



CETMAR

CENTRO TECNOLÓGICO DEL MAR

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Tackling marine litter with maritime stakeholder involvement: local and EU approaches



**THE ROLE OF INTERNATIONAL FISHERIES
AND THEIR INTERACTIONS WITH OTHER MARITIME ACTIVITIES**

Rome. 11 May 2018





- **CETMAR** is a Public Foundation funded by the Galician Regional Government and the Spanish Ministry of Science and Innovation.
- Governed by a Board of Trustees that includes the principal regional and national governmental agencies and research organizations operating in the environmental, maritime and fishing sector.



GOALS



- Promote inter-institutional co-ordination and interdisciplinary integration of all marine research and technology resources
- Foster links and cooperation among science, the marine-fishing industry, governmental agencies and other major stakeholders
- Sustainable development, competitiveness and innovation of maritime/fishing sector

STRUCTURE [7 Areas]



- **Control and Management of Marine Environment & Resources**
- Technology of Fish Products
- Fisheries Socio-economics
- Technology Promotion and Transfer
- Training
- International cooperation
- Unit of Marine Technology



PROJECTS FOCUSED ON MARINE LITTER

GENERAL APPROACH: Gaining of knowledge, implementation of fishing for litter and waste management schemes and awareness raising



-OMAR
- 3R-FISH
-Nothing Over Board
-PESCAL

-CLEANATLANTIC
-MARLIMPO
-OceanWise





OMAR (Environmental Observatory on solid waste from fishing and port activities)

Description: Study of waste generation in Galician ports, analysis of the situation, driving forces, alternatives for sustainable management and education-raising awareness activities.

➤ **Duration:** 2007

➤ **Funded by** Fundación Biodiversidad (MAPAMA).



➤ **Participants:** CETMAR, Ports of Galicia, Port of Vigo, Port of Marin and Port of Coruña, fishing Associations, waste managers, fishing nets makers/menders, fishermen and fish markets, 32 ports involved (Regional scope).

➤ **Specific aims:**

-To characterize the environmental situation in ports concerning maritime waste.

-To analyze management and recycling possibilities of the different waste types (plastic packages and boxes, EPS boxes, fishing nets, steel wires, wooden boxes ...).

-To raise environmental awareness and implement good practices of stakeholders.

-To establish collaboration channels with stakeholders, companies, authorities, etc.

-To develop an effective and integrated platform for users providing data, information and management options of port wastes.



OMAR (Environmental Observatory on solid waste from fishing and port activities)

Results/Outputs

- “Diagnose” of waste generation and management in each port (Data Base and Technical reports).
- Increased awareness and good practices: educational publications and workshops.
- Pilot actions (Fishing nets and EPS boxes management schemes).
- International Seminar on fishing nets management and recycling.
- “At pier” environmental awareness raising “interventions”.



Description: (Fishing for Litter). Pilot action developed in the Galician Rias (NW Spain) in which fishermen for different fleets brought ashore the litter collected in their nets during ordinary fishing operations (gillnets & trawling nets)

➤ **Duration:** 2009 - 2010 (~6 months each year)

➤ **Funded by** Ministry in charge of Environment

➤ **Participants:** Fishing associations, CETMAR, Ports of Galicia, Port of Vigo, Port of Marin and Port of Coruña, port waste managers. Involved Fleets: 152 vessels: artisanal boats + coastal trawlers, ships length ranged from 6 to 30 m. Participation: 11 ports, 600 fishermen (Regional scope)



➤ **Specific aims:**

-To improve knowledge and understanding of marine litter in Galician waters

-To reduce the amount of marine litter and collect data about location, typology, quantities, possible sources and trends.

-To evaluate the feasibility of implementing a sustainable scheme in Galician Ports

-To raise awareness among fishermen, port operators and general public.



Results/Outputs:

≈ 34 ton marine litter collected:

- Good practices-dissemination leaflet
- Environmental awareness workshops

All ports	Weigh (Kg)	Litter type								
		Fishing gears (nets, ropes, wires, floats, etc.)			Plastic	Metal	Textile	Rubber	Wood-timber	Other
		Gillnets	Trawl nets	Traps-pots						
Total	≈ 34 ton	7.399	3620	4201	3720	4087	1814	1223	925	6890
Percentage %		20	12	14	11 %	12 %	5 %	4 %	3 %	20 %
		45%								



Description: Improving the quality of marine waters through the correct use-handling, management and recycling of Fishing nets, lights+batteries and EPS (management pilot actions).



- **Duration:** 2009 – 2011.
- **Funding** LIFE+.
- **Participants:** CETMAR, Ports of Galicia, University of A Coruña, LEITAT (Technological Centre), Port of Marin, Plastimar. (Regional scope)
- **Specific aims:**
 - To enhance the quality of sea waters and seabed through an appropriate management and recycling model for all waste generated by the fishing industry.
 - To promote the sustainable development of fishing and port operations by reducing their impact upon the environment.
 - To establish a management and recovery system for waste both technically and economically feasible.
 - To promote cooperation between all the stakeholders in this scenario.

Integral Management Model for recovering and recycling of F-nets, lights+batteries, and EPS.

- Technical study on potential “Fishing nets waste” generated by the fleets and in ports.
- Pilot action F-NETS: 900 ton managed (during the period of the project)
- Pilot action EPS-boxes: 174 ton managed
- Pilot action Batteries: 33.5 ton managed
- Technical evaluation of the recycling processes (chemical and physical).
- Strategic plan for the implementation of a integral system for the management of target wastes in the Galician port system.
- Dissemination – good practices for fishermen and port stakeholders.



Description: Initiative to implement passive litter collection (FfL) and specific campaigns directed to remove litter/retrieve fishing gears from coastal sites using fishing ships as operators (active); pilot action to evaluate “ghost fishing” by monitoring old gillnets placed in the seabed simulating abandoned gears.



- **Duration:** 2012 – 2014.
- **Funded by** Ministry in charge of Environment

➤ **Participants:** National Organization of Fishing Associations (ONAPE), CETMAR, Ports of Galicia, Port of Vigo, Port of Marin. Participation: 67 vessels, 235 fishermen, 4 ports (Atlantic and Mediterranean coast).

➤ **Specific aims:**

- To remove litter (with fishermen involvement) and gain data
- To raise awareness among fishermen and the general public
- To design and test a protocol to develop litter/gear removal with a specifically-designed gear to be performed on board of a fishing trawler (based on fishing gear models).
- To know the physical behavior and ecological impact of abandoned used fishing gear



Results/Outputs

-Passive Litter collection: **45.075 kg** => 13.642 kg (30%) fishing gear + 31.433 kg (70%) of “other”.

-Active removal of litter: **2.000 kg** (75% fishing gear)

Zona de recogida	Tipo residuo	Cantidad	Porcentaje
Vigo	Restos artes de pesca	5.795	29 %
	Basura diversa	14.130	71 %
	Subtotal	19.925	100 %
Marín	Restos artes de pesca	5.830	31 %
	Basura diversa	13.140	69 %
	Subtotal	18.970	100 %
Puertos Santa Pola y Torreveja	Restos artes de pesca	2.017	32%
	Basura diversa	4.363	68%
	Subtotal	6.380	100%
Total PESCAL	Restos artes de pesca	13.642	30%
	Basura diversa	31.433	70%
	Total	45.075	100%

COSTA ATLÁNTICA	ZONA	Prof. (rango)	Sustrato	Cantidad (kg/día)	Restos aparejos_artes	Plástico	Metal	Otro
Campaña 1 (4 Lances)	Silleiro	110-140	arena	400	347	8	10	35
	Chan de Touriñan	158-184	arena	485	440	5		40
Campaña 2 (4 Lances)	Nave de Fisterra	160-180	arena -fango					
Campaña 3 (4 Lances)	Nave de Fisterra	164-146	arena -fango	115	70	10		35
Campaña 4 (6 Lances)	Corrubedo-Sálvora	152-144	arena -fango	0	800	10	165	25
	Sálvora	128-170	arena -fango	0				
	Sálvora	110-150	arena -fango	1000				
Campaña Total				2000	1657	33	175	135



Ghost fishing Results/Outputs

- **The action:** 13 ghost gears / 36 “samples” (underwater monitoring) / 366 individuals caught belonging to 34 different species.

Observations

- The “ghost gear” is active at the 1st month. Most of the catches even in the first 15 days.
- The “ghost gear” is covered progressively (biofouling), the structure and shape starts to “roll”, “entangles” itself.
- Structure dismantles with time so the catches decrease.
- After month 3 (approx) the gear practically does not catch.
- At month 12, the “ghost gear” is almost collapsed



WASTE MANAGEMENT IN GALICIAN PORTS

The results and conclusions of these projects were used by Ports of Galicia authority to draw up the tender specifications for the waste management service, resulting in a improved management and a substantial reduction in the costs.

Marine Fishing Gear Management-Recycling

-“Ports of Galicia” Authority (122 ports), Port of Vigo, Port of Marin and Port of Coruña, which hold the majority of the Galician fishing fleet (ca. 4000 fishing vessels): they adopt the resulting 3RFISH model and lessons from the other projects

-ADLFG (Abandoned, deliberately discarded or lost fishing gear): existing binding norms to recover/inform of gear loss and to place them in port, but thee are still many aspects to improve:



Recycling is not fully achieved, so the path of “good management”, is essential to avoid becoming marine litter or being dumped in landfill.

The material conditions of the fishing nets recovered from the sea makes industrial recycling complex and still not cost-efficient.

Difficulties to assure an steady provision of materials and a feasible logistic.



NEW PROJECT ON MARINE LITTER

MARLIMPO

Description: Program for the protection and recover of the marine ecosystems and biodiversity through marine litter/fishing gears removal by the fishing sector in the framework of the European Maritime and Fisheries Fund [EMFF].

- **Duration:** Plan delivered in 2016. Pilot actions to be likely initiated at mid-2018 until December 2019
- **Funding Program:** Galician Department for Sea Affairs (EMFF)
- **Participants:** Five Fishing and shellfisheries guilds coordinated by CETMAR
- **Specific aims:**
 - To implement Fishing for litter “passive” actions with the involvement of fishermen
 - To Implement “Fishing for litter” active actions directed to remove litter/retrieve fishing gears from hot spots
 - To raise awareness among fishing sector and the general public.

CETMAR will coordinate this program and develop technical actions (technical protocols, collections systems, identification of hotspots, testing methodologies, monitoring, etc.).

NEW PROJECT ON MARINE LITTER



Tackling Marine Litter in the Atlantic Area

Objective: CleanAtlantic aims to protect biodiversity and ecosystem services in the Atlantic Area by improving capabilities to monitor, prevent and remove (macro) marine litter. The project will also contribute to raise awareness and change attitudes among stakeholders and to improve marine litter managing systems.

- **Duration:** 1st September 2017 – 31st August 2020
- **Funding Program:** Interreg Atlantic Area (2014-2020)
- **Priority:** Biodiversity, natural and cultural assets
- **Programme specific objective:** Improving the protection of biodiversity and ecosystems services
- **Total budget:** 3.249.241,04 euros





➤ **Participants:** Coordinated by CETMAR, 12 Partners, 5 Associated partners, 5 countries from the Atlantic Area



1. Centro Tecnológico del Mar - Fundación CETMAR.
2. Instituto Tecnológico para o Control do Medio Mariño de Galicia, INTECMAR.
3. Instituto Español de Oceanografía, IEO
4. Universidade de Santiago de Compostela, USC

Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente, MAPAMA.



5. Centre de documentation, de recherche et d'expérimentations sur les pollutions accidentelles des eaux, CEDRE
6. Institut Français de Recherche pour l'Exploitation de la Mer, IFREMER
7. Conférence des Régions Périphériques Maritimes d'Europe, CRPM

Ministère de la Transition écologique et solidaire



8. Marine Institute, MI

Department of Housing Planning and Local Government



9. Centre for Environment, Fisheries and Aquaculture Science, CEFAS

Department for Environment, Food & Rural Affairs, DEFRA



10. Direção-Geral de Recursos Naturais, Segurança e Serviços Marítimos, DGRM
11. Instituto Superior Técnico, IST
12. Direção Regional do Ordenamento do Território e Ambiente, DROTA
13. Agência Regional para o Desenvolvimento da Investigação, Tecnologia e Inovação, ARDITI - Oceanic Observatory of Madeira, OOM



OSPAR Commission

Specific Objectives

Characterisation: Gathering and assess data, knowledge and gaps, identify key stakeholders and associated initiatives and assess the economic impact of marine litter in coastal communities in the Atlantic Area.

- **Monitoring and data management:**
 - Develop interfaces and applications to collect & manage marine litter datasets and progress in their interoperability with International Databases.
 - Reinforce and support harmonized monitoring of marine litter in the framework of the MSFD (improvement /development new tools, impact on Marine Organisms...).
- **Environmental impact: Two case studies:**
 - Harm caused by cigarette filters & cotton buds.
 - Marine Litter as a vector for nuisance species.
- **Hotspots:** Develop local and regional maps of hotspots of floating litter. Maps will be based on models of circulation of floating masses of marine litter (hydrodynamic and wave models, a marine litter lagrangian transport tool, and the connectivity between sources and accumulation areas) and the identification of hotspots on coastal areas.
- **Reducing inputs:** Advance in the reduction of marine litter in collaboration with marine stakeholders (the sea professionals, ports and local authorities, among others) by reducing the inputs from sea and port based sources and improving capabilities to remove marine litter from coastal and marine environment.
- **Awareness raising:** Raise awareness and ensure that the project outputs are transferred to other regions, Member States (MS) and stakeholders beyond the partnership and the project lifetime.

Work Packages and Results

WP1: Coordination and management

WP 4: Marine Litter in the Atlantic Area

- Report and interactive map on marine litter data
- Knowledge gaps and recommendations
- Report and map of initiatives and stakeholders
- Impact studies and cost-benefit analysis
- Impact of incentives

WP 5: Monitoring and Data Management

- DB interfaces and apps to record data
- Development/Improvement of monitoring methods
- MSFD indicators & monitoring strategy for ingestion and entanglement
- Study of harm caused by cotton buds and butts
- Study on marine litter as NIS vector

WP6: Mapping and Modelling

- State-of-the art on ML models
- Open source Lagrangian model
- Maps of hotspots
- Maps of influence of river and land based sources
- Maps of influence of ocean based sources
- ML reduction scenarios

WP7: Tackling Marine Litter

- Best practices for waste management onboard and in ports
- Fishing for litter: protocols and case studies
- ALDFG removal: protocols and Case Studies
- Best practices for beach marine litter cleanup for local authorities

WP 8: Awareness Raising

- Awareness raising strategy
- Awareness raising packages adapted to local contexts: panels, infographics and video
- Awareness raising actions in the 5 countries
- Workshops, meetings, online dissemination

WP 2: Communication

Communication plan, dissemination materials (poster, leaflet, newsletter), web, social media, and project events

WP 3: Capitalisation

Capitalisation plan, meetings and interaction with OSPAR, MSFD EU Groups
Other projects: Interactive maps, Atlantic Strategy, participation in external events

More information: www.cleanatlantic.eu

Tackling Marine Litter in the Atlantic Area



PROJECT

CleanAtlantic aims to protect biodiversity and ecosystem services in the Atlantic Area by improving capabilities to monitor, prevent and remove marine litter

[Read More](#)



WORK PACKAGES

This section describes the main CleanAtlantic working streams, detailing their specific objectives, activities and expected results

[Read More](#)



CONSORTIUM

List of project partner institutions and associated partners, including a general description of each institution, staff involved and contact details

[Read More](#)



OCEANWISE.

Wise reduction of EPS marine litter in the North-East Atlantic Ocean

Description: it aims to develop a set of long term measures to reduce the impact of expanded polystyrene products (EPS) in the NEAO.

- **Duration:** 2017-2019
- **Funding Program:** Atlantic Area
- **Participants:** 12 Partners, 5 countries from the Atlantic Area
- **Specific aims:**
 - To identify sources of EPS products that reach the ocean and impact on marine ecosystems.
 - To design and test feasible management options (reducing, reusing, recycling, recovering) to achieve better environmental results in different industries.
 - To develop methodologies to evaluate new opportunities and constraints.



THANK
YOU



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