

INTERNATIONAL COASTAL CLEANUP 2009 SPECIAL

# A day on the beach

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CIGARETTE butts, poly bags don't fall from sky, they fall from our hands. The elements that pollute our beaches are the things we use regularly. Each year, Ocean Conservancy -- in partnership with a network of volunteer organizations and individuals -- provides a compelling global snapshot of marine and inland waterway debris all over the world. In this year's Ocean Conservancy's 23rd annual International Coastal Cleanup, nearly 400,000 volunteers will participate in 104 countries and locations. Locally represented by Kewradong Bangladesh, this year's initiative in our country will include over 400 volunteers from prominent universities, colleges and different organizations from Dhaka,

Chittagong and Cox's Bazaar.

Kewradong Bangladesh is organizing this day long programme since 2006 in Bangladesh with the help of local schools, government officials, hotel owners, sponsors, alliances, supporters and many other bodies who helped this noble venture to mark it as a success. The famous rock band ARTCELL will take part in this initiative to motivate youth to be a part of this global drive. Concoit PR will be the PR partner for the whole event and AB Bank sponsoring the event.

The overall statistics of the pollution and its elements are devastating. In addition to providing the Marine Debris Index -- country-by-country data about the 6.8 million pounds of trash picked up -- this statistics reveal the sources of debris: from cigarette butts and fast-food wrappers to syringes and old fishing lines. It also identifies the

connection between the stress caused by marine debris and the ability of the ocean and its critical life support systems to adapt to the onset of global climate change.

Recommendations provide a roadmap for eliminating marine debris altogether by reducing it at the source, changing the behaviors that cause it, and supporting better policy. Humans have created the marine debris problem, and humans must take responsibility of it. The comprehensive body of data compiled during the cleanup in the course of its 23-year history continues to inform and inspire actions. Working together, citizens, environmentalists, our top corporations, and government leaders can take effective action to eliminate the scourge of trash in the ocean. The future of the planet and the well-being of present and future generations are counting on it.

Litter can travel to the ocean from many miles inland, blown on the wind or carried along by rivers and streams. We are all responsible, from beachgoers to oil-rig workers and fishermen, for cigarette butts, food wrappers, bottles, and bags in the water. Overflowing sewage systems and storm drains add to the burden by ferrying trash from rural roads and city streets to the sea. And, despite national and international regulations against dumping, some people on boats still drop trash directly into the ocean. In recent years, organic materials that were once the most prevalent component of marine debris have been supplanted by synthetics. Not only do items like packing

straps, tarps, nets, and containers last for years, but also they are often highly buoyant, traveling thousands of miles on ocean currents.

According to UNEP "Marine litter is one of the most pervasive and solvable pollution problems plaguing the world's ocean and waterways."

Of the 43 items tracked during the Cleanup, the top three items of trash found in 2008 were cigarette butts, plastic bags, and food wrappers/containers. All readily fall from human hands, and can be easily contained if people dispose them of carefully.

Marine debris kills. Every year, thousands of marine mammals, sea turtles, sea-

birds, and other animals are sickened, injured, or killed because of trash in the ocean. Animals choke or become poisoned when they eat trash, and drown when they become entangled in bags, ropes, and old fishing gear. The majority of entangled animals found during the Cleanup were bound up by old fishing line. The loss of wildlife affects not only the beauty and health of the planet, but also countless local economies based on the bounty of the sea.

Marine debris degrades ocean health and compromises its ability to adapt to climate change. Marine debris is yet another stress on an ocean already facing transformation due to global climate change in the guise of rising



sea levels, warming water, and changing ocean chemistry. As marine organisms and ecosystems struggle to adapt to climate change, we can improve their resilience and help to give them a fighting chance by eliminating the stresses caused by human impacts like trash in the ocean.

After gathering all of the data this is not hard to gain a more accurate originating source of all the trash polluting our ocean. These are very specific several sources which have been identified as how pollutant items enter the ocean and water bodies -- worldwide. According to the data, it's around 61% of total amount of collected debris are sourced by shoreline and recreational activities. In a country like us this indicator shows even higher like 64%.

Marine debris is a stress on an ocean already beleaguered by many other human-caused stresses including coastal development, pollution, overfishing, and now climate

change. As the engine that drives our planet's climate, the ocean is on the front lines of climate change. It absorbs half of the carbon dioxide (CO2) we pump into the sky from the burning of fossil fuels, respiratory systems of animals and most of the extra heat produced by the greenhouse effect. Indeed, the ocean is the unsung hero in this battle. But it's also one of the most vulnerable victims.

The first ever cleanup was held in 1986 at Texas, USA. From then on, thousands of people participate voluntarily in this initiative. This year, volunteers will gather around the Cox's Bazaar shores on August 14 to make people realize once again how important our beautiful beaches are to us. Maybe one day wouldn't really make a difference in the overall situation, but it may well be a start to revolutionize our overall approach.

The writer is Bangladesh Country Coordinator of International Coastal Cleanup.



Volunteers collecting marine debris on Cox's Bazar beach.



Rally of volunteers at Cox's Bazar.

## Marine litter

### Problems

- Marine Litter (ML) is found in all oceans and seas
- ML travels long distances from the sources of input it is a transboundary issue
- ML originates from many sources, both land-based and marine it is a multi-sectoral issue. It cannot be solved by addressing one sector only
- ML is closely linked to the wider problem of waste management, and cannot be resolved independently
- Quantities of ML that enter the oceans are growing every year
- ML is mostly composed of non-degradable or slowly degrading materials (mainly plastics), and its quantities in the oceans and on coasts are increasing
- ML affects almost all marine ecosystems and habitats
- ML causes serious economic, social, aesthetic and environmental damage
- The problem is compounded by lack of legal frameworks (global and national), weak compliance and enforcement measures, and lack of awareness
- Within the wider problem of ML is the specific issue of lost and abandoned fishing

gear

### UNEP's Global Initiative on Marine Litter

a. Building knowledge and understanding the ML problem: Twelve Regional Seas programmes developed well structured, regional initiatives that, amongst others, assessed the magnitude of the problem through collection and analysis of existing data and information, and published regional reports highlighting the status of ML, identifying priorities and strategies for response. The knowledge generated will be used to further develop global and regional activities and implement concrete actions in each of the 12 regions for improved management of ML.

Key results include:-

- Concrete and systematic regional strategies on the management of marine litter (e.g. the Mediterranean Action Plan on Marine Litter). The strategies have been adopted by the governing bodies of seven Regional Seas Conventions and Action Plans, and concrete actions are being developed.
- UNEP has prepared a comprehensive synthesis report

based on an analysis of the regional activities undertaken so far. The report is titled "Marine Litter: A Global Challenge".

b. Developing a common approach to monitoring ML: UNEP's efforts respond to the call by the UN General Assembly to address the lack of data and information on ML as an obstacle to a better

management. Together with UNESCO/IOC, UNEP has developed a new global, operational methodology for the scientific monitoring of ML. Guidelines for the use of the methodology are contained in the publication "UNEP/IOC Guidelines on Survey and Monitoring of Marine Litter". These guidelines will enormously contribute to a common approach in the survey and monitoring of ML, and to the development of science-based strategies and policies to abate marine litter worldwide.

c. Reducing ML through the use of economic instruments: UNEP has developed guidelines on the use of economic instruments in the management of ML. The guidelines

will provide decision makers with practical and operational options for the selection and implementation of economic/market-based instruments to address the problem of marine litter. It is expected that the "Guidelines on the Use of Market-based Instruments to Address the Problem of Marine Litter" will be utilized in the Regional Seas to enhance the management of ML.

### Benefits of resolving the problem

- Reducing damage to marine ecosystems and marine animals
- Reducing economic losses of various affected sectors (shipping, tourism, fisheries, coastal communities)
- Reducing social, cultural and aesthetic impacts of ML
- Improving livelihood and health of local coastal communities, especially in developing countries
- Contributing to finding more comprehensive solutions to waste management problems

### The issue

- Global concern has increased about the amount and impacts of man-made materials lost or discarded at

sea (marine litter).

- ML is a complex issue that spans geographic and political boundaries. It requires coordinated response by governments, industry and the public at large, with the assistance of the UN and other partners, to effectively address its sources, and reduce its social, economic and environmental impacts
- The global problem of ML was recognized by the UN General Assembly resolution on Oceans and the Law of the Sea which, "...notes the lack of information and data on marine debris and encourages relevant national and international organizations to undertake further studies on the extent and nature of the problem..."
- Moreover, another General Assembly resolution calls upon the FAO, IMO, and UNEP, in particular its Regional Seas Programme, to take action to address the issue of lost or abandoned fishing gear and related marine debris
- UNEP's Global Initiative on Marine Litter is a significant contribution to the scientific and substantive understanding of ML and subsequently to the management of a global problem with

devastating effects on ecosystems, economies and human well being

### Facing the challenge

- If not addressed urgently, impacts on ecosystems, marine life, social, cultural and economic resources may increase dramatically
- ML can be resolved only with multi-sectoral and multidisciplinary approaches focusing on waste management
- There is need to enhance the understanding by Governments and other actors on the use of economic/market-based instruments and incentives in the management of marine litter, especially in identified sectors such as the fishing, tourism and shipping industries
- There is a need to address the lack of knowledge on the extent of the problem of lost and abandoned fishing gear and its devastating effects on marine and coastal ecosystems
- Decision and policy makers' awareness of the scale and the trends of the problem is crucial in order to seek global, regional and national solutions for the ML problem

## Lifecycle model for marine litter

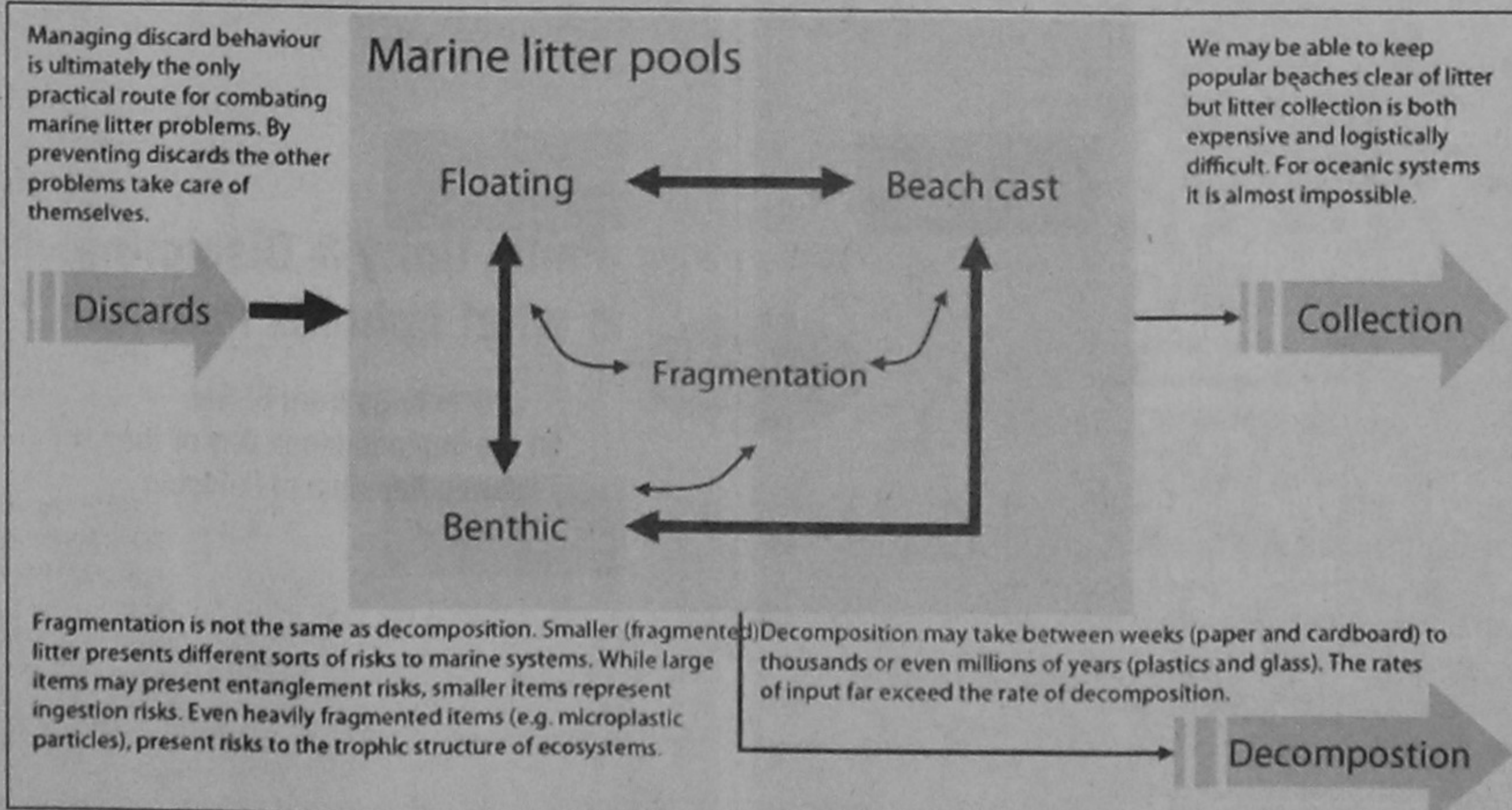
A key challenge in developing guidelines for the assessment of marine litter is to identify the major processes that control the entry and / or removal of litter from the oceans and also the transformations that occur during the lifecycle of any given litter item (e.g. when floating litter sinks to become benthic litter or is cast onto a beach to become beach cast litter). In developing any sampling strategy it is necessary to establish a model of the system being investigated which makes explicit the various assumptions about how the system works. Here following we provide a systems model that describes the dynamics of marine litter from source to sink. This model can be used to visualise the "lifecycle" of marine litter by tracking the various pathways that litter can take from the point of discard and through the system until it is eventually removed or decomposed. The model, represented schematically in Figure 1, provides a simplified view of the key parameters and processes that can be measured or

inferred from an appropriately configured marine litter sampling strategy. In summary, the model identifies a set of key state variables (rectangular boxes) that represent "pools" of material that are in dynamic flux within the system. These pools include Floating litter, Benthic litter and Beach cast litter. The size of the litter pools are defined in terms of quantities of material (e.g. tonnes of floating litter or the numbers of particular items) and thereby represent the sum total of material within the system under consideration. Dynamical processes (indicated in Figure 1 by arrows) illustrate the flux rates or movement of litter from one pool to another. These values are measured and reported as rate functions (e.g. tonnes of litter discarded per year or tonnes of litter being cast onto beaches per year). In general terms these flux rates can be measured either directly, by observation of amounts of material being transported, or indirectly through inferences based on changes in the amounts of litter in each pool over time.

The model can be used to illustrate some simple truths about the longer term options for the management of marine litter including:

1. For as long as the input processes (Discard) exceed the removal processes (Collection and Decomposition) the amount of litter will increase through time resulting in more litter in the oceans and on the beaches.
2. Given that decomposition is slow (particularly for some of the persistent and more toxic plastic forms of litter) then this will never be a solution to the marine litter problem. In some cases material engineering may provide alternative materials that decompose more rapidly; increased rates of decomposition would then result in a reduction in the size of the litter pool.
3. The key point of control in the system is through the management of discard behaviours. If we can reduce inputs we have some chance of managing the downstream environmental consequences. Improvements are needed in waste management and reception facilities

Figure 1. Schema representing the lifecycle of marine litter.



in ports and harbours, education of beach goers is essential to reduce domestic discards and improved management of rubbish dumps, particularly those in coastal catchments.

Management of marine litter can be informed by obtaining good quality data on the size of each of the pools and the rates of exchange between them. This allows us to articulate a set of useful objectives for any national or international programme of

marine litter surveys: i) To provide information about the sources of different types of litter, and ii) To quantify the amount of litter in different ocean systems.

To achieve these objectives, litter assessment guidelines must explicitly incorporate an awareness of the "lifecycle" of marine litter into the design, to support quantification of the key response variables and to allow an analysis of the efficacy of various management interventions.

In the absence of better management at source, the exponential growth of litter in the marine environment is certain to continue (Barnes 2002). The need to develop and evaluate alternative management strategies is therefore central if we aim to limit the amount of litter entering marine systems. In 1975, the annual influx rate of litter to the world's oceans was estimated at six million tonnes (National Academy of Sciences 1975); current rates are likely to be substantially greater. Given the prolonged timeframe for decomposition (UNEP 1990, The Ocean Conservancy 2006) and the very small amounts of litter actually removed through beach clearances (The Ocean Conservancy 2006), it can be argued that the volume of marine litter in the oceans will continue to increase exponentially over the coming decades.

Source: UNEP/IOC Guidelines on Survey and Monitoring of Marine Litter, Regional Seas Reports and Studies No. 186, IOC Technical Series No. 83 by Anthony Cheshire and Elik Adler.