Kalpavriksh and an Adjunct Fellow at ATREE. The presentation was titled “An amphibious approach to education” indicating the need for a localised and island-specific environmental education approach. Ms. Rao stated the several challenges facing educators in the islands which included accounting for the multiple cultural identities stretched across 9 education zones and the lack of island-derived education material, among others. She also pointed out flaws in the mainstream approach to education, involving mechanical transmission of information, the lack of local context, and the loss of creativity through distinct success and failure markers. Such an approach alienates children from their cultural and ancestral roots, traditional sources of livelihood are shed in a poor light, and local sensitivity to the environment gets diluted. Ms. Rao, instead advocated an integrated alternative learning approach, with an emphasis on place based learning. This would foster a better understanding of the local culture and region, lead to social and transformational learning, and develop practical and intellectual skills. Promotion of local education and conservation would result from a synergistic approach to information

sharing among different departments. Including traditional resources and resource persons as well as investing in social networks of people and alliances were some of Ms. Rao’s suggestions to adopt an amphibious approach to conservation education in the A&N islands.

Group Discussion 2

This discussion examined the role of private entrepreneurs in marine conservation, and highlighted plans and efforts to promote environmental education in the Andaman and Nicobar Islands.

Participants were asked to reveal ways in which their organisations contribute to conservation and environmental education in the ANI. **Mr. Giulio Di Anastasio**, of the Barefoot Group mentioned that promoting awareness about conservation activities can be a simple task that needs to be carried out daily and consistently in order for marked results. Saving waters, reusing plastic bottles are simple and sustainable actions that go a long way in conserving island ecosystems. Mr. Di Anastasio also invited participants to visit the Barefoot property and observe conservation activities in action. Adding to this, **Mr. Samit Sawhny** gave the example of Barefoot’s Seacology Centre on Havelock. While it is the place where Barefoot’s environmental education activities are held, it could also be used as a space for other NGO’s to conduct EE programs on Havelock. Mr. Sawhny also cautioned participants about the difficulty in hiring EE staff and sustaining interest in conservation among the staff in conservation programs.

Mr. Bhupinder Singh Bhalla, raised the important issue about integrating environmental education with the present education system. According to him, the current system is based on an individual’s initiative, when what is actually needed in a system approach. An approach suggested by him would involve regular field visits for all students to place them directly in contact with

nature, and an ANI specific environmental text book to be incorporated into the curriculum. The Department of Education is also willing to fund such activities and the Department of Environment and Forests currently sponsors Eco-clubs in schools with Rs 2000 per month. **Ms. Sunita Rao** observed that education and teacher training should extend beyond departments and facilities and should focus on identifying needs for expertise in imparting environmental education. She also mentioned that it was heartening that people in various departments in the ANI have offered to be part of the education initiatives. The Coastal Zone Management Authority, Department of Environment and Forests, and the Central Agricultural Research Institute are potentially important resources for the Department of Education. A focus on engaging frequently with teachers involved in environmental education was another important avenue to explore.

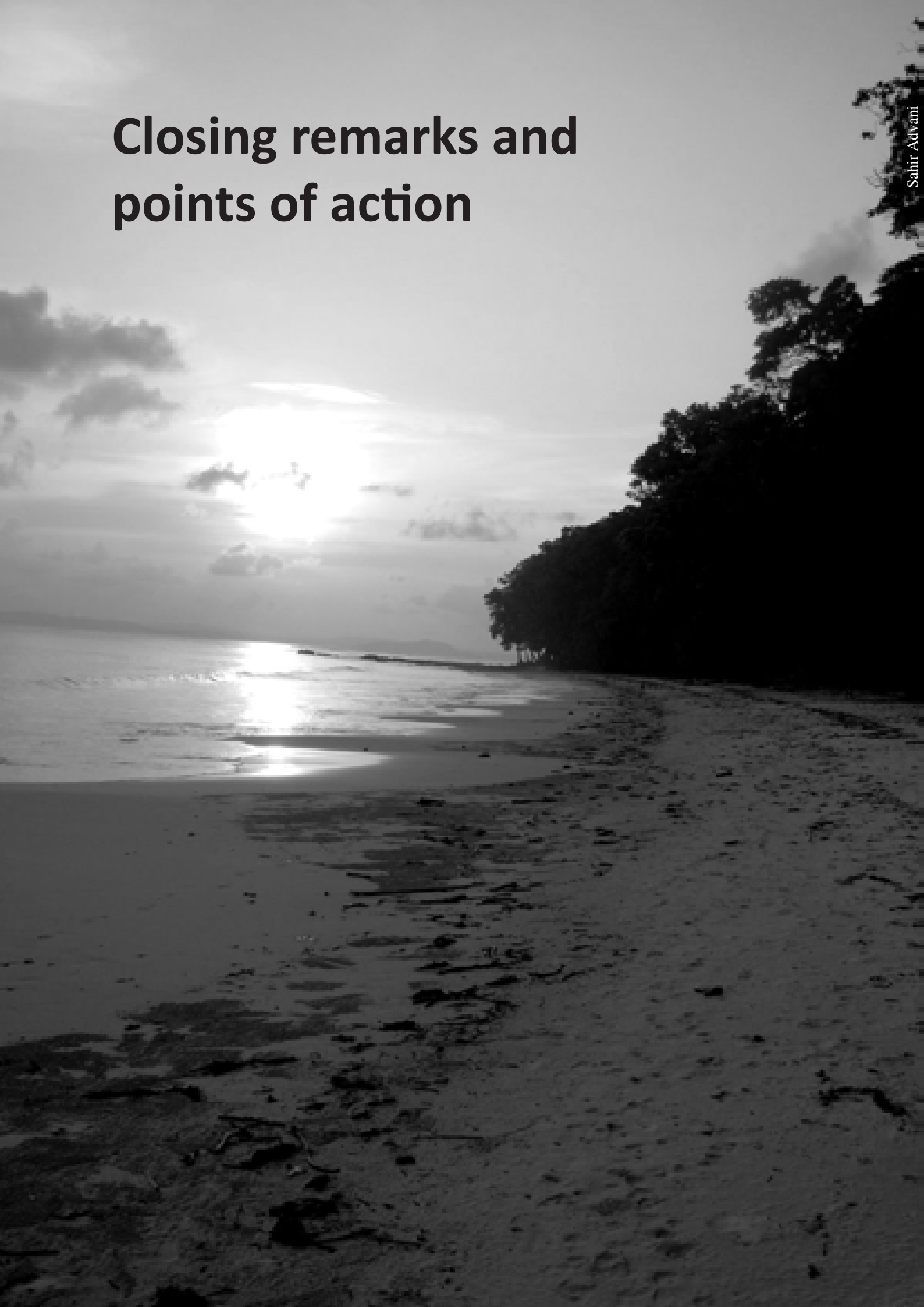
Ms. Sunita Rao also made the important comment that diving and exploring the marine life of the islands was often considered to be an elitist activity. She put forth the question asking whether allowing children to actively engage with the marine environment is practical and feasible. **Mr. Vikas Nairi**, responded to this by stating that swimming classes for children in shallow lagoons and snorkelling activities would be easy to implement for some dive operators like Dive India. He also suggested that swimming lessons be made mandatory for children in the islands. **Mr. Samit Sawhny** mentioned that Barefoot has worked with local students on several occasions for diving and snorkelling experience and even includes some terrestrial based activities. He stated that Barefoot was ready to work in collaboration with institutionalized environmental education programs. **Ms. Tasneem Khan**, the Assistant Director of ANET, made an important point concerning dive operators' relationship with marine conservation. She suggested that under the new rules for dive operator registration with the Information, Publicity, and Tourism Department (IPNT), dive operators diving within Marine National Parks should be

mandated to perform one beach clean-up activity every two months. She also suggested that in line with previous points raised, a system could also be set up where visiting divers could sponsor the training for one child. **Dr. Mohanraju** of Pondicherry University also made the suggestion that increased interaction with researchers and visiting scholars at ANET and other research organisation in the islands could also help foster conservation awareness among students in schools and colleges.

The all-important point about solid waste management was also raised during the discussion. The majority of solid waste including glass bottles and plastic is either collected in dumping yards or is burned in the ANI, a solution that is not ecologically sound. **Mr. Ajai Saxena** mentioned that the Administration currently offers the option of a 100% subsidy for the transport of plastic waste from the islands to the mainland. **Ms. Sunita Rao** also offered the suggestion for adopting technology to convert plastic waste into pellets to be utilised in road construction.

The topic of creating a common platform for information was broached once again during the summary of the second session. **Ms. Aarthi Sridhar** emphasized that a formal network or platform with people and departments collaborating together was a viable option that could lead to effective marine conservation actions. **Dr. Senthil Kumar** stressed on the need for an autonomous body or society to manage this platform or network. He gave the example of the Andaman Science Association that manages the Science Centre and suggested that such a platform could be structured along those lines or could be incorporated into the existing body. He also mentioned the system of a single window for submission of research proposal instituted by the Department of Science and Technology and suggested that the platform, once developed, could adopt this format. **Mr. Dennis Giles** stated that such a platform could be used to centralize information for dissemination to the public and the media.

Closing remarks and points of action



The aim of this workshop was to facilitate a dialogue among the various key government and non-government actors who have an interest in marine conservation in the Andaman and Nicobar Islands. This aim was achieved with remarkable success and several points of action were established and will be undertaken in the coming months.

The workshop also aimed at developing a platform for facilitating sharing of resources, capacities, and information between participants. As a result of the group discussions and closing remarks many of the participants acknowledged the need for such a platform and a few nominated themselves for the core committee that would oversee the activities of the platform. Ms. Tasneem Khan, Assistant Director, ANET, summarized the consensus that was reached where such a platform would undertake the following activities:

- a. Taking marine conservation science to the people of the Andaman and Nicobar islands – Facilitating the dissemination of conservation awareness through the media with contributions from institutions / organisations.
- b. Examining the contributions that private entrepreneurs could offer to enforcement agencies and education initiatives.
- c. Finding ways to enlist the support of the A&N Administration and government

research organisations in marine conservation, research and education initiatives.

- d. Creating a list of departments and the facilities and staff that they can offer as resource people towards conservation/ research/ education initiatives.
- e. Highlighting need based research and pointing out gaps for departments or individuals to fill.
- f. Investigating the possibility of using AN.net to nest a marine conservation portal.
- g. Sustaining a core committee to facilitate collaborative initiatives for marine conservation in the ANI.

To sustain this collaborative effort, an e-group has been created titled “Collaborating for Marine Conservation in ANI”. The link to this group is

www.groups.google.com/group/mar-consv-ani

This joint platform is still in the nascent stage. Given the support it has received from stakeholders, non-government organisations, and government institutions, we hope this will be the first step towards collaborating for marine conservation and resource management in the Andaman and Nicobar Islands. The list of core committee members is included with the participant list in Annexure 1.



Annexures

Annexure 1 - Contact Details of Invited Participants and list of Core-Committee Members

Organization/ Institution	Position	Name	Status	E-mail
Andaman Chronicle	Editor	Mr. Denis Giles	Y, CC	denisgiles@yahoo.com denis_giles@rediffmail.com
ANET	Assistant Director	Ms. Tasneem Khan	Y, CC	tasneem@anetindia.org
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Dakshin Foundation	Research Associate	Mr. Sahir Advani	Y, CC	advani.sahir@gmail.com
Dakshin Foundation	Trustee	Dr. N. Namboothri	Y, CC	naveen.namboos@gmail.com
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Dive India	Dive Instructor	Mr. Vikas Nairi	Y, CC	vnairi@yahoo.com
Fisheries Dept.	Assistant Director	Dr. Arif Mustafa	Y, CC	
Forest Department	DCF (W1)	Dr. Senthil Kumar	Y, CC	senits@gmail.com
Forest Department	DFO	Mr. D.P. Yadav	Y, CC	
JNRM	Lecturer	Mr. P. Abdul Salam	Y, CC	abdulsalam.jnrm@gmail.com
JNRM	Guest Lecturer, Zoology	Dr. Christopher Roy	Y, CC	dr.tcroy@gmail.com
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MCBT	Assistant Director	Dr. Gowri Mallapur	Y, CC	gowrimallapur@gmail.com gowri@ madrascrocodilebank.org

Kalpavriksh, ATREE	Member, Adjunct Fellow	Ms. Sunita Rao	Y, CC	sunitasirsi@gmail.com
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SACON	JRF	Ms. Akshaya Mane	Y, CC	akshayamane@gmail.com
The Barefoot Group	General Manager	Mr. Giulio Di Anastasio	Y, CC	giulioenrica@gmail.com
The Light of Andamans	Reporter	Mr. Zubair Ahmed	Y, CC	zubairpbl@gmail.com
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ANI Admin	Chief Secretary	Shri Shakti Sinha	Y	
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Fisheries Federation		Mr. Shabuddin	Y	
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FSI	Senior Scientific Assistant	Mr. G.V.A. Prasad	Y	

Indian Navy	SSO (CS), HQ ANC	Assistant Comdt. K. Kumar	Y	
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Chamber of Commerce	General Secretary	Mr. Mehrzad		
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Fisheries Dept.	Director	Dr. Krishnamurthy		
Forest Corporation	Managing Director	Mr. Tarun Coomar		
Forest Department	Range Officer MGNP	Mr. Ali Akbar		
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Indian Navy	COO Maritime Ops, HQ ANC	Capt. Rajiv Ashok		
Indian Navy	CCSO, HQ ANC	Cdr Himadri Sarkar		
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NCF	Research Scholar	Ms. Elrika D'Souza		elrikad@gmail.com
NCF	Scientist	Dr. Rohan Arthur		rohan@ncf-india.org
NCF	Research Scholar	Mr. Vardhan Patankar		vardhanpatankar@gmail.com vardhan@ncf-india.org
Pondicherry University	Professor	Dr. Ramanujam		
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SANE	Founder	Mr. Samir Acharya		
Sea Fishing India	Director	Mr. Darren Davis		seafishingindia@gmail.com
Sea Fishing India	Manager	Mr. Shambu Adhikari		
The Echo of India	Editor	Mr. O.N. Jaiswal		onjaiswal1@gmail.com
ZSI	Officer in Charge	Dr. C. Raghunathan		raghuksc@rediffmail.com
ZSI	Scientist	Dr. P.T. Rajan		rajanptandaman@rediffmail.com

Y = Attended; CC = Member of Core Committee

Annexure 2 - Schedule of Events

08:00 –	Opening Session	
09:00	<i>Address by Special Invitees</i>	
	Chief Secretary ANI	Shri. Shakti Sinha
	Director General of Police	Shri. Shamsher Deol
	PCCF ANI	Shri. D.V. Negi
	Introduction to the workshop	Dr. Namboothri & Mr. Mistry
09:00 –	Presentations highlighting the Research,	
11:00	Monitoring, Management, and Enforcement	
	scenario in the Andaman and Nicobar	
	islands	
	<i>Introduction of Session Chair Person, Mr. Ajai</i>	
	<i>Saxena and Co-Chair, Dr. Namboothri</i>	Dr. Senthil Kumar
	Department of Environment and Forests	Comdt. B.K. Singh
	ANC	Dr. N.V. Vinithkumar
	ANCOST (NIOT)	Mr G.V.A. Prasad
	Fisheries Survey of India	Comdt. Satwant Singh
	MRCC	Mr Arif Mustafa
	Department of Fisheries	Mr Tyagi
	Marine Police Force	Ms. Aarthi Sridhar
	Dakshin Foundation	
11:00 –	Discussions	
11:45	<i>Facilitated group discussions on developing</i>	
	<i>a coordinated approach towards research,</i>	
	<i>information sharing, conservation activities and</i>	
	<i>policy making for coastal and marine resources</i>	
	<i>of the Andaman and Nicobar islands</i>	
12:00 –	Wrap Up	
12:30	<i>Summary of points discussed during the group</i>	
	<i>discussion conducted by the Chair, Mr Ajai</i>	
	<i>Saxena</i>	
12:30 –	Lunch	
13:30		
13:30 –	Presentations on Education, Awareness	
14:30	& Outreach <i>highlighting the role of private</i>	
	<i>entrepreneurs and non-profit groups in marine</i>	
	<i>conservation and an appraisal of conservation</i>	
	<i>education and outreach in the ANI</i>	
	<i>Introduction of Session Chair Person, Mr</i>	
	<i>Bhupinder Singh Bhalla and Co-Chair, Ms.</i>	
	<i>Sunita Rao</i>	
	Dive India	Mr. Vikas Nairi
	Department of Education	Mr. Bhatt
	Kalpavriksh and ATREE	Ms. Sunita Rao

14:30 –	Tea and Discussions	
15:15	<i>Facilitated group discussions on identification of major gaps in education and awareness initiatives and developing a coordinated approach towards providing current and comprehensive information for both the media and outreach programmes.</i>	
15:30 –	Wrap up	
16:00	<i>Summary of points discussed during the group discussion on a joint platform provided by the Chair, Mr Bhupinder Singh Bhalla</i>	
16:00 –	Closing remarks	Ms. Tasneem Khan
16:25		
16:25 –	Vote of thanks	Mr. Colin Stevenson
16:30		

