PERSEUS

POLICY-ORIENTED MARINE ENVIRONMENTAL RESEARCH IN THE SOUTHERN EUROPEAN SEAS

Clean Seas Communication & Outreach Best Practice Guide

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EXECUTIVE SUMMARY / ABSTRACT

The main objective of the activities under Deliverable 9.8 is to "package" the insights/ findings of PERSEUS as well as other Best Practices used all over the world to raise public awareness and to promote GES in EU and Non-EU Countries.

The "Clean Seas Communication & Outreach Best Practice Guide" has been developed with a purpose to present best practises that creating public awareness and stakeholders' involvement on the need to change behaviours in order to contain human pressures on marine waters and support GES.

SCOPE

The Best Practice Guide was based on the Issue Paper, which was developed on the main human pressures impacting marine waters in each of the Mediterranean and Black Seas. Specifically the Issue Paper dealt with the specific behavioral changes that are required by which actors to ensure marine waters are within sustainable levels.

The Best Practice Guide is presenting the best of marine communication practices and how the public can be mobilized.

The Guide will be promoted through PERSEUS website and presents examples of outreach activities for use by key actors such as aquariums, marine centers, museum, municipalities, and educational marine centers located in the two regions which target awareness raising at the general public.

1. ABOUT THE GUIDE

1.1 In brief

The guide is made to help provide an overview of communication actions ultimately targing the general public and the change of their behavior, with a view to facilitating the achievement of GES.

This guide targets information on environmental issues where communication and awareness raising can help to improve general public behavior and reduce human pressures in the marine environment. The three topics considered are: tourism in coastal areas, marine litter and fisheries/aquaculture. In general, resulting messages highlight actions to be taken into account at different levels, including dedicated issues where changes in citizen's behavior could make a difference.

This issues paper is the basis for producing the 'Clean Seas' Communication & Outreach Best Practice Guide for public authorities in both EU and non-EU countries on the options for creating public awareness and promoting citizen involvement, contributing to sustainable marine environment management. The paper concludes on the three "issues" which have been identified as the main issues (problem areas) where engaging citizens' support can help produce positive impacts. Using the topics and key messages of this issues paper, WP9 will produce the 'Clean Seas' Communication & Outreach Best Practice Guide. The Guide will provide specific guidelines and campaign materials for undertaking communication and public awareness activities as part of public authorities' programme of measures to promote 'Good Environmental Status' in their countries and wider regions.

1.2 Who is this guide for?

Policy and decision-makers who will design the programme of measures for the MSFD or other marine policy frameworks. It is especially made for the Med & BS – as major summer tourism areas.

1.3 How can it help?

This guide is about practical ideas that can be implemented without significant resources – but with a high impact on the state of the environment of our seas.

To ensure achievement of Good Environmental Status in the South European Seas (SES), for both EU and non-EU countries it is necessary to undertake **"Communication, stakeholder involvement and raising public awareness"** as part of the measures to help promote best practices that will lead to changes in behaviors and ultimately, reduce human pressures on marine waters.

In this deliverable, the key areas where communication and information can make a difference are presented. The areas are the intersection of between where human pressures greatly affect marine waters and where the more informed citizens can make better choices to help alleviate these pressures. These three areas include:

1. Tourism in coastal areas
2. Marine litter
3. Fisheries

In the selection of these key areas, information from PERSEUS WP1 and WP2 deliverables has been taken into account regarding main existing environmental pressures in the SES regions. Each identified key area is explained in terms of the problem (or issue) and the key messages to be targeted via communication and awareness raising actions. Most of the issues included in this document are aimed at triggering changes in citizens' behavior. At the same time, in order to provide a better understanding of the problems in the selected areas, it is also necessary to include general important issues where policy makers can interact in order to raise awareness and lead to changes in environmental behavior at different stakeholder levels.

The end result of these actions will be to have better informed and more responsible citizens, who demonstrate improved behaviors that help reduce negative impacts on the marine waters.

2. COMMUNICATION & OUTREACH FOR THE TOURISM SECTOR IN COASTAL AREAS

2.1 Problems, solutions & the role of communication

Coastal tourism is a very important and rapidly growing sector that offers important social and economic benefits. However, due to the very fragile characteristics of the marine environment, tourism development in coastal areas can result in negative environmental impacts, both locally and to the coastal and marine ecosystems on which this industry depends. It is thus imperative that these impacts are managed so that the environmental integrity of marine ecosystems are maintained, to ensure that we do not 'kill the golden goose' which supports the tourism industry in the first place.

Some of the key environmental concerns with regard to tourism include: habitat degradation; environmental impacts of leisure activities (fishing, diving, boating); increase in waste generation and pollution (from both solid wastes/litter and wastewater); and over-exploitation of natural resources (including water, energy and seafood) -- all of which can severely impact ecosystem integrity and biodiversity.

Specific issues and messages to be targeted via communication and awareness raising actions include:

Problem: Habitat alteration and coastal degradation in ecological value areas due to siting of infrastructures and mass tourism concentration. Habitat degradation can cause the reduction or loss of sensitive coastal systems that offer key ecological services. For example, coastal dunes and wetlands both offer a buffer against high seas and storm surges, protecting natural habitats and man-made infrastructure further inland. If these habitats are degraded it can have dire consequences for the coastline, leading to expensive repairs and maintenance of infrastructure, which could have been avoided with careful planning.

Key Message: *Minimize habitat destruction in coastal areas.*

Proposed communication and awareness raising actions include:

Environmental Legislation - authorities need to put regulations in place to ensure that coastal development is conducted in a sustainable manner that takes the environment into consideration. Any coastal development project should have an environmental impact assessment conducted, together with input and guidance from environmental specialists

and/or NGOs that can offer recommendations that guide the tourism industry stakeholders towards sustainability.

Target Audience: Policy-makers, town planners, developers

Protect sensitive ecosystems, especially ecosystems that offer key services, such as dunes and wetlands. Development should be restricted on dune systems so that they can continue to provide a buffer against high seas and storm surge, especially considering anticipated climate change related sea level rise in future. Special walkways or boardwalks should be installed to provide beach access to prevent dunes and/or dune vegetation from being damaged by trampling. Signs should be erected on dunes to educate the public about the services they provide and to instruct them to keep off ecologically sensitive areas and use designated walkways to access the beach. More information on sand dunes can be found at the Marine Biodiversity and Ecosystem Functioning (MARBEF) website:

http://www.marbef.org/wiki/Sand_Dunes_in_Europe

Target Audience: town planners, developers, tourism stakeholders, beach users/tourists

Consumer Choices - Citizens can contribute in their own right by choosing holiday destinations and accommodation that adhere to sound environmental standards and practices, such as notable environmental conservation efforts and a commitment to sustainable tourism. Tourists can find information on eco-friendly tourism ventures at the following links:

- Ecolabel Index - http://www.ecolabelindex.com/ecolabels/?st=category,tourism)
- The EcoTrans Network (European Network for Sustainable Tourism Development) - http://www.ecotrans.org/visit/index.html

Target Audience: Citizens/Tourists

Problem: Leisure activities such as diving, boating and fishing can also cause negative impacts on ecosystems at local level, affecting living organisms and causing habitat destruction. Boating and diving can introduce underwater noise and cause physical damage to seabed ecosystems by the use of anchors in sensitive areas or inappropriate diving techniques. Fishing can also result in physical damage by breaking valuable seabed structures (e.g. corals) or capturing sensitive/endangered species, and discarded fishing gear can take its toll on underwater habitats and marine life, including coastal species such as seabirds. Boat collisions with surface swimming marine animals such as turtles and marine mammals can injure or kill.

Key Message: *Enjoy the marine and coastal environment responsibly and reduce environmental impacts of recreational activities.*

Proposed communication and awareness raising actions include:

It is possible for citizens to behave responsibly when practicing leisure or sport activities by not visiting protected areas, by not driving boats in an irresponsible manner that could result in collision with marine animals (e.g. turtles and cetaceans), and refraining from fishing for sensitive/endangered species. Regulations need to be put in place to encourage responsible leisure activities including: beach use; snorkeling and diving; boating and sailing; fishing; among others; and citizens/tourists should be adequately informed of these regulations

through signage at key fishing and boat launching/berthing areas; flyers/posters at sports/tackle/dive shops, sports gear/boat rental facilities, etc.

Certain leisure activities should be restricted in protected areas. This should be made known through adequate signage, educational materials and/or maps that provide a visual cue of what activities can be conducted where, and/or what species are sensitive/endangered and why they need to be protected. Exploitation of threatened species should be regulated with fishing restrictions (e.g. fishing bans, fishing licenses, and restricted fishing quotas).

Promote the use of biodegradable eco-friendly sunscreens. Sunscreens contain ingredients that are harmful to corals; encourage beach-goers and ocean users to use eco-friendly sunscreens such as Aethic Sôvee, which is specially formulated so that it does not harm coral. More information can be viewed at this link: http://ecologymatters.org/saving-coral-with-eco-compatible-sunscreen/

Target Audience: tourists, recreational users

Problem: Tourism involves energy and fresh water consumption which can lead to resource depletion. The increased population in coastal areas during tourism high season can lead to overexploitation of resources, causing bigger environmental issues such as freshwater scarcity for local communities throughout the rest of the year.

Key message: *The authorities' management plans and the tourism stakeholder's behavior have the capacity to provide services without depleting resources. At citizen level, environmentally-friendly habits can be promoted to reduce energy and water consumption (e.g. using public transport, switching off lights and devices when not used, choosing to shower rather than taking a bath, turning off the tap when brushing your teeth/shaving, etc.)*

Proposed communication and awareness raising actions include:

Tourism stakeholders (hotels, restaurants, recreational facilities, etc) should be encouraged to install water saving plumbing and appliances and energy-efficient lighting, appliances and devices. Water/electricity wastage can be reduced further by installing timing devices to control water flow in taps/showers and time switches to control lighting in key areas, including public places.

Tourists and locals alike should be encouraged to save water and energy through local media channels (radio, TV, Newspaper, Magazine campaigns), as well as billboards and signage. To help tourists conserve these resources, a list of water and energy saving tips should be provided in all hotel rooms (e.g. as a laminated poster on back of bathroom/bedroom doors or as part of an information/welcoming pack for all guests. Different energy and water saving tips can be consulted in the following links:

- http://www.sustainabletourism.net/carbon.html
- http://www.ecotourism.org/energy-saving-tips-travelers
- http://skal.org/a_english/sustainable101_tips.html

Target Audience: tourism stakeholders, tourists/citizens

Problem: An influx of tourists during peak season can put pressure on marine resources (seafood/fish supply) to meet an increased demand for specific seafood.

Key Message: *Create awareness about threatened species and encourage the utilization of alternative resouces that are more sustainable.*

Proposed communication and awareness raising actions include:

Promote sustainable fisheries practices and encourage sustainable aquaculture ventures to meet additional demand during peak tourism season.

Target Audience: Fishing Sector

Compile endangered species lists of threatened species and create awareness amongst tourism stakeholders (hotels, restaurants, seafood suppliers). Educate and create awareness amongst tourists and tourism stakeholders to choose meals wisely to ensure sustainably. Design laminated posters and/or placemats depicting the status of fish species commonly served in restaurants. Encourage tourism stakeholders, especially restaurants to display these prominently or use them as placemats on tables in their establishment so that diners can get visual cues to help them choose their meals responsibly.

Target Audience: tourists, tourism stakeholders

Problem: Tourism can also lead to a decrease in coastal water quality and biodiversity due to water pollution issues. The generation of high volumes of domestic wastewater ends up frequently with poorly treated or non-treated effluents reaching the rivers and coastal waters, causing problems such as eutrophication and unhealthy conditions for bathing waters due to possible presence of microbial pathogens. Nutrient loading due to runoff from agriculture and aquaculture, together with fertilizers used in agriculture and/or to maintain sports grounds and recreational facilities, such as golf courses, compounds the problem further. Besides the increased likelihood of pathogens, nutrient loading causes eutrophication of coastal waters which can lead to oxygen depletion and ultimately ocean dead zones, resulting in decreased biodiversity.

Key Messages: *Take steps to improve the quality of water entering the oceans from wastewater streams and stormwater runoff.*

Proposed communication and awareness raising actions include:

Authorities planning needs to ensure that wastewater treatment facilities and storm water collection systems are well designed to cope with high season loads in order to guarantee that pollution levels in effluents are within established safety limits. Tourism stakeholders need to behave accordingly, in line with regulations guaranteeing that wastewater receives appropriate treatment by connecting to sewer systems or by adequately treating their wastewater in their own facilities prior to discharging.

Target Audience: town planners, wastewater facilities, tourism stakeholders

Tourists should become informed about the water quality status of their holiday's destination through authorities' water monitoring programmes and eco label programs such as the 'Blue Flag' for beaches. Tourism stakeholders from destinations with good water quality can promote this via the internet (local websites and websites of programs such as those listed above), email campaigns to the travel industry (e.g. travel agents), etc.

Target Audience: tourists, travel agents, travel industry

Promote a 'Bin it and Bag it' (rather than flush it) campaign to encourage citizens and visitors to bag personal products such as Q-tips rather than flush these down the sewer, as they often pass through the system and end up littering the ocean floor and beaches.

Target Audience: citizens, tourists

Create awareness regarding issues related to nutrient loading - promote more sustainable practices in local agriculture and aquaculture industries, such as organic farming methods

and closed recirculated pond systems for local aquaculture ventures. Encourage local recreational facilities such as golf courses to reduce their use of fertilizers as this can fuel algal growth in freshwater and coastal systems leading to eutrophication, red tides and ocean dead zones in marine systems. Get the message across that poor water quality can ultimately affect tourism and thus be bad for their business as well.

Target Audience: agriculture, aquaculture, recreational facilities

Problem: Along with water pollution, the influx of tourists during peak season generates a huge amount of solid waste from domestic sources, which needs to be appropriately managed in order to minimize environmental impacts, such as marine litter.

Authorities, tourism stakeholders, citizens and tourists can all take action to reduce solid waste and litter, as explained in the Marine Litter section of this document.

Key Message: *Reduce the amount of solid waste generated and improve solid waste management.*

Proposed communication and awareness raising actions include:

Promote measures to Reduce, Reuse and Recycle solid waste so that less waste enters the waste stream in the first place. Encourage manufacturers, retailers and consumers to reduce packaging; encourage composting of organic waste, upcycling or recycling of products and materials.

Target Audience: authorities, tourism stakeholders, citizens and tourists

Negative impacts of tourism in coastal areas	**Solutions & Measures**	**Communication actions**
Strain on fresh water supply	• Installing water saving plumbing fittings • Provide list of water saving tips for locals and tourists	• Flyers/laminated posters in hotel rooms
Strain on energy supply	• Installing energy saving appliances, lighting, and devices • Using a time switch to control lighting in key areas • Provide list of energy	• Radio, TV, Newspaper, Magazine campaigns • Billboards and signage • Flyers/laminated posters in hotel rooms

	saving tips for locals and tourists	
Increases marine litter – cigarette butts and trash	• see marine litter	• see marine litter
Creates more solid waste	• Promote measures to Reduce, Reuse, Recycle waste (reducing packaging/consumption; composting or up-cycling waste; recycling waste materials)	• signage • billboards • posters in rooms • provision of recycling facilities
Increased water pollution	• Biodegradable eco-friendly toiletries/soaps/detergents • Eco-friendly sunscreen • Bin it and Bag it rather than flush it • Reduction in use of fertilizers for local agriculture and recreational facilities (eg golf courses) • Adequate wastewater treatment	• Posters in hotel rooms • Signage • Promote tourist destinations with good quality water online (e.g. Blue Flag status) • Business communications encouraging the reduction of fertilizers (e.g golf courses) or switching to biodegradable products (tourism stakeholders)
Habitat degradation - reduction/loss of key ecological services	• Prevent development on sensitive areas (dunes/coastal wetlands/estuaries, etc) • Promote the use of eco-friendly sunscreen	• Legislation • Dune walkways • Signage

Environmental impacts of leisure activities (e.g. fishing, diving, boating)	• Promote responsible beach/water use • Promote responsible sporting activitiescitizens	• Guidelines for various leisure activities available as leaflet/booklet
Strain on marine resources (seafood/fish supply) to meet additional demand for specific seafood	• Sustainable aquaculture • Sustainable fisheries • Endangered Species lists • Educate and create awareness amongst tourists, restaurants, hotels to choose meals wisely	• Endangered species lists • Poster/placemats depicting status of various seafood species

2.2 Examples & Best Practice

In developing the Clean Seas Best Practice Guide for Policymakers/Authorities, all existing materials will be taken into account. It is important to highlight the work already been done with the following interesting links on sustainable tourism:

The **European Commission** has documented EU policy objectives and implementation with regard to tourism in Europe in various communication documents, which are available on their website (http://ec.europa.eu/enterprise/sectors/tourism/background/index_en.htm)

These include the following four priority areas:

- Stimulate competitiveness in the European tourism sector;
- Promote development of sustainable, responsible, high-quality tourism;
- Consolidate Europe's images as a collection of sustainable, high-quality destinations;
- Maximise the potential of EU financial policies for developing tourism.

European Council on Trade and Tourism offers an online guide for sustainable tourism (http://ectt.webs.com/sustainabletourism.htm), including:

- A list of best practices in sustainable tourism
- The European Charta on Principles of Fair Tourism

- European Union Code of Conduct for Tour Operators
- The Partnership for Global Sustainable Tourism Criteria

The Rainforest Alliance in partnership with **Conservation Internationa**l have put together a comprehensive *Guide to Good Practices for Sustainable Tourism in Marine-Coastal Ecosystems: Lodging Businesses,* which can be downloaded at the following link: http://www.rainforest-alliance.org/sites/default/files/site documents/tourism/documents/marine_coasta_eng.pdf).

This guide offers comprehensive information about marine coastal ecosystems and the environmental resources most used by tourism activities in these ecosystems. It analyses the potential problems associated with tourism activities and recommends best management practices to improve management practices in the hospitality industry. By implementing these best practices tourism stakeholders can minimize their impact on the environment and communities while gaining maximum benefit from tourism activities that utilize natural and social environments. By using this guide tourism stakeholders can become aware of the key characteristics of the natural habitats where their businesses are located or operate, enabling them to develop and improve their management plans by applying the suggested best management practices.

United Nations Environment Programme (UNEP) has compiled a handbook on *Sustainable Coastal Tourism: An integrated planning and management approach*, which can be downloaded at the following link:

http://www.unep.fr/shared/publications/pdf/DTIx1091xPA-SustainableCoastalTourism-Planning.pdf

The handbook strives to explain how the tourism sector can contribute to sustainable development in coastal areas, as well as the long-term sustainability of coastal tourism. The handbook provides an easy-to-use practical guide to sustainable coastal tourism, offering key tools that can be used at different stages throughout the planning process, identifying key stakeholders who need to be included at various stages of the development process to ensure a successful conclusion. This handbook is targeted at national and local decision-makers, as well as operators from the tourism sector and practitioners in the field of integrated coastal zone management, and also strives to support communities affected by tourism development.

The Collaborative Actions for Sustainable Tourism (COAST) Project (http://coast.iwlearn.org/en/en/TheCOASTProjectNewsletter2012.pdf) is working in nine coastal states in Africa (Cameroon, Senegal, Kenya, Tanzania, Mozambique, The Gambia, Ghana, Nigeria and Seychelles) to enhance the adoption of Best Available Practices/Technologies for sustainable tourism practices in three main thematic areas; Eco-tourism Practices, Environmental Management Systems by hotels and Reef and Marine Recreation Management. The COAST Project hopes to document working best practices on the afore-mentioned thematic areas and other areas such as waste management, energy efficiency, community participation in tourism and conservation of coral reefs through proactive engagement with the tourism sector. Learn more at:

PERSEUS & Sailing

PERSEUS has teamed up with several charter sailboat companies to launch the PERSEUS &

Sailing “eco-campaign”. This outreach campaign targets both locals and visitors who will be sailing in the Mediterranean during the summer season, promoting the use of eco-friendly practices while boaters enjoy their sailing experience on the Mediterranean. Outreach materials include a leaflet that offers '5-eco-friendly tips' that sailors can adopt to reduce their impact on the marine environment, as well as the launch of the Sustainable Sailing Photo Contest where sailers can submit images taken during their holiday to be entered into the contest to win discounts on their next sailing trip. The leaflet can be downloaded at the following link:

http://www.perseus-net.eu/assets/media/PDF/Sustainable%20Sailing/2726.pdf

Sailors are also encouraged to participate in PERSEUS citizen science projects such as their Jellyfish spotting and Marine LitterWatch campaigns.

3. COMMUNICATION & OUTREACH FOR MARINE LITTER

3.1 Problems, solutions & the role of communication

Marine litter is a problem rooted in unsustainable consumption patterns and behaviours. Increasing amounts of litter, mostly originating from land-based sources, are ending up in the oceans, making this an emerging global problem. Plastic is the most abundant material in this waste, although the amount and type of litter varies regionally.

Marine litter has been recognized as a threat to marine wildlife, including birds, fish, marine mammals, reptiles and invertebrates. Persistent plastic waste is a major part of it. Animals can become entangled in plastic foil, bags or in discarded fishing nets and lines. They can be harmed by ingestion of microplastics particles, plastic items and fragments, or litter on the seafloor can smother bottom dwelling organisms or even change the structure of biological communities living there.

Furthermore, pollutants that are ingested with the plastics often bioaccumulate within the systems of marine organisms, becoming more and more concentrated further up the food chain. These chemicals can negatively impact the health of marine organisms -- especially higher predators, including humans -- who feed on them. Besides being harmful to the environment, wildlife, and human health, beach litter can also have negative aesthetic, social and economic impacts to humans, effecting recreational activities and tourism.

Research on marine litter is still under development and there are many questions that need to be answered in the coming years. Beach areas are a good place to monitor marine litter. They act as an indicator of two types of litter: 1) litter that is washed up ashore, and 2) litter that has been left as waste on beaches by beachgoers.

Marine litter originates from multiple sources, including: beachgoers; litter washed in from rivers; litter discarded from recreational boats and commercial shipping; and litter from fishermen and fishing boats, mostly in the form of discarded fishing gear. In order to combat the problem, policy-makers need to take a multi-pronged approach that targets all of these sources. This can be achieved through a combination of both education and awareness campaigns, and legislation and regulatory enforcement.

Specific issues and messages to be targeted via communication and awareness raising actions:

Problem: Marine litter itself is a specific issue that involves a societal challenge, as it concerns both organizational and management frameworks, etc. in recycling and waste disposal, and the conscience and behaviour of every single person.

Key messages: *Actions need to be taken at different levels to change environmental behaviour, including government authorities, NGOs, industry stakeholders and citizens. As an example, the MARLISCO project is preparing a best practices document: http://www.marlisco.eu.*

Education is of high importance, as information and responsibility is the best environmental protection.

Problem: Litter left by beachgoers

To reduce the amount of litter left behind by beach users, it is necessary to educate beach users directly, and possibly also to encourage fast-food vendors to change their business practices.

Key Message: *Citizens can act as responsible consumers day by day, not only by avoiding littering, but more importantly by using and promoting products which lead to less waste, and to support recycling.*

Proposed communication and awareness raising actions include:

Vendors should be encouraged, possibly through incentives, to use reusable/recyclable packaging/containers, for which the consumer pays a refundable deposit (refunded once returned to vendor). Other recycling initiatives such as containers for cans, glass, paper and plastic could be made available at busy beaches to enable beachgoers to recycle their litter rather than trash it, together with billboards and signage encouraging beach users to do so.

Themed campaigns such as 'Leave only your footprints...' can also be targeted towards beach users, communicated via billboards, posters, and signage on beaches, at restaurants, hotels and holiday accommodation facilities, etc., encouraging beach-goers to 'Stash their Trash' (including food/beverage containers, sippy straws, cigarette butts, etc) and dispose of it responsibly in a recycling or trash bin.

Consumer Choices - Encourage consumers to choose reusable containers for food and beverages over disposable packaging.

(Target Audience: Consumers)

Target Audience: Beachgoers (recreational users, tourists); fast-food vendors**;** consumers

Key Message: *Encourage citizens to participate actively in beach clean-up campaigns and join local groups who are part of major networks (e.g. International Coastal Cleanup - Ocean Conservancy, Surfrider Foundation, Project Aware, etc.)*

Problem: Beach Litter/Marine Debris

Beach litter together with marine debris (flotsam and jetsam) that has washed ashore is unsightly and hazardous to wildlife. Concerted efforts should be undertaken on a regular basis to clean up beaches by removing litter and debris that has washed ashore.

Proposed communication and awareness raising actions include:

Beach Cleanups targeting specific ocean user groups (surfers, beachgoers, etc), school groups (e.g. as part of the Eco-Schools program), youth groups (e.g. cubs, scouts, etc), and local communities. Beach cleanups can be a fun way for many of these groups to learn about environmental problems (especially related to marine debris) and to make a positive contribution to help curb the problem. Schools can incorporate other lesson plans (e.g. mathematics, science, art) into these activities, for example by using the materials collected to create artworks or crafts, or by analysing the composition of litter/debris collected.

Organize sponsored art competitions - photographic, video, arts & crafts made from collected marine litter (targeting adults and/or children). This can be incorporated into general beach cleanup activities or as part of a kids holiday program run by local community groups or as part of a hotel's holiday activities for children.

Sale/Auction of above artworks at charity events can raise both awareness and funds to support further cleanup efforts.

Target Audience: Beach users, schools, youth groups, local communities

Problem: Litter washed in from rivers

Much of the litter that washes ashore on beaches originates from further inland, flowing into the ocean via rivers and stormwater outlets. To combat this problem, we need to reduce the amount of waste that is generated, and implement measures to prevent litter from entering rivers, streams and stormwater systems.

Key Message: *Take action to prevent litter from entering freshwater systems.*

Proposed communication and awareness raising actions include:

Reduce, Reuse, Recycle - Promote efforts to reduce waste, reuse products, and recycle materials wherever possible. Besides communicating this message to consumers, there needs to be facilities (i.e. recycling bins and/or recycling centers) put in place to enable them to do so. Communication and awareness efforts can include campaigns via magazines/newspapers, billboards, and other traditional media.

(Target Audience: Consumers).

Plastic Shopping Bags - plastic bags are one of the most obvious culprits in terms of litter washed into the ocean from rivers and stormwater systems. Plastic bags can encapsulate or entangle marine life, and clear plastic bags are often ingested by turtles who mistake them for jellyfish -- their staple diet. Plastic bags are typically discarded on land and blow into rivers or wash into stormwater drains with runoff. To combat this problem, we need to discourage the use of plastic bags. The distribution of free plastic shopping bags should be banned, or they could be banned altogether. A surcharge should be levied on all plastic shopping bags and stores should be encouraged to either sell or hand out *reusable* shopping bags to their customers, which can be printed with their logo for marketing purposes.

(Target Audience: Consumers and Stores)

Stormwater Grates - To prevent litter from washing into stormwater systems (and ultimately

flowing to the sea) measures should be taken to trap litter before it enters the stormwater system. Policy-makers and local officials should consider providing budget to install grilles that prevent litter from being blown or swept into the system with stormwater runoff. It would be easier to clean these grates out regularly than to recover this litter once it enters the stormwater system.

(Target Audience: Policy-makers, local officials)

Flushed Personal Care Products - many personal care products are flushed down the sewer and while some of this may be removed during the sewage treatment process, a significant portion escapes with treated effluent and is discharged into the ocean. Disposable nappies, women's sanitary products, and plastic sticks from cotton earbuds (Q-tips) are all problematic. Q-tips are widely used, and because of their small size, easily pass through the sewer system, and thus are a common form of plastic debris washed up on beaches. Greater awareness should be generated with regards to flushed waste products, and consumers should be encouraged to 'bag and bin it' rather than flush it.

(Target Audience: Consumers)

Problem: Litter from recreational boats

Due to the high number of recreational pleasure boats in both the Mediterranean and Black Sea, litter from recreational boats is another source of marine litter that needs to be addressed.

Key Message: *Encourage recreational boaters to dispose of their refuse responsibly when they return to shore rather than dumping it at sea.*

Proposed communication and awareness raising actions include:

The 'Bag it and Bin it' approach to flushed waste needs to be promoted amongst this target audience, together with a 'Stow it, Don't Throw it' campaign encouraging boaters to stow their waste and dispose of it responsibly or recycle it when they arrive back ashore. There are several methods to communicate this message, including signage at launching/berthing areas; posters at yacht clubs; adverts in newspapers and/or recreational boating/fishing magazines/newsletters, etc.

(Target Audience: pleasure boaters, yachtsman, recreational fishermen, etc)

Problem: Discarded fishing gear

Every year hundreds, if not thousands of marine animals are killed or maimed by discarded fishing gear (including fishing line, fishing nets, lobster traps, and other fishing tackle such as hooks, etc.). Broken fishing nets (that either break away or are discarded at sea) act as ghost nets, trapping and drowning fish, marine mammals and other sea life. Discarded fishing line can entangle marine mammals, turtles, sea birds and other forms of marine life leading to drowning or severe/fatal injuries.

Key Message: *Encourage fishers to dispose of their fishing gear in a responsible manner by creating awareness and providing adequate facilities for them to do so.*

Proposed communication and awareness raising actions include:

There is a need to create greater awareness of the problems associated with discarded fishing

gear targeting both the commercial and recreational fishing sector. Fishermen should be encouraged to salvage broken fishing gear/tackle and dispose of this responsibly once back ashore. This can be communicated via signage at key fishing beaches and at fishing boat launching/berthing areas; flyers distributed at bait and tackle shops; getting skippers and fishing crew to sign a pledge.

Facilities should be provided on all fishing vessels and at key beaches used by recreational fishermen to enable them to dispose/recycle broken fishing line responsibly. For example, at Gansbaai in South Africa, closed bins constructed from PVC piping have been installed at popular fishing beaches where fishermen can safely dispose of mono-filament fishing line for recycling (http://www.dict.org.za/fishing_line_bins.php). A similar concept should be made compulsory for all fishing vessels.

(Target Audience: commercial and recreational fishermen)

Specific Issues/Problems	Solutions & Measures	Communication actions
Litter left by beach-goers	• Encourage the use of returnable packaging • Fines for littering	• Signage at beaches • Flyers/posters at hotels/local shops
Litter washed in from rivers	• Reduce, Reuse, Recycle • Banning distribution of free plastic shopping bags (or banning plastic shopping bags altogether) • Flushed personal products • Stormwater grates/grilles to prevent litter from washing into stormwater systems	• Recycling programmes initiated/supported • Surcharge levied on plastic bags and/or reusable shopping bags introduced • Awareness campaign to highlight issues surrounding flushed personal products • Budget allocated for stormwater grates and litter removal before it enters the stormwater system
Litter from recreational boats	• 'Stow it - Don't Throw it' awareness campaign	• signage at launching/berthing areas • Posters at yacht clubs, etc. • Adverts in newspapers/boating magazines/newsletters, etc.
Discarded fishing gear (nets/line/tackle)	• Provide facilities where fishermen can discard fishing gear safely on	• provide special closed 'bins' where fishermen can discard fishing

	beaches/vessels • Create awareness among both recreational and commercial fishermen	tackle • posters/signage at key fishing beaches and boat launching areas • Flyers distributed at bait and tackle shops • Skippers to sign pledge

3.2 Examples & Best practice

In developing the Clean Seas Best Practice Guide for Policymakers/Authorities, it is important to highlight the work already been done to combat marine litter. Some examples of best practice follow below:

✓**MARLISCO** (Marine Litter in European Seas - Social Awareness and Co-responsibility) (http://www.marlisco.eu). The MARLISCO project has listed 73 best practices that strive to combat the problem of marine litter in European seas.

✓**UNEP** Regional Seas Programme (http://www.unep.org/regionalseas/marinelitter/). The UNEP Regional Seas Programme has developed and implemented several activities related to marine litter management.

✓**Project Aware** - Dive Against Debris (http://www.projectaware.org/project/marine-debris). The Dive Against Debris initiative consists of underwater surveys of marine litter undertaken by divers who record then remove trash from the seabed. The data recorded provides information on marine debris to help persuade governments, businesses and individuals to take action to combat this scourge.

✓**Ocean Conservancy** - International Coastal Cleanup. (http://www.oceanconservancy.org/our-work/international-coastal-cleanup/) Every year, the Ocean Conservancy organizes an International Coastal Cleanup at beaches all around the world. In 2014 648,015 volunteers from 92 countries took part in the International Coastal Cleanup, recording and collecting more than 12.3 million pounds of litter off beaches around the world.

✓**Surfrider Foundation** (http://www.surfrider.eu/en/environment-local-actions/marine-litter.html). Surfrider Foundation strives to eliminate marine litter that originates from both land and marine sources by advocating reduce - reuse - recycle programmes to minimize waste, and through various action programmes, including: 1) Lobbing the European Commission to recognize marine litter as a pollutant and influencing manufacturers to convert to more environmentally-friendly practices; and 2) Scientific research that quantifies and qualifies the impact of waste dumped by ships, ultimately aiming to ban ships dumping waste at sea.

✓**PERSEUS** Marine LitterWatch citizen science programme (http://www.perseus-

net.eu/site/content.php?locale=1&sel=516). One important example is the Marine LitterWatch citizen science programme where PERSEUS is collaborating with the European Environment Agency (EEA) to actively promote the recording of data on marine litter from beaches in the Mediterranean and Black Seas

(more information on this initiative follows in the section below).

Marine LitterWatch / Adopt a Beach

PERSEUS together with the European Environment Agency (EEA) and other partner organizations have launched the Marine LitterWatch campaign -- a citizen science project whereby citizens can record marine litter data on beaches in the Mediterranean and Black seas, using a smartphone app. This data is then fed into a central database of marine litter hosted by the EEA that can provide a useful tool for decision-makers to take further action to combat marine litter.

To date 41 European beaches have been adopted by PERSEUS partner organizations in Cyprus (1), Turkey (1), Malta (1), Tunisia (2), Greece (2), Spain (3), Morocco (4), Bulgaria (4), Israel (5), Romania (5) and France (6). These beaches will be surveyed four times throughout the year, where data on marine litter will be recorded using the Marine LitterWatch application.

The goal of the PERSEUS-MLW Campaign is to create a clearer picture of the problem by gathering relevant data on different litter types and distribution and to generate environmental awareness to the problem of marine litter by getting citizens and scientists actively involved in the PERSEUS main concept of *Clean Seas by 2020.*

4. COMMUNICATION & OUTREACH FOR FISHERIES/ AQUACULTURE

4.1 Problems, solutions & the role of communication

In 2013, 88% of the assessed stocks in the Mediterranean and Black Seas were overfished (EEA). According to FAO data, in 1960 – 10 kg the annual global per capita consumption of fish was 10kg, today the annual global per capita consumption of fish has almost doubled to 19 kg, with consumption in some countries such as Denmark, Portugal and Japan as high as 40 to 50 kg. These figures show just how much more we are depending on fish as a food source.

Well-managed fisheries and aquaculture resources and its associated industry provide a fundamental component of human nutrition, as well as an important source of employment for society. Despite all the international efforts for responsible and sustainable management of fisheries, many fish stocks are still exploited beyond sustainable limits, meaning that a specific fish population would not be able to guarantee its reproductive capacity in order to replenish stocks. Overfishing can lead to a dramatic decline of targeted species, often resulting in a devastating stock collapse, which can have severe economic, social and ecological consequences.

Specific issues and messages to be targeted via communication and awareness raising actions:

Problem: Fishing fleet overcapacity is a major problem and implies that catches are higher than what the sea can offer in a sustainable way. Modern technology has given the fishing sector a huge advantage over fish -- sonar fish finders assist fishing vessels with targeting large shoals of fish, and advances in fishing gear together with refrigerated holds enable commercial fleets to harvest large numbers of fish, which can be stored onboard, allowing them to fish for longer before returning to shore. As larger, mature fish are typically targeted, this reduces the number of breeding adults in a population, often with dire consequences, as the remaining stocks may not be reproductively viable and therefore unable to replenish the fish populations at the same rate that they are removed.

Key messages: *Actions must be taken on a large scale through regional and national policies, such as the Common Policy Framework at European level. Fleets need to be adapted and controlled, especially large-scale fisheries, to guarantee sustainability of stocks.*

Proposed communication and awareness raising actions include:

Educational campaign/materials targeting commercial fishing sector highlighting the need for them to harvest the fish that sustain the industry (and their jobs) in a sustainable manner so that there will continue to be fish tomorrow. This will not only ensure that people have a sustainable source of protein well into the future, but will also ensure the long-term security of their livelihoods.

This should be backed up with sound fisheries management policies that regulate the industry by setting sustainable Total Allowable Catch (TAC) limits and by allocating annual quotas to commercial fishing companies. Fishing fleets need to keep accurate records of their catch, including bycatch of non-target species.

Management policies can also restrict fishing in certain areas (e.g. marine reserves) to ensure that there is still a viable population that is able to replenish stocks, and/or restrict fishing during vulnerable seasons (e.g. when fish are spawning) to ensure that the population remains healthy.

Target Audience: Commercial fishing sector; policy-makers

Problem: Overfishing of certain stocks is an important issue since the public tends to concentrate consumption on a very small number of species that are highly in demand.

Key messages: *This issue requires a change in citizens' behaviour that can be enhanced by administrations and NGOs through educational programmes. Citizens need to get information on species and sources of catches from labels to enable them to select sustainable fisheries. Some good options are to diversify fish species choice for consumption to reduce pressure on certain populations, and for consumers to avoid buying fish from overexploited stocks. It is also necessary to reduce pressure on sensitive species such as sharks and other slow-growing fish populations, which are more vulnerable as their stocks recover slower.*

Proposed communication and awareness raising actions include:

Create awareness amongst stakeholders in the fishing sector to harvest fish stocks in a sustainable manner, and where necessary to diversify. Promote the utilization and harvesting of alternate less vulnerable species to reduce pressure on stocks that are in high demand.

Consider promoting the *sustainable* farming of popular species to reduce pressure on wild stocks. However, to ensure that this doesn't cause more harm than good, the pros and cons should be weighed up before opting for this as a solution. For example, wild feeder fish species are often over-exploited to produce fish meal or pellets in order to sustain

commercially farmed species. This can have negative ecological impacts, such as reducing a vital source of food for wild predators (including fish, marine mammals, seabirds). Aquaculture facilities can also cause habitat destruction of coastal habitats, and wastewater from these facilities can negatively affect water quality. When considering this option, measures should be taken to reduce any potential environmental impacts to ensure that it is sustainable.

Create awareness amongst consumers -- make labelling of fish products mandatory, including information regarding species status and source of the product, to enable consumers to make sustainable choices when purchasing fish products.

Target Audience: stakeholders in the fishing sector; consumers

Problem: Destructive fishing practices can cause habitat alterations that can severely affect the entire ecosystem. For example:

- Bottom trawling can damage the seabed and other sensitive structures such as corals, as heavy fishing gear is dragged across the ocean bottom. Trawling (both bottom trawling and pelagic or mid-water trawling) is also unselective and traps all forms of life, including non-target species and undersize fish that have little commercial value.
- Commercial purse-seiners can encircle and scoop up entire schools of fish, as well as non-target species, and consequently can put severe pressure on fish stocks.
- Commercial long-lining fishing boats deploy lines set with baited hooks (sometimes numbering in the thousands), which attract and kill a high number of non-target species, including seabirds, sharks and turtles. It is estimated that 100,000 albatrosses, many of which are endangered (some critically), are killed each year by this fishing method.

The good news is that there are steps that can be taken to reduce the number of non-target species that are killed, and responsible fishing fleets are now beginning to implement mitigating measures to reduce their bycatch.

Key messages: *Citizens can play a decisive role to discourage fishing companies to continue these practices by getting informed on the impact of different fishing methods and to choose products that are harvested using less environmentally destructive practices.*

Proposed communication and awareness raising actions include:

Create environmental awareness amongst the fishing sector, especially on the need to protect non-target species, as well as the need to protect the ecosystems that support the fish on which they depend for their livelihoods.

Research and implement measures to reduce environmental impacts of fisheries, especially the impacts on ecosystems and non-target species. Run educational campaigns targeting stakeholders in the fishing industry (particularly commercial fishing fleets), that create awareness of the problems and propose less destructive alternatives or mitigating measures such as gear modifications, that can be taken to reduce their environmental impact. For example, Trawlers and purse-seiners can increase the mesh size of their nets to allow smaller non-target fish to escape. Long-liners can reduce their impact on seabirds by using bird scaring lines to deter birds; they can deploy their nets at night when birds are less active, or they can deploy them under water where they are less likely to attract birds.

Regulate the fishing industry, making it compulsory for all fishing vessels to keep records of their incidental catch of non-target species, and for them to take steps to reduce their

bycatch. Create awareness amongst consumers so that they can make informed decisions when purchasing fish products.

Target Audience: Commercial fishing sector; policy-makers; consumers

Problem: Destructive aquaculture practices can cause habitat alterations that can seriously affect the entire ecosystem. Intensive aquaculture practices (e.g. farming tropical shrimp species) involves the construction of ponds that can cause severe damage to coastal ecosystems such as mangroves and wetlands, yet the resulting products can be found in any supermarket all over the world. Intensive aquaculture is also associated with poor water quality and nutrient loading, and in some cases, over-exploitation of feeder fish species used as live food or for the production of fish meal or pelleted feed.

Key messages: *By getting informed on the impacts of different aquaculture methods, and boycotting unsustainable products and choosing products that are farmed in an environmentally responsible and sustainable manner, citizens can play a decisive role in reducing the demand for environmentally sensitive products and encourage companies to pursue sustainable aquaculture practices as a more economical alternative.*

Proposed communication and awareness raising actions include:

Create awareness amongst consumers through educational campaigns via traditional media such as newspaper/magazine articles, radio interviews, TV documentaries that highlight the problems associated with unsustainable aquaculture practices.

Create awareness of environmental impacts amongst stakeholders in the aquaculture industry. Promote sustainable aquaculture practices and encourage ventures that utilize these methods to label their products as such to enable consumers to choose sustainably farmed products over others. Sustainable aquaculture practices include:

- Closed recirculated pond systems, where wastewater is treated on site and recycled back into the system should be used to reduce environmental impacts on surrounding freshwater and coastal waters;
- Use of larvae that originates from stock that has been kept in captivity throughout the entire breeding cycle rather than larvae acquired from stock that was removed from the wild for spawning should be used to stock aquaculture ponds as this reduces the pressure on wild stocks but also reduces the risk of introducing diseases into the ponds and thus the need for antibiotics to combat disease in the stock being raised. Ultimately this results in a healthier natural environment, a healthier pond system, the end product is healthier for the consumer, and the aquaculture venture remains economically healthy too.
- Strive to follow basic ecological principals when managing aquaculture pond environments in order to maintain a balanced natural pond ecosystem that replicates a natural system.
- Aquaculture ventures should strive to use feed that contains commercially grown ingredients (e.g. grains) that are easily replenished rather than ingredients that originate from natural resources such as feeder fish that could risk being over-exploited.

Target Audience: Stakeholders in the aquaculture industry; consumers

Problem: Loss of biodiversity can have long term ecological impacts on natural ecosystems as everything in nature is interconnected and dependent on their habitats and other species in some way.

Some common problems that can cause loss of biodiversity in marine and coastal systems include:

- Habitat destruction/loss due to destructive fishing or aquaculture practices;
- Introduction of alien species accidentally released with aquaculture wastewater;
- Overfishing of vulnerable species;
- Incidental catch of non-target species;
- Overfishing of species that provide a key ecological function, such as sharks. For example, when the numbers of predator fish are reduced, grazers proliferate, which can result in algal beds being denuded, ultimately leading to habitat destruction of reefs, which impacts all species that depend on these habitats for food and refuge from predators.

Key messages: *Stakeholders in the fishing industry as well as citizens can all play their part in preventing loss of biodiversity, by taking measures to promote sustainable fishing practices which minimize habitat loss, taking care not to introduce alien species, and taking steps to limit bycatch and to prevent overfishing of vulnerable or key species.*

Proposed communication and awareness raising actions include:

Create awareness of why biodiversity is important amongst stakeholders in the fishing industry as well as consumers. The fishing industry must be made aware that biodiversity is essential for healthy ecosystems, healthy seas, and ultimately for healthy fisheries.

Create awareness of the issues that threaten biodiversity in coastal and marine systems through educational campaigns targeted at specific stakeholders in the fishing/aquaculture industry.

Educate the public and stakeholders in the fishing industry about the need to prevent habitat destruction of sensitive coastal ecosystems, such as estuaries and wetlands that serve as nursery areas for juvenile fish, as well as marine systems (benthos, reefs, etc.) that are crucial for supporting a wide variety of species, including the species being targeted and ultimately the fishery.

Educate stakeholders in the fishing sector and public about the ecological roles that different species play in marine and coastal ecosystems. By understanding some key ecological issues, such as how overfishing one species can impact others (or even the entire ecosystem), or the impact of habitat loss or destruction on the species that live there, stakeholders in the fishing sector may be more inclined to take measures to reduce their impact, and consumers are more likely to put pressure on the industry to do so.

Stakeholders in the recreational fishing sector, such as shark fishing, should be encouraged to participate in catch and release (or tag and release) programmes rather than more lethal alternatives. Data collected can be used for scientific research and fisheries management purposes. Guidelines should be provided to ensure the welfare of the targeted species and to improve its chances of survival after release. Tips for tagging sharks can be found at the following links:

- http://nefsc.noaa.gov/nefsc/Narragansett/sharks/instructions.html
- http://www.shark.co.za/SharkAngling
- http://rac-spa.org/sites/default/files/doc_fish/gl_shark_ray_en.pdf

Target Audience: Stakeholders in fishing sector; stakeholders in aquaculture industry; consumers

Specific Issues/Problems	Solutions & Measures	Communication actions
Overfishing - overcapacity of fishing fleets	• Setting sustainable Total Allowable Catch (TAC) limits • Annual Fishing quotas	• Educational campaign/materials targeting commercial fishing sector
Overfishing of popular food species - Targeting vulnerable species	• Consumer awareness - consumer choices • Annual fishing quotas for commercial fisheries • Daily catch limits for commercial fleets • Daily bag limits for recreational fishers	• Create awareness amongst consumers • Labels to include information regarding source and status of fish • Create awareness amongst fishing sector • Promote utilization/harvesting of alternate less vulnerable species • Promote sustainable farming of popular species to reduce pressure on wild stocks
Destructive fishing practices: purse-seine nets, bottom trawling, long-lining	• Create environmental awareness amongst the fishing sector & consumers • Regulate fishing industry • Implement measures to reduce environmental	• Educational campaigns targeting various stakeholders in the fishing sector • Create awareness amongst consumers • Educational Brochures, leaflets highlighting the

	impacts of fisheries	problems caused by various fishing practices, and how to minimize these impacts. • Infographics - signage/posters at docking areas as well as onboard
Destructive aquaculture methods	• Create awareness of environmental impacts amongst stakeholders in the aquaculture industry • Encourage sustainable aquaculture practices	• Educational campaigns via traditional media such as newspaper/magazine articles, radio interviews, TV documentaries
Loss of Biodiversity	• Prevent introduction of alien species • Prevent overfishing of vulnerable species • Reduce bycatch • Prevent overfishing of key species • Prevent habitat loss/destruction	• Create awareness of why biodiversity is important • Create awareness of issues that affect biodiversity • Encourage tag-and-release for sport/leisure fishing

4.2 Examples & Best Practice

In developing the Clean Seas Best Practice Guide for Policymakers/Authorities, it is important to highlight the work already been done to minimize the impacts of fisheries. Some interesting links on fisheries follow below:

WWF, in partnership with the Seafood Choices Alliance, North Sea Foundation and the Marine Conservation Society, have developed a method of assessing the sustainability of species harvested for seafood and have put together seafood guides for various countries, as well as posters and other materials, to help consumers choose their meals wisely. Seafood guides for European countries as well as other countries around the world can be viewed at

the link below:

http://wwf.panda.org/what_we_do/how_we_work/conservation/marine/sustainable_fishing/sustainable_seafood/seafood_guides/

The **Marine Stewardship Council's (MRC)** *Certified sustainable seafood* program works with various partners to transform the global seafood market, promoting sustainable fishing practices. By conforming to strict standards in terms of fishery sustainability and seafood traceability, stakeholders can become certified within the program, allowing them to market their seafood products under the MSC ecolabel as certified sustainable seafood. More information on this program can be found at the MRC website:

http://www.msc.org/

Marine Conservation Society - *Fish Online: Your guide to sustainable seafood* provides an online tool that tells you where different fish species come from, and helps you choose your fish wisely by offering sustainability ratings from 1 (sustainably harvested species that you can eat) to 5 (unsustainably harvested species that are best avoided). To check whether your dinner is sustainable or not, visit: http://www.fishonline.org/

"*How do you choose your fish?*" A Press Pack put together by the **European Commission** for journalists to help them create awareness to support the reform of the Common Fisheries Policy. This press pack contains information for journalists on how to help consumers understand more about the fish they buy and about the Common Fisheries Policy. The press pack can be downloaded at the following link: http://www.friendofthesea.org/public/news/eudgmarepresspackconsumers.pdf

Facts and Figures on the Common Fisheries Policy - a booklet published by the **European Commission** that provides comprehensive data on Europe's fisheries and seas compiled by experts from various scientific institutions and organizations across Europe. The data provided offers policy makes a vital tool for sound decision making in terms of fisheries management in European seas to ensure fisheries remain viable, profitable and sustainable in the future. The booklet can be downloaded at the following link:

http://ec.europa.eu/fisheries/documentation/publications/pcp_en.pdf

The **United Nations Environment Programme** (UNEP) Mediterranean Action Plan has published *Guidelines for shark and ray recreational fishing in the Mediterranean.* The publication was prepared as part of the Action Plan for the Conservation of Cartilaginous Fishes in the Mediterranean Sea and provides guidelines for recreational fishers targeting cartilaginous fish species. The guidelines strive to:

- Promote catch and release and thus reduce the impact of recreational fishing activities on shark and ray populations in the Mediterranean Sea.
- Provide guidelines for handling catches to improve survival after being released.
- Encourage recreational fishers to participate in 'citizen science' projects by collecting data that can assist with research and management.

- Create awareness and improve scientific knowledge of the status, biodiversity and ecological importance of sharks and rays in the Mediterranean.

The publication can be downloaded at the following link:
http://rac-spa.org/sites/default/files/doc_fish/gl_shark_ray_en.pdf

5. COMMUNICATION & OUTREACH FOR OCEAN LITERACY & CITIZEN SCIENCE

5.1 Problems, solutions & the role of communication

Many of the problems facing our marine environment are not clearly visible or obvious. What lies under the waves remains a mystery for many. Ignorance may be bliss, however it does not empower people to do their bit to help solve problems. If we want citizens to contribute to cleaning up our seas, education is key. This can be achieved with targeted communication campaigns and citizen science projects that aim to improve ocean literacy of both ocean users and the broader public.

Ocean literacy can be improved by encouraging scientific institutions, museums, aquariums and other education and science facilities to work together to offer outreach programmes that educate citizens about marine ecology and the environmental issues facing the marine and coastal environment.

Problem: Many of the issues that impact the marine environment stem from land-based activities, or are caused by the actions of people who may not use the ocean or be aware of the associated problems.

***Key Message**: Educate citizens about key issues facing the marine environment, and the actions that cause them, so that they can take steps to minimize these impacts.*

Proposed communication and awareness raising actions include:

Create awareness amongst citizens of environmental issues facing marine ecosystems. In order for citizens to have the will to minimize their impact on the marine environment due to their land-based activities, they need to be aware of the impact caused by these activities, understand how these activities affect the environment, and what they can do to minimize their impact. For example litter causes and increase in marine debris, which kills and maims marine life; nutrients from land-based activities (sewage, fertilizers, agriculture) can cause algal blooms, red tides, and can deplete oxygen, resulting in ocean dead zones devoid of all life.

This is an area where multiple stakeholders in the scientific and educational communities can work together to improve ocean literacy of the general public. Schools are an obvious place to start, however, ocean literacy campaigns should not be limited to this demographic, but rather should incorporate ocean user groups (e.g. surfers, sailors, fishers) and the broader public. This can be achieved with active participation and involvement of a wider network of institutions offering outreach programmes targeting adults and the youth.

Problem: Citizens have limited knowledge of marine ecosystem dynamics.

Key Message*: Educate citizens so that they have a better understanding of marine ecology and the ecological interactions that take place in marine ecosystems.*

Proposed communication and awareness raising actions include:

Provide educational channels (such as formal or informal extension courses offered by scientific institutions, outreach programmes, etc.) that improve the public's understanding of how marine ecosystems function. If citizens have a clearer understanding of ecosystem dynamics and the need to keep marine ecosystems in balance, they will be more inclined to do their bit to help.

Posters and informative signage can also play an important communication role. For example illustrated signage placed on sensitive sand dunes, providing information on dune species, dune ecology, sand dune movement, and the ecological services that dunes provide and why we need to protect them, serve as an excellent on-site educational tool.

Problem: Citizens have limited knowledge of species diversity and are unable to identify species or differentiate between different species.

Key Message*: Educate citizens so that they are able to identify different species and make a positive contribution to science by actively participating in citizen science projects.*

Proposed communication and awareness raising actions include:

Provide educational channels (such as informal extension courses offered by scientific institutions, illustrated identification charts/keys and field guides, etc.) that empower citizens to be able to identify marine species, especially threatened species.

Citizen science projects are an excellent way to both educate the public and to gather scientific data (e.g. species diversity, abundance, and distribution) from a much broader source. With smartphones being as popular as they are, nearly everyone carries a camera on them during their leisure activities, or has one available nearby. These devices enable citizens to capture an image of a species and record basic data such as measurements, as well as other important information such as GPS coordinates, which can be submitted directly to web-based citizen science projects from the field, or can be uploaded later when they return to their computers.

Project Noah is an excellent example of a citizen science project where students and citizens are encouraged to upload photographs of plants and animals they have observed in nature, which are then identified by scientists. The benefits are twofold: 1) the information recorded is added to the scientific database, helping scientists better understand wildlife demography;

and 2) the student/citizen scientists get their species identified by an expert, which broadens their knowledge and empowers them to be able to identify species in the field. More information on Project Noah can be found on their website: http://www.projectnoah.org/

Problem: Tourists flock to the marine and coastal environment to enjoy the leisure activities on offer, but most are unaware of the environmental problems and conservation issues that threaten their paradise. However, many tourists are conservation minded and would readily support conservation based leisure activities that would in turn contribute both physically and financially to conservation efforts, if they had the opportunity to do so -- in fact, many would happily pay for this privilege.

***Key Message**: Encourage sustainable eco-tourism initiatives that educate tourists while at the same time generate finances to fund environmental and conservation projects.*

Proposed communication and awareness raising actions include:

Encourage scientific/research institutions to initiate research based travel initiatives, and for tour operators to support these projects. For example EarthWatch Institute offers research expeditions on a broad range of environmental projects all over the world. Volunteers pay for their trip, and in return get the opportunity to travel and join scientists in the field, assisting hands-on with field monitoring and data collection, while experiencing the natural environment and cultures of the places they travel to first hand. These research expeditions give travellers the opportunity to learn about pressing environmental issues as they contribute to environmental research, and at the same time, money raised from these expeditions goes back into funding the projects concerned. It's an excellent concept as it's win-win all around. Learn more about EarthWatch at their website: http://earthwatch.org/

5.2 Examples & Best practice

The **European Network of Science Centres and Museums (ECSITE)** is a network of science communication specialists from over 400 institutions from 50 countries that collaborate on projects and activities, sharing ideas and best practice on pressing issues.

One of their projects, the “Sea for Society” MML Action Plan, focuses on “Marine resources, inland activities and sustainable development”, seeks to analyse public perception of the future marine research and governance in Europe. The project involves 20 partners with 9 associated partners who will organise participatory activities for stakeholders and citizens to foster dialogue among scientists, economic stakeholders and civil society in 12 countries. The ultimate goal is to identify challenges and put forward proposals for humankind to live sustainably and in harmony with our oceans.

More information can be found at their website: http://www.ecsite.eu/

PERSEUS@Schools

PERSEUS@School programme strives to give students the opportunity to learn about marine life and marine ecology of the Mediterranean and Black Seas, and the impact that human activities is having on these marine ecosystems. Furthermore, through various interactive

educational activities aimed at school groups, the PERSEUS@School programme in collaboration with museums, aquaria and scientific and educational institutions in several countries, will provide students with the opportunity to assist scientists protect our seas. There is also the opportunity for participating schools, teachers and students to network and discuss environmental issues through the PERSEUS@School Network. More information can be found on their website: http://www.perseus-net.eu/en/schools_network/index.html

This initiative could also be incorporated into projects run by schools that are registered with the International Eco-Schools program, as it fits in with several of the themes covered by the Eco-Schools program (Water, Waste/Litter, Energy, Nature and Biodiversity, Transport/Sustainable Mobility, Healthy Living, Noise, and Climate Change). The Eco-Schools program encourages schools to undertake projects that promote eco-friendly solutions to everyday problems, long-term sustainability and responsible custodianship of our environment and natural resources. More information on the Eco-Schools program can be found on their website: http://www.eco-schools.org/

PERSEUS Jellyfish Spotting Campaign

As our oceans and seas become warmer, conditions seem to be favourable for jellyfish, who seem to be taking advantage and are popping up everywhere. However, monitoring their movements and distributions is tricky as they are literally 'here today, gone tomorrow'. The PERSEUS Jellyfish Spotting campaign strives to harness 'citizen scientists' to record sightings of jellyfish they observe at the beach or in coastal waters, and to submit these records to the "Jellyfish Spotting" website. Information gleaned from these contributions will be added to a GIS database, which will allow citizens and scientists alike to view jellyfish distribution patterns from the campaign's website. This initiative gives citizens the opportunity to contribute to science and help scientists monitor jellyfish migration patterns. More information on the Jellyfish Spotting campaign can be found on the PERSEUS website: http://www.perseus-net.eu/en/jellyfish_map/index.html

PERSEUS Marine LitterWatch Campaign

The PERSEUS Marine LitterWatch campaign is another citizen science project that allows citizens to actively participate in marine environmental research by recording data related to marine litter on beaches in the Mediterranean and Black Seas. See more information on this initiative in the Marine Litter section of this document, or visit their website at: http://www.perseus-net.eu/site/content.php?locale=1&locale_j=en&sel=516

PERSEUS@Art

PERSEUS in collaboration with the Athens School of Fine Arts (ASFA) held an Art Competition to bring the worlds of Art and Science closer together by encouraging artworks inspired by nature -- more specifically, an exploration of our seas. The best three artworks won their artists a trip on a PERSEUS oceanographic cruise, while three artworks were awarded distinctions. The entries were showcased in an art exhibition titled "Images of the Sea", hosted by PERSUES and the Athens School of Fine Arts. The aim of the exhibition -- which was promoted to a broader audience by the communications sponsor SKAI 100.3, a Greek national

radio station -- was to raise awareness about the need to maintain clean seas in southern Europe. The exhibition catalogue can be downloaded from the PERSEUS@Art website: http://www.perseus-net.eu

6. NEW OUTREACH MATERIALS ON MARINE LITTER FOR SCIENCE CENTRES, MUSEUMS, AQUARIA

6.1 Posters & Signage

Posters, infographics and interpretive signage provide an excellent way to put information across visually, and can also have a lot more impact than information in a text document. Posters and infographics that graphically depict data on marine litter, such as sources of litter, types of litter, animals affected (e.g. deaths per year) can be very effective at educating the public of the need for action.

Interpretive sign boards that visually show the effect of various forms of litter on the environment and marine life can also be very powerful communication tools. For example, a seal with a plastic packaging strapping noose cutting into its neck, or a dissected bird with a stomach full of plastic, will effectively get the message home without the need for much text.

Graphic posters and signs have another important benefit: because the message is visual, it can be understood by people of all languages. This is important in coastal holiday destinations that attract tourists from other countries who speak different languages to that spoken by the citizens in the tourist destination. One sign will convey the same strong universal message to whoever is viewing it, whereas a sign in say English or Spanish may not be understood by someone who speaks French, and vice versa.

6.2 Information Leaflets/Booklets

Information-rich leaflets or booklets that provide stats on marine litter together with information on the impacts that marine litter has on the environment, highlighting the damage it can cause both to marine ecosystems, marine organisms, and also how this can pose a health risk to humans, are an effective educational tool for a captive audience (such as school groups, visitors to museums/aquaria, etc) who by their presence are already showing an interest and are actively seeking information and have more time to peruse text rich documents or to read these at their leisure. This type of communication materials can be used to provide in-depth information on the problem of marine litter, the damages caused, and also to propose solutions to the problem and put forward suggestions that citizens can do to help combat the problem of marine litter.

6.3 Audio-Visual Lectures

Science centers, museums and aquaria can also host outreach events/lectures where

expert speakers/lecturers are invited to give a talk/slide show to school groups or visitors. Audio-visual educational materials, such as educational slides or video documentaries produced on DVDs or uploaded to YouTube for students to download or view online at home or in the classroom, can present a lot of information in a format that is readily absorbed. Videos (both documentaries and lecture series) provide an excellent educational tool, and when put onto a DVD can also include other fun interactive activities, such as a quiz to test and reinforce a students knowledge.

6.4 Technology & Apps

Computer applications and smartphone apps offer an excellent way of marrying technology with communication and outreach. Nearly everyone owns at least one smart device, and these devices can be very effective communication tools, not just in the broader sense, but also in terms of creating environmental awareness amongst users and allowing them to contribute to citizen science programs.

Some examples of Apps that help solve the problem of marine pollution include:

- The **PERSEUS Marine LitterWatch App** allows beachgoers to record data of marine litter surveyed during their beach combing activities against a master checklist of marine litter types that are commonly found on European beaches. They can then submit this data via the app to a central marine litter database hosted by the European Environmental Agency. Information in this database can be visualized on the EEA website, and is readily accessible for broader use. The Marine LitterWatch App is available to all European citizens and offers and excellent tool to gather important data at beach clean-up events, while at the same time encouraging public participation in solving the marine litter problem. The app can be downloaded from the PERSEUS website: http://www.perseus-net.eu/site/content.php?locale=1&locale_j=en&sel=516

- **Marine Debris Tracker** is a similar App that allows ocean users and beachgoers to report marine debris or litter from wherever they are in the world. The Marine Debris Tracker app, which can be downloaded for use on iPhones and Android phones, is a simple tool that allows users to report and record the type and location of debris through GPS features pre-installed on a cell phone. The data submitted is posted on an interactive website (www.marinedebris.engr.uga.edu) that allows data to be viewed and downloaded for users to design plans to prevent marine debris.

- The **Beat the Microbead App** is a smartphone app that was initially developed by two Dutch NGOs -- North Sea Foundation and the Plastic Soup Foundation -- to help consumers determine whether personal care products contain microbeads and enable them to choose an environmentally-friendly alternative instead. The United Nations Environmental Programme (UNEP) and Fauna & Flora International have since partnered with these Dutch NGOs to further develop the App for international consumers. Microbeads are tiny particles of plastic that are routinely added to certain

personal care products, including soaps, shower gels, bodywash and body scrub products, and certain brands of toothpaste, to name a few. These microscopic beads wash down your bathroom drain, and because they are so tiny, are not filtered out by wastewater treatment facilities and thus end up in the oceans, where they accumulate as they are not biodegradable. Marine organisms ingest or absorb these plastic beads, which they accumulate in their system; these microbeads are then passed up the food chain to higher predators, including humans who consume contaminated seafood. Using a smartphone's barcode reader, the Ban the Microbead app allows consumers to scan a product's barcode, and will produce a color coded output to indicate whether the product contains microbeads or not: Red, the product contains microbeads; Orange, the product contains microbeads, but the manufacturer has committed to replacing/omitting these in the near future; Green, the product contains no microbeads. The app can be downloaded from their website below: http://www.beatthemicrobead.org/

6.5 Arts and Crafts

Beach clean-ups are a fun way to get schools groups, clubs and other members of the community involved in keeping our coastline clean. But these initiatives can also be used as part of a marine litter outreach program that encourages creativity by getting students/citizens to produce arts and crafts constructed from marine litter.

Organise an 'art corner' for artworks constructed from marine litter - Organize art and craft events (e.g. holiday programs) where children can partake in arts and crafts using marine litter to create their handiwork. To highlight the problem and create awareness of what types of materials people are putting into the sea, make an area available to display artwork made from marine litter. Encourage NGOs/schools/beach authorities who do beach clean-ups to donate materials for this on a regular basis.

Outreach through art/photographic/video competitions and exhibitions - get artists/photographer/videographers involved and encourage art institutions and artists to organize and participate in exhibitions showcasing work that depicts marine litter (sculptures, paintings, artwork, photographs, video documentaries that are made from marine litter of focus on marine litter). Some examples include:

- the PERSEUS@Art project - A "marriage" between science and art, where the inspiration and feelings captured in the artworks create awareness of pressing marine issues. More information is available at their website: http://www.perseus-net.eu/site/content.php?locale=1&locale_j=en&sel=861

- Expedition GYRE (http://www.expeditiongyre.com/) - an expedition to Alaska by an international team of artists, scientists and educators to document and highlight the issue of marine debris. The expedition culminated in an exhibition of artworks created by 20 world renown artists from marine debris collected on the shores of Alaska during the course or their journey. The 7,500-square-foot exhibition "Gyre," started at the Anchorage Museum in Alaska and will be repackaged by the Smithsonian Institution for a tour of the USA. More information is available at their

website: www.expeditiongyre.com/

6.6 Classroom/Learning Activities

Try to use beach clean-ups as a broader educational tool. For example:

- get students/artists to make arts and crafts from items collected, and perhaps even organize a market where these crafts can be sold (funds raised can be donated to charity/environmental initiatives or used to fund other environmental projects/activities);
- get learners to analyze the debris collected to determine the percentage that originates from land and marine based sources, and the percentage of various types of litter (i.e. plastic bags, bottles, bottle tops, fishing gear, cigarette butts, etc.).
- Encourage students/citizens to come up with creative ways to recycle various forms of litter collected -- perhaps organize a competition where the best/most viable suggestions win prizes.

These activities will all create awareness and help students/citizens to find solutions to reduce the marine litter problem.

6.7 Dissections & Postmortems

Dissecting fish stomachs - Host/conduct an interactive group workshop where fish are dissected to analyze their stomach contents to see what percentage have ingested plastic particles that are visible to the naked eye.

Photo Exhibitions - To highlight the problem and create awareness of the plight that marine animals suffer as a direct consequence of marine litter, display a photo exhibition of postmortems conducted on marine animals and seabirds who died from ingesting plastic or as a result of plastic entanglement.

7. NEW OUTREACH MATERIALS – "BE AN ECO-FRIENDLY TOURIST"

7.1 Advertisements

Adverts in traditional media channels such as magazines, e.g. inflight magazines or tourism related magazines sold in magazine stands at bus/train stations can be used to place adverts that communicate messages to tourists on how to be an eco-friendly tourist.

7.2 Billboards

Large billboards bearing an environmental message erected at strategic places frequented by tourists, such as airports, train stations, ports, or the entrance to holiday destinations, can be an effective way of communicating with tourists en-masse as they arrive for their holiday. For example, a billboard depicting two beach scenes: one showing a filthy beach covered in litter and marine debris; the other showing a couple walking along the shoreline of a pristine beach, with the message "Leave only your footprints..."

7.3 Signs

Signs that provide tips on how to be an eco-friendly tourist can be erected at hotels, beaches, fishing spots, boat launching/berthing areas, marinas, promenades and other public places frequented by tourists.

7.4 Hand-outs

Handouts of top eco-friendly tips can be given out on airplanes traveling to tourist destinations, on arrival at airports, on arrival at hotels, or made available in hotel rooms and recreational areas, etc. These tips can also be made available on tour operators websites for tourists to view, download or print out before their trip. Some suggested tips are listed below:

Be informed before your trip:

- Assess the quality of the beach and sea water -- check blue flag status of the beach
- Stay at eco-friendly hotels that promote green initiatives
- Check out what eco-tourism options are available at the holiday resort/destination

At your hotel:

- Save water
- Conserve electricity
- Reuse towels
- Opt not to have your room cleaned every day
- Use biodegradable shampoos, soaps, and other personal products
- Bag and bin personal care products such as Q-tips rather than flushing these down the toilet

On the beach:

- Don't discard cigarette butts in the sand - use bins or stash and dispose responsibly at your hotel later
- Dispose of garbage in the bins – if there are no bins, stash your trash and take it with you to dispose of properly
- Dispose of fishing line responsibly -- if there are no facilities stow it with your gear and dispose of it when you can
- Choose biodegradable/recyclable fast food packaging over non-biodegradable disposable items
- Use an eco-friendly biodegradable sunscreen, especially when participating in water activities.
- Be aware of the rules and regulations and obey these at all times
- Be aware of sensitive habitats, such as sand dunes, and keep to designated access paths.
- Make an effort to pick up any fishing line, trash, etc. you see lying around, even if you

didn't put it there

- Participate in beach clean-ups, and/or get your children to participate in any beach clean-up activities that may be offered as part of a children's holiday program

At the restaurant:

- Be aware of the status of your food - choose sustainable seafood that is not over-exploited and which has minimal environmental impact
- Eat the right fish for the season
- Be aware of how aquaculture products are farmed, what they are fed, and the impact that farming this species has on the environment

While having fun on the water:

- Sail / fish / dive responsibly – try to keep noise to a minimum
- Be aware of the rules and regulations and obey these at all times
- Don't disturb or harass fish or other marine life
- Take care to avoid collisions with marine life when sailing/boating
- Don't damage sea grass, corals or other sensitive habitats that provide food and shelter for marine life
- Take cognisance of marine protected areas -- don't fish in areas where fishing is prohibited
- Be aware of sensitive ecosystems and species, and avoid these or tread cautiously

While shopping:

- Pack your own shopping bags or recyclable bags – don't accept any plastic shopping bags that may be offered
- When shopping for seafood (fresh, canned, or bottled), choose sustainable seafood products that are labelled accordingly

Take time to learn about the sea:

- Visit science centres, museums, aquaria and learn about marine ecology and the biology of marine organisms
- Learn about environmental issues that affect the marine environment and marine life - search for information online, in books or for freely available educational materials provided by science centres, museums and aquaria
- Learn more about the different habitats that can be found at your tourism destination and the animals and birds that can live in them, as well as the environmental problems that affect these ecosystems and the organisms that inhabit them
- Find out which seafood species are sustainable and which species should be avoided

If you are on a cruise:

- Don't throw litter overboard
- Don't waste water
- Don't flush medicines down the toilet
- Don't flush Q-tips and other personal care products down the toilet

- Avoid personal care products that contain plastic microbeads
- Use an eco-friendly biodegradable sunscreen

8. GENERAL GUIDELINES ON HOW TO DESIGN & IMPLEMENT COMMUNICATION & OUTREACH ACTIVITIES

8.1 Communication Strategy

As a general starting point, review the overall program of measures and see which ones could be facilitated by communication. For these measures, draw up a supporting communication strategy and plan. For example, if you are planning to do X, then Y communication would be helpful.

8.2 Partnerships & Resources

Secure partners that can act as multipliers or relayers of your message. For example, forming a partnership with the hotel industry helps to reach many more tourists that trying to target tourists directly, and the hotels themselves can take on a part of the cost of promoting your message. By contributing to eco-awareness, stakeholders in the hotel industry are viewed as eco-friendly establishments – raising their profile in the eyes of the citizens.

Hotels can also use this as a marketing opportunity; they can promote the quality of their beaches – or nearby beaches – and team up with scientists to get real time information posted. For example, digital signposting at reception providing information relating to weather (temperature, wind speed/direction, weather warnings, etc) and/or ocean conditions (ocean temperature, salinity, etc); interesting points for diving in the region; biodiversity on offer for viewing, etc. It is a competitive advantage for their hotel to be known for its 'green' approach (now referred to as blue growth!). This could be promoted as the BLUE campaign (blue for water colour), and could be tied in with the Blue Flag beach program if the beach qualifies for this status (if not, perhaps set this as a goal for stakeholders to strive for), with participating/qualifying hotels being marketed/promoted as 'Blue Label' hotels.

Hotels increasing also offer incentives for eco-friendly behaviour that can in turn save them money – i.e. guests can hang a 'Do Not Clean' door hanger outside their door indicating they do not wish to have their room cleaned daily, and for every day that the room is not cleaned, they get a 5 EUR voucher to be used at the hotel bar – this saves the hotel money on cleaning personnel, consumables, energy and water that would be needed for washing extra towels, sheets, etc. A clear win-win situation. Guests should also be encouraged to re-use beach towels. Other such incentives and reward schemes can be developed with hotels.

Public beach showers and taps can be timer operated or push-button operated to reduce time spent rinsing off or washing hands, and to prevent taps from not being turned off properly or left running for prolonged periods. Hotels could install timers on the showers to help increase awareness of time limits to spend in a shower with the water running.

Hold an event targeting stakeholders in the tourism industry to introduce them to these ideas and provide them with information of what they can do to take action, and provide ready-made materials (leaflets, signs, door hangers, etc.) that they can put their logo on.

8.3 Ideas for Communication Tools

Tour operators

Encourage tour operators to include information on eco-friendly tourism in their promotional materials/websites, including: information on eco-tourism in the region, such as things to see, marine biodiversity, wildlife tours (boat-based and/or land-based options); information from hotels and other tourism stakeholders on their eco-friendly practices; and also to suggest eco-friendly behaviour/ best practices for tourists when visiting the coast.

At Hotels

Hotel Rooms - provide information on eco-friendly best practices in all hotel rooms, such as printed out hand-outs that can be included in hotel kits, TV screen ads on arrival to room, signposting on bed / bathroom.
Reception Areas - provide information on eco-friendly best practices in the reception areas, as well as information on eco-friendly tourism options available in the area, such as hikes, wildlife tours, etc.; information on litter disposal and recycling (and where the recycling facilities are). This information can be provided on notice boards, posters, signs, or in a glossy brochure.
On the beach / pool areas - install signage that provides tips for being an eco-friendly tourist while enjoying the recreational facilities on offer. Provide facilities such as garbage/recycling bins that are prominent and clearly marked for tourists to discard their litter in a responsible manner.

At The Beach

Signage - use signs to communicate best practices to beach-goers. Interpretive signage can be used as an educational tool to provide information on different beach zones or information on sensitive habitats (e.g. dunes, wetlands, estuaries) and how tourism impacts these habitats, together with suggestions of what we can do to minimize these impacts.

Litter Patrols - make a “litter patrol” using children to keep beaches clean – make them vests with Beach Litter Patrol on it and ask them to go around and “police” litterers with a ticket! Or in a positive way, go around with a garbage bag and go around “collecting garbage” while giving feedback to tourists – I hope you will take your garbage to the garbage cans, use ashtrays for cigarette butts and then throw them away properly.

Organize a 'treasure hunt' for children, where they collect trash for a given time with prizes awarded for various categories, such as: for the heaviest bag of trash; the most trash collected; the most colourful collection of trash; the most plastic bags/bottles/cans/cigarette butts/fishing line etc. This is a fun way for kids to help clean up the beaches, while generating awareness about marine litter, and is a great holiday activity for hotels to include in their

children's holiday programs. Data collected can be added to the EEA Marine LitterWatch database via the PERSEUS Marine LitterWatch App, which can be downloaded at their website below:

http://www.perseus-net.eu/site/content.php?locale=1&locale_j=en&sel=516

Encourage schools and beach user-groups (surfers, divers) to get involved with beach management activities, such as beach clean-ups, giving participants free promotional material such as t-shirts, bumper stickers, etc. that bear an environmental message, e.g. 'I'm a Clean Seas supporter' that they can proudly wear/display to further promote your message.

Install signage that provides tips for being an eco-friendly tourist while enjoying the beach. Provide facilities such as garbage/recycling bins that are prominent and clearly marked for tourists to discard their litter in a responsible manner. Provide special bin facilities for fishermen to discard/recycle fishing line. An example can be viewed at the following website: http://www.dict.org.za/fishing_line_bins.php

Consider providing guests with convenient carry bags made from recycled plastic that they can use to stash their litter when visiting remote beaches that lack the above facilities. This stashed trash can then be recycled or disposed of responsibly when they return to the hotel. These garbage bags can be included in hotel kits and can also be made freely available at reception, and can include the hotel's logo and an environmental message, e.g. 'Leave only your footprints...'

In Restaurants

Encourage restaurants to provide an explanation of the status and source of seafood on their menus, as well as on placemats and/or printed paper tablecloths to enable citizens to make an informed choice when selecting their meal and to persuade them to opt for more sustainable species. Work together with marine scientists/fisheries biologists, conservation organizations such as WWF and stakeholders in the tourism industry to develop a sustainability index consisting of a colour coded system that categorizes seafood species according to how they rank in terms of their sustainability. Encourage restaurants and hotels to use this system so that guests can readily determine how sustainable their meal is. For example, The South African Sustainable Seafood Initiative (SASSI) has implemented a sustainable seafood index, together with awareness tools such as a *Consumer Seafood Pocket Guide* and a *Conscious Seafood Diner Card,* using the colour codes Green, Orange, and Red as outlined below:

- **Green** - species on the Green list are the most sustainable choices that are sourced from healthy well-managed populations or are farmed in a sustainable manner that does not negatively impact environment -- this is the group recommended for consumers.
- **Orange** - species on the Orange list have associated reasons that make them a less sustainable option - either overfishing has caused their population numbers to decline and they cannot sustain current levels of demand, and/or their biology makes them vulnerable to being overfished, or the method used to harvest or farm them is harmful to the environment. While it is legal to harvest and sell these species

commercially, any increase in the demand for these species could impact their long-term sustainability. Consumers should think twice before opting for these species.

- **Red** - species on the Red list include species that are considered unsustainable and species that are illegal to sell. However, some of the species that are illegal to sell may be caught by recreational fishers for their own personal consumption if they have the necessary recreational fishing permits and comply with other set restrictions (such as minimum catch size, closed seasons, daily bag limits). These species should not be offered for sale in restaurants, hotels or supermarkets, and if they are, consumers should not buy them as they are unsustainable species.

More information on this initiative can be viewed at the WWF/SASSI website: www.wwfsassi.co.za/

At Recreational Service Suppliers

(boat tour operators, boat rental companies, fishing/diving gear rental companies, etc)

Encourage recreational service suppliers to provide their clientele with tips and guidelines on how to be responsible tourists and how to minimize their impact while enjoying their leisure activities. This information can be provided on their website and social media sites, as computer generated hand-outs (simply print-outs from PC), included with information on their sales brochures or marketing materials, on signs and/or decals on boats and equipment, or sales personnel can provide verbal information and advice to their clients.

In Aquaria / Marine Centres

Educational posters with high graphic content, that provide information through visually appealing illustrations and infographics can be a wonderful educational tool alongside exhibits or displays that feature specific marine organisms or marine habitats.

Interactive materials and displays such as touch-screens and touch-pools offer a more interactive hands-on user experience, and are very effective teaching tools. Touch-screen computers can include a quiz related to a specific exhibit or to marine issues in general. Touch-pools allow visitors to handle or feel certain specimens, allowing them to experience first hand some of their biological traits. This a great educational tool for supervised groups, such as school groups, as long as it is well controlled and conducted responsibly.

Provide tour/school groups with hand-outs consisting of key facts that can be handed out during tours/school field trips

Partner with schools, youth groups, hotels (school holiday programs), and beach user-groups (surfers, divers, fishers, etc) to organize beach clean-ups. Provide hand-outs to participants (e.g. students/teachers) to create awareness of marine litter sources and its environmental impact. Litter collected can be used to make artwork, sculptures and crafts. Allocate an 'art corner' to display these artworks, or organize an exhibition where they can be showcased and sold, or an event where they can be auctioned to raise funds for environmental causes.

Online educational campaigns via website and social media, including online videos, lectures, educational materials as well as downloadable content.

8.4 "Clean Sea Ambassadors"

Find national / regional / local personalities that are interested in becoming role models of good behaviour It could be someone famous that likes to surf / dive / sail / fish, or a well known sports person such as a world champion surfer. Get them to appear on TV, radio, print ads; or make a video of them describing why it is so important for us to maintain the health of our seas, and ask the tourism industry to post online through their websites / social media, etc. For example, Jacque Cousteau inspired generations of ocean scientists to be curious about the sea - others need to be developed.

Develop/conceptualize a superhero or mascot that can be used in marine awareness campaigns, animations, adverts, videos etc., as a 'spokesperson' for marine environmental awareness. This can be a sea creature such as a dolphin, seal, turtle or octopus; a fantasy superhero figure, such as a mermaid; or a humanized superhero like Pop-Eye the sailor. Aquaria and marine centres can get children to build or create a version of the mascot using marine debris, and display these creations in their art corner.


PERSEUS
POLICY-ORIENTED MARINE
ENVIRONMENTAL RESEARCH IN
THE SOUTHERN EUROPEAN SEAS