

Newsletter

On Marine Environment Protection









From the Director General's Desk



The Indian Coast Guard (ICG) has always been a keen campaigner for environment friendly practices and assisted the oil industry, ports and other agencies in establishing contingency plans and adopting preventive actions and best practices. The ICG has also coordinated with various agencies for preventing operation of substandard ships, pollution prevention efforts for pollutants other than oil, and coastalcleanup measures. We have not only been working on national initiatives but also at the international level, such as facilitating the regional oil spill contingency plan under the auspices of the South Asia Cooperative Environment Programme of the United Nations and development of national plan for Maldives and Sri Lanka.

There has been no major oil pollution incident in Indian waters over the past one year, though a series of incidents of grounding and sinking are a cause of concern. These incidents have showcased the proactive response from all the stakeholders, more importantly, they have served to validate the relevant contingency plans.

Indian Coast Guard's recently launched website as part of 'Digital India Campaign' also enables a refreshed segment of marine environment wherein various features for the purpose of stakeholder's convenience have been added. In addition, an updated version of OOSA (Online Oil Spill Advisory) has also been hosted on the website alongwith a single revised common *pro forma* which can be utilized for rendering annual returns and reports on inspections.

As a result of our collaborated efforts towards progress on the national plan, INCOIS in its SMS service for the fishing community on Weather and advisories on Potential Fishing Zone has developed software for disseminating information. Fishing Avoidance Zone in the event of an oil spill, which like the OOSA will prove to be of immense utility.

I am confident that all of us responsible towards keeping our waters clean, would continue to work in random so as to ensure marine environment security.

I wish all the readers and stakeholders a 'Happy Reading'

Vayam Rakshamah. Jai Hind

(Rajendra Singh) Director General Indian Coast Guard

02 Sep 16 New Delhi

Editorial

The publication of the Blue Waters is a continuing effort on part of the Indian Coast Guard to keep our community apprised of developments in the field of Marine environment protection on the national and international arena. It also serves to inform the stakeholders of our collective efforts to strengthen the Capacity and Capability for marine oil spill response in the Maritime Zones of India.

The highlights for this issue are few coherent write-up on initiatives towards marine environment protection, plastic pollution, negative impact of trawling and Ocean Information system. Other articles emphasize the legislative framework for shipping in Marine Pollution and efforts being made for safeguarding of the Olive Ridley turtles during the Operations Olivia 2015-16.

The grounding incident of the passenger ship MV Qing with 350 tons of fuel and the response put in by various agencies in stabilizing the vessel and sealing the leakages from hull, at Mormugao Port, which could have been a massive pollution disaster has been considered for the India Watch. It is my profound duty to appeal to all stake holders and the readers for contributing their best for the **"Swachh Sagar Abhiyan"** as part of **"Swachh Bharat Abhiyan"** by ensuring **clean seas** in their area of operation, so as to prevent marine litter reaching our coast.

Thanks to all authors who have contributed to this edition of "Blue Waters" and solicit their kind cooperation in future too by providing articles and materials for enhancing commitment of the newsletter to marine environment protection.



(Bhim Singh Kothari) Commandant Director (FE)

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Website : www.indiancoastguard.gov.in

ARTICLES

Initiatives for Marine Environmental Protection

Cdr Sandeep Kumar *

Maharashtra has a 720 km coastline spread over six coastal districts. As per the survey conducted by Institute of Ocean Management (Anna University), Chennai in the year 2010, around 234.05 km of the state's coastline is prone to erosion. Man made changes made for development, due to the large population residing in coastal districts leading to excessive exploitation of coastal resources for socio-economic reasons; high tides in monsoon and storms, and rise in temperature due to global warming, resulting in rise of sea water level, are the major contributing factors towards coastal erosion. It has been established without an iota of doubt, that beaches are the best natural defense against coastal erosion as it causes dissipation of energy without eroding the coast.

Considering the alarming situation, the state of Maharashtra embarked upon an ambitious multi tranche project entitled "Sustainable Coastal Protection and Management Investment Program" (SCPMIP) with loan assistance from Asian Development Bank (ADB) towards improving management of coastal ecosystems and reduce loss of coastal property in the state. This project under the aegis of ADB has been presently implemented for the three coastal states of Maharashtra, Karnataka and Goa. The immediate purpose of the project is to design innovative interventions of sustainable coastal protection and improve shoreline management planning in the above three coastal states. In the state of Maharashtra, the project implementing authority is Maharashtra Maritime Board (MMB). In this context a project steering committee has also been formed under the guidance of Hon'ble Chief Secretary, Govt. of Maharashtra with 11 secretaries of Govt. of Maharashtra as members for implementation, monitoring and maintenance of the project.



Fig 1. Snapshot showing the location of the artificial reef on the bathymetric chart

The project is strategically aimed for immediate targeting and implementation of a shoreline protection and management of subprojects that has an area which comprises of sea coast and a significant number of estuaries along the coast of Maharashtra. The Coastal Protection and Management Project is designed to address the immediate coastal protection needs, through the implementation of economically viable protection works, using environmentally and socially appropriate solutions. The project, also addresses the causes and potential causes of coastal erosion and coastal instability. Investments in this part will be directed mainly at other coastal infrastructure that is presently causing, or potentially cause damage to the natural coastal processes. In addition the project will support investments for natural protection measures such as the development and planting of dunes, planting of mangrove or other trees for protection and shelter.

The project also supports investments in the wider area of coastal management including water quality,

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navigational entrances, dredging, and training of river and drain mouths. Some financial support and investment will also be provided to increase the economic value or amenity value of the coast and shoreline.

In parallel to the investment program, the project will develop the institutional capacities to meet the long term needs of sustainable coastal protection and management. Initiatives under this theme include, the development of the capacities at central, state and district level in shoreline planning, detailed planning, modeling, and design; and coordination and management of coastal infrastructure. The project will also support initiatives to increase the participation of the private sector and communities in the planning, design, financing, implementation and maintenance of coastal protection and management projects.

In accordance with the above ADB guidelines, MMB has initiated the following Coastal community development initiative.

"COASTAL COMMUNITY DEVELOPMENT"

Maharashtra Maritime Board has embarked on a unique project, which will involve participation of stake holders at Village, District & State level, through the community initiatives listed below. These are, on line with earlier Multilateral Funded projects in India in different sectors such as 'Total Sanitation Program', 'Jal Swaraj', 'Vyasan Mukti', Joint Forest Management etc.

The villages of all the coastal districts of the state of Maharashtra will be covered in the following schemes under the flagship umbrella of a Shoreline Management Plan, under which all the SMOs (Shoreline Management Organisation's) will be formed. Their **need**, **composition**, **responsibilities**, **scope of work** and **schemes** proposed to be implemented under the same are outlined as below.

(a) The need for the formation of SMO -

• SMO being a local community based organisation, stakeholders and beneficiaries will help support the co-ordination and monitoring of the shoreline / projects during the implementation phase of the project and will play a crucial role in the management and maintenance of the Shoreline / Beaches.

• Being a local body SMOs would not only create awareness for the protection of Seashore, beaches, but also encourage tourism, preservation of eco-system, prevent land degradation. It would also further reduce the local resistance which is being experienced regularly for the SCPMIP or other projects.

These SMOs would not only reduce resistance to change, but through implementation of the envisaged schemes below, also help in training of the Youth of the Coastal Villages by imparting skills relevant to their needs like conducting water sports, imparting etiquette training and soft skills with language skills for making their shores / beaches more tourist friendly. Basic knowledge of wave moment and sand / beach patterns could also be imparted to the community to enhance their understanding of their surroundings.

Schemes manifesting improvement in -

- ✓ Water sports
- ✓ Cleanliness & Waste Management
- ✓ Maintenance
- Alternative energy sources
- ✓ Security preparedness
- ✓ Tourism & facilities for Tourist
- ✓ Skill Development & Enhancement
- Dissemination of prompt safety based SOS regarding Weather & Tidal information

✓ Coral & Mangroves development and sustainability

- All these schemes would be implemented more smoothly with SMOs being in place.

Formation of SMO: Its Structure and **Functions**

At the village level it will be named as "Sagar tat Vyavasthapan Samithi" comprising of 15 - 21 members out of which 30% shall be women. These members would be residents of the villages adjoining the beaches and apart from the following, village level workers would be members of this Committee:-

- Gramsevak Member secretary
- Talathi
- School Head Master .
- Agricultural Assistant

Representatives of following field shall be taken as invited members -

- \checkmark Co- operative credit society
- \checkmark Fishermen Co- operative society
- \checkmark Marine Tourism
- Water Transport etc. may be co-opted for guidance

At the District Level also "District Sagar tat Vyavasthapan Samithi" will be constituted. The District level Committee would encompass all the villages of that district and would work as an umbrella for achieving the long term objectives of that district and the Shoreline Management Plan of the state. The District level committee would prioritise the selection and implementation of the proposals received by it, from the village level committees and also encourage the villages to cooperate & participate in bigger external aided projects. The District level committee's would finally converge into the broader SMP of the State. Their members would be:

- CEO – Zilla Parishad – Vice Chairman
- Regional Port Officer Member Secretary
- District Forest Officer / Deputy Conservator of Forest/ Superintendent
- Agricultural Officer (SAO) •
- Executive Engineer Coastal PWD •
- Representative of Marine Police / Coast Guard
- **Concerned Tehsildars**
- **Concerned Block Development Officers**
- Representative of NGOs working in the field of Environment, Tourism and Water Transport
- Representative of Private Port Developers
- Social institution Officer of MMB. •

The SMOs would serve dual objectives in the Coastal Areas. First of all they would support in the developmental work planned by the state under the SMP for bigger and Multilateral Funded Projects like this one by early & active involvement in the life cycle of the project, through active participation, thereby minimising resistance. Secondly, they would suo motu suggest and bring up proposals for improvement of their beaches, tourism activities and propose such steps to minimise erosion. Basically they would (i) cooperate & participate in bigger civil works of the state and (ii) they would actively manage their shorelines / beaches by better waste disposal, sanitation and tourism activities etc.

The Responsibilities of the SMOs at the Village level would be to

- Protect, manage and sustain the seashore area of respective locality.
- Create awareness for protection of seashore. •
- Ensure cleanliness of the shoreline / beaches by efficient waste disposal systems.

District Collector - Chairman

- Manage water sport activities if any
- Encourage and promote coastal tourism.
- Promote environment friendly ideas such as Bio Gas, Solar lighting, Wind energy etc.
- Provide assistance for rescue, relief and prevention of drowning incidents by maintaining vigil and life guards.

The village level SMO will meet every month to review the progress and submit a report to the district level SMO's.

The **Responsibilities of the SMOs at the District level** i.e District Sagar tat Vyavasthapan Samithi would be to

- Identify funding sources, raise funds and manage funds for sustainable development and protection of beach.
- Create awareness for sustainable protection of sea shore.
- Planning of projects for promoting Water Transport, Tourism, and Water Sport etc.
- Promoting use of non-conventional energy sources.
- Identifying areas for PPP investments.

The District Level SMOs will meet every quarter to review the progress and discuss the activities proposed by the village SMOs and submit a report to MMB at the state level.

The above SMOs will be instrumental in the smooth execution of the following two flagship schemes proposed to be launched by MMB and which has been accorded approval by Govt of Maharashtra:-

(a) Nirmal Sagar tat Abhiyan.

This will be a long term mission to organise the shoreline and beaches of Maharashtra by way of better management in terms of waste disposal, water sports activities, tourist friendly measures, encouraging healthy competition between beaches for the upkeep and cleanliness of the same. Innovative novel environment friendly and green solution ideas, like Bio Gas, Solar, Wind energy etc. would be encouraged.

(b) Sagar tat Vyavasthapan Abhiyan.

This is a scheme for managing the activities of tourism, transportation and water sports, in an organised way on the beaches, for inclusive growth of the coastal economy.

These schemes would be funded by DPC / MMB / other government schemes available for the same. The fund would be disbursed to the respective Gram panchayats for execution and the SMOs will monitor the expenditure.

Entry Point Program

To kick start the above schemes an amount of **Rs. 10 – 20 lacs per village level SMOs** could be sanctioned by MMB. This will go a long way in capacity building of the villagers and to provide necessary infrastructure on the beaches for better management and hygiene. Imparting training in marine activities, port activities, soft skills for tourism purposes, communication skills, awareness of beach management and the environment etc. could be undertaken with these funds. The funding would be classified under three categories for Village level SMOs depending on their size, need & potential.

- (a) A+ category SMOs 20 lacs
- (b) A category SMOs 15 Lacs
- (c) B category SMOs 10 Lacs

Out of the above funding 25 % would be earmarked for training & skill development. The managements of such SMOs would be committed to train for social audits & environment hazards etc. Their responsibilities would be to prepare a plan for development of the

beaches. They will also be involved in decision making by MMB for different activities like;

- Beach Management
- Cargo Development
- Passenger transport
- Tourism activities

Whichever project comes to their area the committee will be responsible for monitoring the quality & progress of the project.

MMB also intends to encourage **healthy competition** between the various beaches for the above two schemes and would be offering the following awards annually in each of the above schemes:

- ₹ 25 lacs for the 1st prize
- ₹15 lacs for 2nd prize
- ₹ 10 lacs for 3rd prize
- Three consolation prizes of ₹ 1 lac each.

The total financial outlay for this proposal would be approx. ₹ 20 to 30 Crores for the entire coast of Maharashtra.



Fig 2. A google map showing the location of artificial reef created in Mirya bay for coastal protection

Mirya Bay Project

The SCPMIP total project cost is ₹ 827 crores. The project cost is being met by an ADB loan of ₹ 470 crores, the state's share is ₹ 265 crores and the private sector share is ₹ 89 crores. As part of **tranche I** of this ADB funded project, **offshore artificial geotextile reef construction** for shore construction followed by sub-project of **beach nourishment** in **Mirya bay** in Ratnagiri district is being implemented. The cost of the tranche I is ₹ 72 crores. The construction of the offshore Geo textile reef has been completed. The salient features of the project is enumerated below:-



Fig 3. Photograph showing the Geo textile reef

Project Name: Mirya Shoreline Protection & Management

Overall project description

Mirya Bay is located on the West Coast in Ratnagiri District, Maharashtra. The beach situated on the Northern part of the bay has been subjected to severe erosion and consequently accretion happened on the Southern part at Mirkarwada Bandar.

Project Objectives

Erosion Control of the beach was the main objective. In order to mitigate the problem of erosion, a

construction of a Multipurpose Submerged Geotextile Reef at the Northern Shoreline of Mirya Bay was proposed. Objectives included the construction of Multipurpose Submerged Geotextile Reef.(Constructing a small headland "Cup Reef" to trap sand at the northern end of the Bay).The total length of the proposed Reef was 255 m and was constructed by installing sand filled Geotextile containers on the sea bed under water. The subproject of tranche I namely the creation of artificial beach is under implementation.

The other important project details are as below:-

(a) Total number of Geotextile tubes - 67 Nos.

(b) Dimensions of the Geotextile tube (after filling)Length = 18m, Width = 3.8m, Height = 1.7m

(c) Total quantity of sand required for filling of Geotextile tube – 6633 cu meters

(d) Geomat for the footprint for Reef area – 5225 sqm

(e) Geomat Roll dimensions = 4.75 m x 100 m (each roll)

Marine Pollution – Legislative Framework for Shipping

Commandant Rajesh Mittal*

Although almost 90% of the cargo (by volume) is shipped world over by sea and this transportation contributes a meager 3% of the total pollution in the oceans; the maritime industry has been at the forefront to further reduce its carbon footprint. This has been possible by implementing a structured and effective legislative framework to regulate pollution caused by sea going vessels. An apt way of depicting the players of this legislative framework is shown in figure 4.

The Coastal State, Port State, and Flag State controls in addition to regional Memorandums of Understanding have enabled application of this framework to the players in a uniform way. However, there still remain opportune defaulters who would try to find a window of opportunity in this scheme of legislative framework to pollute and yet go scot free. The way forward by global community manifests in form of UNFCCC, the Kyoto Protocol and many other such initiatives. Maritime CO_2 emissions are projected to increase significantly in the coming decades (IMO, 2015) as established by both Top Down and Bottom Up methodologies applied. Most of the nations have ratified MARPOL 73/78 with exception to Annex-VI. Thus, pollution by gaseous substances would remain a challenge despite better technology being available to overcome GHG issues and global warming resulting in sea water rise.



Fig 4. Players of the legislative framework for shipping

The realm of marine pollution has produced most voluminous and comprehensive convention instruments. Yet, it is challenged with newer targets to be achieved in the evolving sea order of the world. Prof. PK Mukherjee arranges these relevant convention and treaty instruments in a lucid form.

Prof Yoshifumi Tanaka opines that:

"In principle, the law regulates marine pollution according to its sources, such as land-based pollution, vessel-source pollution, dumping, pollution from seabed activities under national jurisdiction, pollution from

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activities in the Area, and pollution through the atmosphere." (Tanaka, 2013).

In the Indian context, the National Oil Spill Disaster Contingency Plan 2015 lays down the scheme of methodology to combat such eventualities and reflects current international norms and best practices, key relevant national regulations as, India is a party to the United Nations Convention on the Law of the Sea (UNCLOS) and has an obligation to protect and preserve the marine environment. The Forty-second amendment to the Constitution of India obliges the State to endeavor to protect and improve the environment. It is for the Nations of the World to adduce the relevant national laws from its constitution and apply them in consonance with the existing world order to strengthen the legislative framework in order to abate marine pollution which requires a fine act of balancing, growth on one hand and development on the other to achieve sustainable growth.



Fig 5. Marine Pollution Spectrum

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Plastic Pollution: A Threat to Marine Ecosystem

Asst Comdt Shruti Giri *

Plastics have become an inescapable commodity in our day to day life. From car parts to toys, soft drink bottles to the refrigerators they are stored in, plastic containers to shopping bags, we have dragged ourselves into an era best termed as "The Plastic Age". A major threat attracting attention of marine biologists, researchers and oceanographers is that the dumping destination of this plastic is our oceans. Collection of manmade debris has more precisely been termed as Garbage Patches. It is the vast area of the sea where natural ocean gyres causes the garbage to collect.

A gyre in oceanographic term is any system of rotating ocean currents particularly those involved with large wind moments. Global wind patterns, effect of Earth's rotation and Earth's landmass holds the responsibility for gyre formations. Significance of movements of world's major ocean gyres is that, it drives the "Ocean Conveyor Belt" which circulates ocean water and regulates temperature, salinity and nutrient flow, around the world. Wind induces drag on the ocean surface, causing water to move in the direction of the wind. The Earth's rotation deflects these wind-driven currents, akin to the Coriolis Effect. Below the surface currents of the gyre, the Coriolis Effect results in what is called an Ekman spiral. Each deeper layer in the water column is deflected slightly less than the surface current. This results in a spiral pattern descending to about 100 meters or more. Ocean gyres based on their location have been classified as subpolar, tropical and subtropical gyres. Sub-polar gyres sit below an area of low atmospheric pressure due which the wind drives the currents away from the coastal area. Tropical gyres are formed near the Equator. Here since Coriolis Effect is not present winds are the primary

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creators of currents. Sub tropical gyres form between the polar and equatorial regions of Earth. They circle areas in the regions of high atmospheric pressure. These are placid ocean areas thousands of kilometres in diameter. Unlike coastal zones, these central regions are relatively stable.

Major oceanic gyres are the Indian Ocean Gyre, North Atlantic Gyre, South Atlantic Gyre, South Pacific Gyre and the North Pacific Gyre. The north pacific gyre has now become a site for unusually intense collection of manmade debris in our ocean, known as the Great Pacific Garbage Patch. The Indian Ocean Gyre is a complex system of many currents from east coast of Africa to the west coast of Australia. Normally moving in counter clockwise direction, in winters it reverses direction due to seasonal South Asian Monsoon winds.



Fig 6. Accessing Trash Ropes

Charles Moore, a Californian environmentalist discovered patches of plastic products bobbing by in North Pacific Ocean in 1997. Astonishing fact is that he discovered six times more plastic than zooplanktons (the dominant life form) during his second voyage after 2 years that sensitised the marine biologists to focus on the effects on marine ecosystem. Since then many expeditions have travelled through the Great Pacific Garbage Patch gathering data assessing the patch density, its composition, origin and most important the



Fig 7. Trash Collected By ICGS C-412

substantial physical Chemical, and biological variability on a nearly impossible to track the origin of variety of time scales on marine life. It is marine debris. The tiny plastic particles that make up most of the patches are also not that easy to go through and skim off. The estimated size of the patch is not known, however, as per scientific data it is estimated that the size ranges from three quarter of a million sq. km to more than 1.5 million sq. km. Also the seabed under these patches may also be an underwater trash heap as 70% of marine debris sinks to the bottom of the ocean. 2011 Japanese Tsunami that took almost 5 million tons of material along with it into the Pacific Ocean continues to leave its mark. Studying the movements of floating buoys deployed predicts this flotsam to end up circulating in the Great Pacific Garbage Patch. North Pacific Sub tropical Gyre is too large for scientists to trawl; further scientists have confirmed the existence of a second garbage patch in the North Atlantic gyre. Existence of a garbage patch in the Indian Ocean, the third major collection of plastic garbage is recently discovered in the world's oceans. A concern for India and Indian subcontinents. Years after the Tsunami of 2004 the natural material has decomposed and dispersed whereas the man made debris is still making its presence felt in the Andaman Sea daily growing with discarded polythene bags and bottles, the indestructible flotsam as described by John Grey a writer on environmental matters for "Phuket Gazette".



Fig 8. Ghost Fishing

Ocean gyres are created by slowly circling large area of stationary, calm water. Debris drift into this area and due to lack of moment can accumulate for years. The expression garbage patch might conjure up images of a floating landfill upon miles of plastic bottles bobbing about on water. But, in actual they are the areas with small bits of plastic described as micro plastic. These bits of plastic are suspended in water, similar to herb flecks floating within a bowl of soup, but they posses no less hazard than the plastic, they come from the garbage patch can be of different sizes and composition. Generally, it is the bigger plastic that breaks away into smaller pieces but, unlike wood or metal that disintegrate into organic substance, but plastic never really goes away. These particles collect on or near the surface of the ocean, thereby block sunlight from reaching planktons and algae below that forms the basis of entire ocean food chain. Due to effect of sunlight and other environmental factors, micro plastic becomes as small as these planktons. Species such as shrimps, birds and fish consume these micro plastic which often kill them.

If populations of those animals decrease, there will be less food for apex predators such as tuna, sharks, and whales. Eventually, food becomes less available and more expensive for humanity. These dangers are further compounded by the fact that plastics both leach out and absorb harmful pollutants like bisphenol A, Dichloro Diphenyl Trichloroethane (DDT) and Poly Chlorinated Biphenly's (PCBs). Other than danger to wildlife, these floating organic pollutants when ingested by humans can cause hormonal disorders and life threatening conditions. Marine debris can be very harmful to marine life in the gyre. For instance, loggerhead sea turtles often mistake plastic bags for jellies. Albatross mistake plastic resin pellets for fish eggs and feed them to chicks, and die of starvation or ruptured organs. Seals and other marine mammals get entangled in abandoned plastic fishing nets. They often drown in these forgotten nets-a phenomenon known as "Ghost Fishing".

A self volunteered effort was made to find any such garbage patch near the Andaman Group of Islands. To my surprise very small patches of broken plastic were witnessed on the way to Hut Bay and also patrolling nearby Port Blair. Further, C-412 during one of its regular patrolling collected a bunch of trash ropes some 05 nm North East of Ross Island. Recently, a turtle was saved off Barren Island by ICGS Aruna Asaf Ali that was found entangled in furious fishing nets dumped at sea. During ebbing lots of plastic debris has been found near tourist places like Chidiatapu, Carbyn's cove, Wandoor and Marina park in Port Blair.



Fig 9. Rescue by ICGS Aruna Asaf Ali

Boyan Slat, at the Delft University of Technology, is working to combine environmentalism, technology, and creative outlook to rid oceans of plastic debris. The Ocean Cleanup Project aims to utilise the oceans' natural gyres to collect plastic waste. Ocean Cleanup concept would use sea water processing stations, fixed to the seabed, to collect plastic waste as the oceans moved around it, due to the gyres. The stations would have large booms, rather than nets, that would be designed to allow sea life and other items with the proper densities to pass under, while the plastics would be captured. Success of this project will be a boon for the plastic already trapped in our oceans. Limiting or eliminating use of disposable plastics and increasing use of biodegradable resources will be the best way to halt the further emergence of the Garbage Patches. This can be achieved through changing individual's behaviour and habits, creating less waste, reusing, recycling, avoiding littering and beach cleanups on everyday basis. The situation is yet not hopeless and the marine debris is a solvable problem as it comes from humans and our everyday practices. Small steps on our part can contribute to a greater extent.

MARPOL Annex V regulates the disposal of plastics and garbage into the oceans from ships. The revised Annex V prohibits the discharge of all garbage into the sea, except related to food waste, cargo residues, cleaning agents and additives and animal carcass. Indian being a MARPOL compliant nation can make regulation and plans to create awareness, identify, determine its sources, assess, reduce, and prevent marine debris and its impacts on the marine environment.

The increased industrialization and use of plastic products which ultimately gets dumped into the oceans are not only a threat to the marine wildlife, but certainly disturbs the food web, and humanity would be the ultimate sufferers. The overall solution lies in creating awareness about abandoning the use of disposable and non biodegradable products and implementing more strict rules on garbage disposal into the oceans. Together we can, and together we should.

References

Official Website of National Oceanic & Atmospheric Administration (US Dept of Commerce) Official website of National Geographic

Research Paper of Boyan Slat of Delft University of Technology

Saving Olive Ridleys

Deputy Commandant Shanta Kumar*

It was around 1100 hrs on 01 Mar 16, when the ship was on deployment approx 90 nm off Kakinada, depth in the area was around 2800 meters. The officer of the watch noticed four turtles entangled in fishing net and being washed away with sea.



Fig 10. Olive Ridley turtle entangled with ropes and net

The ship immediately maneuvered and lowered the sea boat. The boarding team was tasked to untangle the fishing nets around the turtles, so as to rescue them and set them free. It was then ascertained that the operation was not feasible by sea boats, the ship's diving officer jumped into water and with the help of sharp knife was able to cut the tightly and heavily entangled fishing net around the turtles. Subsequently, all the turtles were set free. Photograph of the rescue event are depicted here.

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Fig 11. Turtle entangled in net being rescued by Coast Guard Divers

Negative Impacts of Trawling

Assistant Commandant Himanssu Panwal Kumar*

Introduction

When the weighted nets and trawl doors are dragged along the seafloor, everything in their path is disturbed or destroyed, including sea grasses, coral reefs or rock gardens, where fish hide from predators. Bottom trawling is one of the most destructive ways to catch fish, and is responsible for up to half of all discarded fish and marine life worldwide. Valuable fish, turtles, seabirds, marine mammals and other animals are all captured and discarded by bottom trawls, and many not survive. In a side-by-side comparison, bottom trawling for spot prawns threw away nine times as much catch as more selective fishing gear. In the Gulf of Mexico, scientists estimate that for every pound of shrimp caught, between four and ten pounds of marine resources are thrown away. Shrimp trawling in the Caribbean and Central America also has high discard rates, with shrimp trawls in Panama discarding more than 80% of their catch. Even small-scale fisheries catch high percentages of unwanted fish and marine resources when using bottom trawls, including Brazil as well as Trinidad and Tobago.

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In 2007, shrimp trawlers in Belize landed only 19 metric tons of shrimp (FAO) and likely discarded about 76 to 190 metric tons of other marine life. The fish thrown away by bottom trawlers in Belize are probably a third of total spiny lobster landings for the same year.



Fig 12. Demersal trawl

Trawl fishing has both direct and indirect impacts on the marine ecosystem as well as on biodiversity, as this method of fishing collects and kills huge amount of non target species and young ones of commercially valuable species, mechanically disturbs the sea bottom and injures a wide variety of marine benthic creatures. The indirect effects of fishing, though less obvious, are important in defining the structure of benthic communities. Benthic habitats not only provide shelter and refuge for juvenile fish, but the associated fauna provide food sources for a variety of important demersal fish species. Thus, frequent alterations in the benthic habitats would result in decline of marine fish landings.

Physical Impacts

Trawling is considered as the most important source of human-induced physical disturbance on the seafloor throughout the world. Reports on the physical impact of trawl fishing appear more frequently in recent research literature. Bottom-trawl nets can plow deep furrows in the seafloor, remove rock and coral, stir up

sediments that smother benthic organisms, and smooth out natural topography, thus resulting in the reduction of structural heterogeneity – an important factor contributing to the abundance of biodiversity at the sea bottom. The reduction in habitat heterogeneity is a major deterrent in the survival and recruitment of countless marine organisms, including many species that are commercially important. The impact of trawling on the seafloor, which depends upon the speed of towing, the size and weight of the net, type of seabed and strength of currents and tides, may remain as a transitory phenomenon in shallow waters affected by strong tides or persists for several years in deeper areas with lesser disturbance.



Fig 13. Untrawled Coral

Impacts on chemical cycles

Trawling activities may affect sediment community function, carbon mineralization and biogeochemical fluxes, because the physical effects of trawling are equivalent to those of an extreme bioturbator. The macro benthos of the sea bottom is important carbon consumers and their presence reduces the magnitude of available fluxes. Model studies showed that, in soft sediment systems, where the level of physical disturbance due to waves and tides is low, intensive trawling disturbance could cause large fluctuations in benthic chemical fluxes and storage. The dragging of trawl nets may decrease dissolved oxygen, which may be due to the mixing of reduced products such as methane and hydrogen sulphide or the resuspended bacteria attached to sediments exerting an increase in oxygen demand in the water column. Formation of sediment clouds in the sea bottom may affect natural balance between physico-chemical parameters in the ocean, further depleting the availability of oxygen. Trawling was also found to flush out nutrients and contaminants, and there are possibilities of rise in lethal gases such as ammonia, methane and hydrogen sulphide, affecting the life of organisms in water. Studies have shown that resuspended sediments during trawl fishing hinder the respiratory activity of filter feeders at the sea bottom and result in the resuspension of contaminants, thus enhancing benthic as well as pelagic nutrient flux. Studies in the Gulf of Maine recorded that changes in nutrient supply at the sea bottom may have impacts throughout the ecosystem due to nutrient imbalance, affecting phytoplankton growth.

Impacts on biodiversity

The seawater-benthic habitat interface is similar to any ecotone in the terrestrial realm. The mechanical penetration of the sea bed by the ground rope and tickler chains of the trawl net upsets the delicate physical and chemical properties of the habitat, leading to direct mortality of the benthic fauna. Several organisms that occur in the path of the net are killed as a result of direct contact with the gear and exposure to predators. The impacts are more severe with beam trawl because of its deeper penetration; Even the low impact of trawling may significantly affect sensitive infaunal and epifaunal species inhabiting the upper zones of the sea bed. Organisms inhabiting the soft sediments, particularly the biogenic structure-forming creatures creating mounds, tubes and burrows, develop much of their habitat's structure and play a critical role in many population, community and ecosystem processes; the

decline and/or elimination of these species and the disturbance to their habitats may affect both structural and functional biodiversity. Intensive trawling has been recorded to decrease the density and abundance of sea grasses, polychaetes, molluscs and echinoderms. Depletion of polychaete fauna due to trawl fishing was observed in Kerala coast, India. Excessive trawling has also resulted in decline in the proportion of larger size groups of commercial species of shrimps in the Indian coast. The trawl net, being an efficient, but unselective fishing gear with a small cod end mesh size, captures numerous small-sized species as well as juveniles of larger species, compared to any other fishing gear. The increase in prawn landings in Kakinanda, Andhra Pradesh, during 1970s had been due to the gradual reduction in cod end mesh size of trawl nets; this ultimately results in the reduction of average size of the prawns. The quantity and quality of juveniles and sub adults in the by-catch depends upon the type of trawl net used. In the South Indian states, an annual average of 6200 tonnes of juveniles/young fishes was recorded to be landed by trawl nets. The annual economic loss generated due to catching of juvenile fishes by a single trawler in Kerala coast was estimated at 28.3 lakhs. The discarding and wastage of huge amounts of juveniles is ultimately a loss to the fishery of the state. Further, intensive trawling during the breeding season



Fig 14. Trawled Coral

of fish and shellfish may affect total marine fish landings. In tropical waters, trawl nets can catch over 400 species in their nets.

Impact on Tourism

Ocean-based tourism involving snorkeling, diving, and sport fishing is one of Belize's most important economic activities, and is directly threatened by discards of the marine wildlife people most want to see. Bottom trawling not only affects valuable fish species, but also threatens sea turtles, sharks and rays, sea grasses and coral reefs. Corals, sea grasses and other seafloor habitats are especially vulnerable to disturbance by bottom trawling, and can be extremely slow to recover. Bottom trawling flattens any upright structure on the seafloor destroying coral reefs and other places where juvenile fish hide.

A fishy issue: Is By Catch Raising a Stink?

Ketki Jog and Mihir Sule*

In the October of 2011, we were in Dandi, a small fishing village in the city of Malvan on the southern coast of Maharashtra, collecting data for a study on fisheries. Having integrated with the local community for the past two months, we were invited for the local pooja and prasad lunch on Padamgad, a temple on a small islet. We scurried across the pristine sand, the waves lapping at our feet, racing the tide as it closed our path; the mighty Sindhudurg fort looming on our horizon. On our way we encountered a few fishermen hurrying in the opposite direction. On enquiring, we were told that a 'Behra' had been landed ashore and they were going to see this giant! So, at the cost of facing God's wrath, we delayed his appointment to go see the catch. We hastened our pace, our curiosity escalating, "What is this 'Behra'- is it a whale?"

^{*} Member of "The Konkan Cetacean Research Team", Gol-GEF-UNDP sanctioned

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Fig 15. Whale Shark Rhincodon typus

As the spindle shaped body came into sight, we were surprised to find an erect tail, a white-speckled, grey body and the characteristic wide mouth. It was a Whale Shark (Rhincodon typus), about 4 meters long, just landed ashore by a gill-netter. The shark was just barely alive, gasping for water that had ceased flowing through its gills, thrashing its tail in a feeble attempt to move. We witnessed this behemoth being hacked alive and loaded into a truck in minutes, before the authorities could catch wind. It was a first sighting of this amazing fish for us, but the circumstances of it brought tears to our eyes. We enquired what they would do with it; did this species have a market in India, or was it exported to South-East Asia, where it fetches top dollar as Tofu-Shark. We were shocked to know that this female, probably a juvenile, had been sold to make fertilizer for a meager Rs. 2500/-.

This is not a one-off incident. During the last few years, working along the Konkan coast, we witnessed many species dying in the nets in staggering numbers, only to be discarded on shore. We came across cases of entanglement in nets that had killed dolphins, porpoises, turtles and whale sharks. We also encountered two cases of Saw-Toothed Sharks (*Pristis microdon*); one of the most endangered and elusive shark species in Indian waters; badly entangled in gillnets due to their peculiar toothy snouts. What is a cause for concern is that these are not even the targeted species.

The fact that we don't have population estimates for most of these species along our coasts makes it impossible to determine the toll it takes on them. With very low birth rates and years between birth and reproductive maturity, replacing dead individuals takes a very long time. Are we killing them beyond the limit of recovery? We might not know till it is too late! The by catch problem is not restricted to the large and enigmatic. In fact, the most numerous casualties are actually, the small fish and invertebrates.

The trawlers dredge the bottoms and strain the seas; scraping up anything larger than a centimeter. We have seen small fish, fish egg clumps, tiny crabs, corals, mantis shrimps, sea snakes, starfish, jelly fish, small mollusks etc being dredged up, only to be dumped back in the sea; the trauma of capture killing most of them. The scale of this slaughter is tremendous. To capture a few target species, these trawlers net capture everything in their path, often juveniles of target species. What they are doing is literally killing tomorrow's catch, their predators, prey and associate species: the entire ecosystem, all to get to those few marketable fish. As these marketable fish become unsustainably rare, they shift to newer target species, in different areas, at different depths. In the recent years, species like ribbonfish, Sardines and Squids, that had been 'thrashed' a decade ago, have become the 'target catch'. The scenario with gillnets is not very different. Old-time fishermen have told us how the net sizes have been reducing over the years to compensate for the ever-increasing demands and the declining supply of fish. That just means they have started targeting smaller and smaller fish every year. More often than not, this results in a greater proportion of smaller, low value catch, which often gets discarded.

We questioned a few fishermen to ask how they felt about this wanton waste. A large trawler owner admitted "I know I am destroying my future catch but I would grab all I could till there is fish in the sea. I have to; there are loans to pay and families to feed; do you guys have a better way?" We were stumped. A young twenty-something fisherman joked, "My kids would see Paplets (Pampus sp.) and Surmais (Scombreomorus sp.) only in photographs." An octogenarian veteran of the seas recounted tales of his youth, "We would catch Surmais as tall as you", he said pointing at a 1.6 meter Isha, one of our colleagues, "and now look at the fingerlings they bring back, a cat would not touch it in my day. With my own eyes I have seen three species of catfish vanish from these waters, the sharks also seem to have disappeared."



Fig 16. Whale shark sliced by fishermen

Most fishing gears are indiscriminate in catch. The fishing industry is inadvertently culling millions of individuals from thousands non-target species, worldwide, everyday. It's like trying to pluck tealeaves with a bulldozer! But, demand for seafood is very selective: depending on the species, size and season. Hence a large percentage of what is caught does not reach the market. What is sold for food today might be chickenfeed or fertiliser tomorrow, as the rates drop; the fate of millions of tons of food is determined by fickle market-trends. For every fish sold in the market as catch, hundreds are dumped overboard. We need the policy-makers and the consumers to realize that there is a problem; that the possibility of running out of fish from the 'boundless' ocean is now very real. We have never considered fish as wildlife; they have always been a resource, at our disposal.

The pressures we put on the marine ecosystem are tremendous and it starting to show, the experts estimate that we may run out of fish in the next 15 years, the fishermen think less. One fishing magnate casually said "This fishing business was over five years ago, now we are just running on fumes. I have made my dough. My kids are in a good school in Goa, I will make sure they do anything else but get into my business, and there is no future... my generation made sure of that." It chilled us to the bone. A large part of the world's population consumes fish as source of cheap protein; billions of people are dependent of fisheries directly or indirectly for their livelihoods. What would it lead to? Food crisis? Large-scale unemployment?

Having lived in the Malvan dandi (fishing village) for almost five years now, we have seen this struggle from the inside. We have seen fishermen buying fish at the market for the evening meal- their nets empty for the day; we have seen large boats left in their sheds, the golden goose of yesterday a white elephant today with the meager catch; we have seen tears in old wrinkled eyes, as they look at their sons and grandsons bring in the paltry catch and remember the days bygone. It got us thinking, are the marine flora and fauna the only things on the brink of extinction; I mean we see a whole community, a culture, and a way of life older than the Stone Age on the brink of extinction due to our inability to manage how we exploit our resources. If we cannot care for a fellow Homo sapiens are we going ever to slake our thirst for resources and stop our plunder to save any other species? A wise man once said, "Earth provides enough to satisfy every man's need, but not every man's greed."

EVENT

21st NOS-DCP and Preparedness Meeting – 05 Aug 16

The 21st National Oil Spill Disaster Contingency Plan (NOS-DCP) and Preparedness meeting was held on 05 Aug 16 at India International Centre, New Delhi.



Fig 17. Chairman NOS-DCP welcoming the delegates

Director General Rajendra Singh, PTM, TM, Director General Indian Coast Guard, chaired the meeting which witnessed an active participation from various government departments, ports and oil companies.



Fig 18. The Chairman reviewing NOS-DCP Proceedings

A total of 83 representatives from 47 organizations attended the meeting.





The Chairman in his inaugural address welcomed all the delegates attending the meeting and thereafter highlighted few notable incidents in recent times, viz. Grounding of Passenger Vessel MV Qing at Mormugao Port with 350 T of fuel onboard, Grounding of barges Sri Krishna 16, Jubilee 5 and Hansita V off Tuticorin, Veraval and Vizhinjam respectively.



Fig 20. Inaugural address by the Chairman

The Chairman also mentioned the capsizing of MV Coastal Pride and abandonment of MV Jindal Kamakshi both off Mumbai and appreciated the proactive response and the services provided by all the stakeholders during such incidents to validate the relevant contingency plans. The Chairman urged all the



Fig 21. The Chairman urging stakeholders to expedite preparation of Local Contingency Plan

Coastal States to pursue their crisis management plans for shoreline response in all earnest and requested all stakeholders to update their facility contingency plans and upload the same on the Indian Coast Guard website.

The inaugural address was followed by an overview of NOS-DCP activities since the last meeting held in



Fig 22. NOS-DCP overview by Director (FE)

April 2015 by Commandant Bhim Singh Kothari, Director (Env). The presentation highlighted the imperatives for preparedness of the online submission for Annual returns, reports on Joint Inspections and uploading of facility contingency plans with stakeholders login.

A presentation on OOSA software which has been indigenously developed by Indian National Centre for Ocean Information Services (INCOIS) in consultation with Indian Coast Guard was delivered by Dr. TM Balakrishnan Nair, Head-ISG & Scientist 'F' INCOIS.



Fig 23. Presentation by Dr. TM Balakrishnan Nair, Head-ISG & Scientist 'F' INCOIS

The software was thereafter launched during the meeting by the Chairman.



Fig 24. Launching of OOSA Software (Ver 3.0) by the Chairman

INCOIS I	Iome OSF Hom	e Service di	escription & user r	nanual	OilSpill Reporting Form	Contact Us Accou	nt -
	Welcome OOSA						
			SPILL INFORM	ATION (R	efer User Manual)		
	Point source-C	ontinuous P	oint source-instanta	ineous	Spill from drifting source	Spill along the Line	
	Region of Spill:	INDIAN OCEA	N (60E - 100E,00N - :	25 NJ	•		
	Spill Start Date:	08/04/2016 10:00	00 Spill End Date:	08/07/2	1016 05:00:00		
	Start Position:	84,1417	End Position:	17,854			
	Pollutants:	CONSERVATIVE	•				
	Quantity Release	nd: 500	Un	es: CUE	ICMETERS +		

Fig 25. Online Oil Spill Advisory (OOSA), Ver 3.0

An online demonstration of the software was also undertaken by the Dr. SJ Prasad, INCOIS to explain the feature of OOSA 3.0.



Fig 26. Presentation by Dr. SJ Prasad, INCOIS



Fig 27. Presentation by Dr. MT Babu, Principal Technical Officer, NIO

A presentation on "Need for Ocean Management and Cleaner Coast" was delivered by Dr. MT Babu, Principal Technical Officer from National Institute of Oceanography (NIO), Goa.





The other significant issues discussed and deliberated upon during the NOS-DCP meeting include Preparation of Local Contingency Plans, Surveillance systems by ports against illegal discharge, Tier-1 response time in offshore fields, Well capping device and Approval for application of oil spill dispersant; Online Submission of Contingency Plans, PR training, PR Awareness Programmes, Evolving effective coordination and Promulgation of detailed guidelines for PR equipment.



Fig 29. Discussion on Local Contingency Plan

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Fig 30. Discussion on Well Capping Devices

In his concluding address, the Chairman appreciated the sincere efforts made by various agencies to enhance their response preparedness and expressed his gratitude on the active participation by all agencies.



Fig 31. Concluding address by the Chairman

The Chairman was convinced with the discussions which undoubtedly ensued great promise for safe environment practices at ports, oil terminals and offshore installations.

The Chairman exhibited his confidence for gaining and enriching the experiences through such meetings, real-time joint exercises, training and continued interaction, to emerge better preparation to tackle critical



Fig. 32 The Chairman appreciated participants

issues. He also requested the members to take further necessary action on points deliberated during the meeting, in a timely manner.

The Chairman appealed to all the maritime stake holders to contribute their best towards "**Cleaner Seas**", **a way towards "Swachh Bharat Abhiyan**" by keeping the marine environment clean and litter-free.

<u>"Swachh Bharat Abhiyan"</u> "Cleaner Coast" a way towards "Swachh Bharat Abhiyan" Contribution from Maritime Stake Holders

Fig 33. The Chairman Emphasized on 'Swachh Bharat Abhiyan'

Towards the end, the Chairman reiterated that oil spills cannot be dealt with by any single agency. Involvement, synergy and cohesion between all the stakeholders are the need of the hour, to mitigate such contingencies through effective and collective response.

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BLUE WATERS

Operation Olivia 2015

The Coast Guard has been protecting and safeguarding the Olive Ridley, a species of endangered turtles, since 1997. The aim of 'Ops Olivia-15' is to protect and safeguard the endangered Olive Ridley Turtles in Gahirmatha Sanctuary and prohibited areas off Odisha coast under Ontario Ministry of Agriculture, Food and Rural Affairs (OMFRA). Enforcement of legislation and notifications promulgated by the State of Odisha with regard to use of TEDs by Trawlers while trawling/ fishing, prohibiting gill net laying on approaches as stipulated and curtailing poaching of Turtles, in and around nesting areas.



Fig 34. Rescuing Olive Ridley entangled with ropes

The 'Ops Olivia-15', was undertaken from 01 Nov 15 to 31 May 16. A state level meeting with NGOs and CBOs under the chairman-ship of Regional Chief Conservator of forests, Bhubaneswar was held on 09 Nov 15. A high power committee meeting was held on 12 Nov 15 under the Chairmanship of the Chief Secretary, Govt of Odisha with regard to safeguarding the Olive Ridley turtles.



Fig 35. After laying eggs

69 sea sorties and 43 Air sorties were undertaken by the Coast Guard Ships and Aircrafts respectively, clocking 250 days at sea and 93 hrs of flying. Mass nesting commenced from 03 Mar 16 onwards, and total 1,31,995 eggs were laid. During the operation, 215 dead turtles were sighted by the Coast Guard Ships and Aircrafts. The 'Ops Olivia-15' was terminated on 31 May 16. This time no trawlers have been found violating the regulations. Coast Guard has apprehended total 296 boats since commencement of the 'Ops Olivia' operations in 1997.



Fig 36. Laying eggs by Olive Ridley

NEWS

Marine Environment Protection Committee (MEPC), 69th Session, 18-22 Apr 16

The MEPC adopted amendments to MARPOL and the NO_x Technical Code 2008, with expected entry into force on 01 September 2017:

- Amendments to MARPOL Annex II, appendix I, related to the revised Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) hazard evaluation procedure;
- Amendments to MARPOL Annex IV relating to the dates for implementation of the discharge requirements for passenger ships while in a special area, i.e. not before 1 June 2019 for new passenger ships and not before 01 June 2021 for existing passenger ships;
- Amendments to MARPOL Annex VI regarding record requirements for operational compliance with NO_x Tier III emission control areas;
- Amendments to the NO_x Technical Code 2008 to facilitate the testing of gas-fuelled engines and dual fuel engines;

Energy efficiency of international shipping

The Energy-Efficiency Design Index (EEDI) for new ships and associated operational energy-efficiency measures for existing ships became mandatory in 2013, with the entry into force of relevant amendments to MARPOL Annex VI. The regulations require IMO to review the status of technological developments and, if proven necessary, amend the time periods and the EEDI reference line parameters for relevant ship types and reduction rates.

• Data received by the IMO Secretariat identifies that so far nearly 1,200 ships have been certified as complying with the new energy-efficiency design standards. • The MEPC considered an interim report of its correspondence group reviewing the status of technological developments relevant to implementing Phase 2 of the EEDI regulations. The Committee instructed the group to continue considering the status of technological developments for Ro-Ro cargo ships and Ro-Ro passenger ships and to make recommendations to MEPC 70 on whether the time periods, the EEDI reference line parameters for relevant ship types and the reduction rates (in regulation 21 of MRPOL Annex VI) should be retained or, if proven, recommend necessary, amendments.

Designation of Philippines Tubbataha Reefs as a Particularly Sensitive Sea Area

The MEPC approved, in principle, the designation of the marine area known as the Tubbataha Reefs Natural Park, located between the islands of the Philippines and North Borneo, as a Particularly Sensitive Sea Area (PSSA), in order to provide special protection from international shipping. This ecologically important sea area is already on the UNESCO World Heritage list.

The Philippines is expected to submit its proposal for an "Area to be Avoided" (ATBA) for all ships of



Fig 37. Philippines Tubbataha National Park

150 GT and above, in the proposed PSSA to the Sub-Committee on Navigation, Communications, Search and Rescue (NCSR), for adoption by the Maritime Safety Committee (MSC). The PSSA could then be formally designated by MEPC 71 in spring 2017.

Sub-Committee on Pollution Prevention and Response (PPR), 3rd Session, 15-19 Feb 16

Draft bunker delivery note amendments agreed to address fuel supplied to ships with scrubbers

Draft amendments to the MARPOL Annex VI bunker delivery note relating to the supply of marine fuel oil to ships which have fitted alternative mechanisms to address sulphur emissions requirements were agreed by the Sub-Committee on Pollution Prevention and Response (PPR), when it met for its 3rd session.

The draft amendments to appendix V of MARPOL Annex VI are intended to address situations where the fuel oil supplied does not meet low sulphur requirements, but has been supplied to a ship which is using "equivalent means" (for example, abatement technology such as scrubbers) to reduce the sulphur oxide emissions from the ship in order to comply with MARPOL requirements.

The draft amendments will be forwarded to the Marine Environment Protection Committee (MEPC 70) in October 2016 with a view to approval and subsequent adoption.

The Sub-Committee also agreed draft Guidelines for onboard sampling for the verification of the sulphur content of fuel oil used on board, for submission to MEPC 70, for consideration. The guidelines provide an agreed method for sampling to enable effective control and enforcement of liquid fuel oil, used onboard ships under the provisions of MARPOL Annex VI.

OSV Chemical Code further developed

The Sub-Committee continued its work on the draft Code for the Transport and Handling of Limited Amounts of Hazardous and Noxious Liquid Substances in Bulk in Offshore Support Vessels (OSV Chemical Code) and re-established the correspondence group to finalise the text for submission to PPR 4.

The aim is to develop a consistent regulatory framework for the transport and handling of limited amount of hazardous and noxious liquid substances in bulk on offshore support vessels with a single certification scheme, taking into account the complex and continued evolution of the offshore industry as well as the unique design features and service characteristics of these vessels.

International Maritime Prize

The International Maritime Prize is awarded annually by IMO, to the individual or organization judged to have made the most significant contribution to the work and objectives of the Organization. It consists of a sculpture in the form of a dolphin and also includes a financial



Fig 38. International Maritime Prize by IMO

award, upon submission of an academic paper written on a subject relevant to IMO.

The prestigious International Maritime Prize for 2015 is awarded to Dr. Frank Lawrence Wiswall Junior, former Chair of the IMO Legal Committee and Vice-President (Honoris Causa) Committee Maritime International (CMI), for his contribution to the work of IMO over many years in establishing uniformity of maritime law and developing a number of key international treaties and holding important roles at various international IMO legal and diplomatic conferences.

States urged to ratify compensation regime for Hazardous and Noxious cargoes

IMO, together with the International Oil Pollution Compensation Funds (IOPC Funds) and the International Tanker Owners Pollution Federation (ITOPF), is urging its Member States to ratify and implement the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious substances by Sea, 2010 (2010 HNS Convention).

Together with the IOPC Funds and ITOPF, IMO has produced a six-page brochure that explains to States the purpose and benefits of the HNS Convention and encourages IMO Member States to take the next steps to ratify or accede to the Convention.

The HNS Convention will provide a regime of liability and compensation for damage caused by HNS transported by sea. It recognizes that accidents can and do happen and ensures that those who have suffered damage caused by HNS have access to a comprehensive and international liability and compensation regime.

Entry into force requires accession by at least

12 States, meeting certain criteria in relation to tonnage and reporting annually the quantity of HNS received in a State.

World Maritime Day 2017



Fig 39. Connecting Ships, Ports and People

"Connecting Ships, Ports and People", as proposed by the IMO Secretary-General Kitack Lim, is selected for World Maritime Day theme 2017, which would provide an opportunity to work with developed and developing countries, shipping and public and private sector ports with a view to identifying and promoting best practices and building bridges between the many diverse actors involved in these areas.

Key objectives includes improving cooperation between ports and ships, and developing a closer partnership between the two sectors; raising global standards and setting norms for the safety, security and efficiency of ports, and for port and coastal State authorities; and standardizing port procedures through identifying and developing best practice guidance and to create conditions for increased employment, prosperity and stability ashore through promoting trade by sea; enhancing the port and maritime sector as wealth creators both on land and, through developing a sustainable blue economy, at sea.

Date	Meeting Title
05 Sep 16	CCC 3 - Sub-Committee on Carriage of Cargoes and Containers
15 Sep 16	LP-CG 9 - LP Compliance Group
19 Sep 16	LC 38 - Consultative Meeting of Contracting Parties (London Convention 1972) 11th Meeting of Contracting Parties (London Protocol 1996)
10 Oct 16	TC 66 - Technical Cooperation Committee
24 Oct 16	MEPC 70 - Marine Environment Protection Committee
21 Nov 16	MSC 97 - Maritime Safety Committee
05 Dec 16	C 117 - Council

New IMO Secretary General Mr. Kitack Lim

The IMO Assembly unanimously endorsed the appointment of Mr. Kitack Lim (Republic of Korea) as the Secretary-General of the IMO, with effect from 01 January 2016, for an initial term of four years.



Fig 40: New IMO Secretary General
IMO award for exceptional bravery at Sea

Captain Radhika Menon, Master of the MT Sampurna Swarajya, is to receive the 2016 International Maritime Organisation Award for Exceptional Bravery at Sea for her role in the dramatic rescue of seven fishermen from a sinking fishing boat in tumultuous seas in the Bay of Bengal in June 2015. Captain Menon will be the first woman captain of the Indian Merchant Navy to receive IMO award for Exceptional Bravery at Sea.



Fig 41: Captain Radhika Menon





Grounding of M.V. Qing



Fig 42. M.V. Qing listed 15-20 degree due to ingress of water

An Indian flagged 35,143 tons passenger ship M.V. Qing, was berthed at WISL Jetty, Mormugao Port. The 1982 built ship owned by M/s Sahara India Private Ltd and chartered by M/s Trinity Leisure Private Ltd was berthed, since 09 Jan 2014 for repairs.

ICGS Samarth while departing Goa harbour on 29 Jun 16, noticed M.V. Qing listing 15-20 degree to starboard, due to ingress of water, alongside berth.



Fig 43. M.V. Qing grounded and sitting on even keel alongside berth

Later, around 1400h, the vessel grounded and sat on even keel.

Preliminary investigations by Coast Guard District Headquarters no 11, Goa revealed presence of 350 tons (approx.) fuel onboard, which invoked for threat perception of oil spill. Deputy conservator, Mormugao Port was requested for issuance of notices to owners/ charterers and instituting preventive measures for any likely spillage of oil and early removal of fuel.



Fig 44. ICGS Samudra Prahari deploying boom for containment of oil patches

Indian Coast Guard Pollution Response Vessel ICGS Samudra Prahari was positioned at Mormugao port pm 30 Jun 16 for responding to oil spill, if any.

Marcantile Marine Department, Goa issued notice under section 356J of MS Act, 1958 to Master, Owner, Agent, Charterer, Managers and Operator of M.V. Qing and M/s WISL for necessary steps to prevent pollution. Some oil patches were reported, probably from washed out machinery bilges. ICGS Samudra Prahari deployed its boom for containment as an interim measure. ICG advised MPT to direct owner and charter to place boom around the vessel so as to contain oil leakage till arrival of the equipment hired by charterer of the vessel.

The vessel was out of class at the time of the incident. However, after negotiation between owners

and P&I Club, the P&I club agreed for the third party insurance cover, which included removal of oil and covering damages due to oil pollution, if any and appointed M/s. Resolve Salvage & Fire to stabilize the vessel and prevent any oil seepage from ship's hull. The condition of vessel is stable and no further oil spill from ship was observed.

Grounding of M.V. Hansita-V



Fig 45. M.V. Hansita-V grounded off Kollam beach

M.V. Hansita-V was anchored in position 08° 51.56 N 076° 35.70 E w.e.f May 2013. The vessel ran aground on 28 Jun 16, parallel to shore line near Kollam Beach off Kakka Thoppu approx 1.5 NM from Thangassery Harbour Mouth. The vessel was unmanned and there was nil fuel/oil held onboard.



Fig 46. Grounded Ship M.V. Hansita-V

WORLD WATCH

M.V. Modern Express



Fig 47. Listed M.V. Modern Express ingress water

A Panama-flagged 10,454 dwt car carrier Modern Express, owned by European Ro-Ro Lines, was on its way from Gabon, Africa to Le Havre, France carrying 3600 tons of timber and construction machinery when it started listing, about 148 miles off Cape Ortegal, Galicia, in the Bay of Biscay on 26 Jan 16. The crew raised an alarm after ship developed a list of about 40 degrees in inclement weather. All 22 crew members were evacuated by helicopters and subsequently flown to Corunna and Celeiro in Galicia. Spanish Search and Rescue Agency Salvamento Maritimo had confirmed that there was no casuality reported.

A Falcon 50 aircraft and an intervention, assistance and rescue tug Abeille Bourbon were initially deployed by France Maritime Authority to monitor the situation, however, it could not be feasible due to inclement weather. Later, SMIT Salvage, a Dutch maritime company, was hired by the vessel's owner to remove the vessel from shipping lane. The ship was carrying 300 tonnes of fuel onboard which was a matter of concern.



Fig 48. M.V. Modern Express being towed by Tug Centaurus

The salvage operation gears up amid efforts aimed at preventing the ship from grounding on France's coast. The Spanish tug Centaurus, hired by SMIT Salvage, started towing operation 46 km from the coast and finally the vessel was towed to the port of Bilbao instead of originally bound for the French port of Le Havre. All measures were taken well in time to prevent any eventuality.

M.V. TS Taipei

The 2006-built containership TS Taipei 20,615 dwt was grounded on a rocky shallow off Shimen, Taiwan on 10 Mar 16 on its way from Taiwan's Keelung to Taichung.

The vessel initially suffered damages in its aft part and sustained a major rupture in its hull. Later a massive oil spill occured from one of the fuel tank after its hull spilt in two parts due to inclement weather and rough seas. Taiwan's Environmental Protection Department (EPA) has confirmed that though some diesel from the vessel's fuel was pumped out, however, 242m³ of fuel, 37.5 m³ of lubricants and 35 m³ of waste water, as well as 614 containers still remained onboard TS Taipei.



Fig 49. Containership TS Taipei hull split into two parts after grounding

Due to inclement weather, the rescue vessels could not approach the containership, Taiwanese Coast Guard airlifted 21 crew members safely. Taiwan Coast Guard's helicopter while inspecting the oil spill with five crew onboard, lost its control and crashed. The pilot and a rescue team member were killed in the crash, while other crew members were brought to safety. The spill effecting about 2 km of Taiwanese coastline. EPA launched clean-up operations as the weather in the area calmed down. Coast Guard and other authorities continued monitoring the vessel, as it was at risk of capsizing.



Fig 50. Fuel being pumped out after by Taiwan's Environmental Protection Authority (EPA)

Soon after favorable weather, Salvage operations commenced. No report of marine speices effected due to the spill was reported.

Royal Dutch Shell Oil Spill

A medium sized oil spill took place, when an oil leakage was observed from an undersea pipeline system operated by the oil company Royal Dutch Shell, some 97 miles south of Port Fourchon off the Louisiana coast. An estimated 2,100 barrels (about 88,200 gallons) of oil was spilt into the Gulf of Mexico on 12 May 16.



Fig 51. One pelican affected in oil spill

Shell has immediately stopped its production once a Royal Dutch Shell helicopter observed the 2-mile-by-13-mile sheen on the surface of the water at the company's Glider Field which is a group of four subsea wells. Shell has isolated the leak and shut production at Glider Field. The company took all appropriate regulatory measures for securing the source of the discharge and mobilized response vessels, including aircraft.

Shell and United States Coast Guard launched a joint response to skim recoverable oil and confirm that there were no additional points of leakage. Their joint efforts have helped recover 2,012 barrels (about 84,000 gallons) of oily-water mixture. Shell has resumed its oil production after undertaking repairs of the Glider field and was cleared by U.S. Bureau of Safety and Environmental Enforcement (BSEE), the agency that regulates offshore drilling.



Fig 52. Royal Dutch Shell 88,200 gallons of oil spill

M.V. Istra Ace

Heavy fuel leakage was observed from 577-foot car carrier Istra Ace owned by the Japanese shipping company Mitsui O.S.K. Lines (MOL), in the Cerritos channel at Berth 198 at the Los Angeles Harbour on 17 Mar 16. The quantity of oil spill could not be assessed. The majority of the oil released has been reported as being contained on the pier, however, some of the oil water mixture entered the water. An initial investigation revealed faulty piping that may have allowed oil to leak from the starboard side of the ship.



Fig 53. 15,600 feet of boom have been deployed around the vessel

A Mexican-flagged tanker ship Tula got tangled in the oil spill and was prevented from leaving the terminal until it was properly decontaminated. Containment boom were deployed around the tanker ship to minimize the spread of oil. Oil spill response organizations including the National Response Corporation, Ocean Blue, and Patriot Environmental were rushed to the scene of incident and undertook clean-up operations under supervision of US Coast Guard using oil skimmers and absorbent pads. 15,600 feet of boom have been deployed around the vessel as well as at critical points in the channel to contain the oil within the affected area and preventing further contamination of the harbour. A total of 18 response vessels have been engaged in the incident. Members of the Coast Guard and California Fish and Wildlife were supervising all response efforts.

Oil Spill Dispersants Approved for Use in Indian Waters (Appendix S2.Rev.2 to NOS-DCP 2015)

SI.	Oil Spill Dispersant	Approval Holder	Contact Numbers	Authority
1.	Nova OSD Concentrate Type 2/ 3	Nova Chemicals Office No.6, 4 th Floor, Hatim Manzil (Old Sai Bhuvan) 141, Shamal Das Gandhi Marg	 ☎ +91 22 2203 7464/65 ➡ +91 22 2262 1969 ☑ solutions@nova 	NIO, Goa letter NIO/CON-03/2010 dated 07 Apr 2010
2.	Nova 4G OSD Concentrate Type 3/Type 2	Princess Street, Lohar Chawal Mumbai 400 002	chemicals.in	NIO, Goa letter NIO/ CON-04/2015 dated 13 Jul 2015
3.	Spilcare- ADT Type 2/ 3	Spilcare Environmental Technologies Pvt Ltd., 128/12, Emerald Apartments Anna Nagar West Extension Thirumangalam, Chennai 600 040	 ☎ +91 44 6566 1522 ➡ +91 44 2615 4972 ☑ sales@spilcare.com 	NIO, Goa letter NIO/ CON-02/2010 dated 10 Feb 2010
4.	FINASOL OSR 52 Concentrate Type 2/ 3	Total Oil India Pvt Ltd, 3 rd Floor, The Leela Galleria Andheri-Kurla Road Andheri(East), Mumbai 400 059	 ☎ +91 22 6723 2500 ➡ +91 22 6723 2600 ➡ MS-IN.totalindia@ total.com 	NIO, Goa letter NIO/ TSP-01/2014 dated 14 Feb 2014
5.	Slickgone NS Concentrate Type 2/ 3	Dasic International Ltd, Winchester Hill, RomseyHampshire, S051 7YD United Kingdom	 ☎ +44 1794 512419 용 +44 1794 522346 ☑ info@dasicinter.com 	NIO, Goa letter NIO/ TSP-02/2014 dated 03 Mar 2014
6.	Rochem Concentrate Type 2/ 3	Rochem India Pvt Ltd101, HDIL Tower Anant Kanekar MargBandra (East), Mumbai 400 051	 	NIO, Goa letter NIO/ TSP-05/2014 dated 27 Mar 2014
7.	Sunchem OSD Type II/ III	M/s Sunchem Industries 302, Katchhi Memon Bldg.272, Narshi Natha Street Masjid Bunder, Mumbai 400 009	 	NIO, Goa letterNIO/ TSP-02/2016 (TSP2994) dated 29 Jan 2016



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