CleanAtlantic

Tackling marine litter in the Atlantic Area

Interreg Atlantic Area
European Regional Development Fund

EUROPEAN UNION

Clean Atlantic

CleanAtlantic is an Interreg Atlantic Area funded project that aims to protect biodiversity and ecosystem services in the Atlantic Area by improving capabilities to monitor, prevent and remove marine litter. The project also contributes to raise awareness and change attitudes among stakeholders and to improve marine litter managing systems.

CleanAtlantic run from January 2017 to June 2023. Here you can find a list of the project outputs.

To learn more about the project, please visit www.cleanatlantic.eu

Consortium

Project Partners

CETMAR · intecmar · USC · Ifremer · Marine Institute · Cedre · DGRM · Técnico Lisboa · Cefas · Secretaría Regional do Ambiente, Recursos Naturais e Alterações Climáticas · CPMR CRPM · Arditi · KIMO

Associated Partners

OSPAR Commission · An Roinn Tithíochta, Pleanála agus Rialtais Áitiúil, Department of Housing, Planning and Local Government · Ministère de la Transition écologique · Department for Environment Food & Rural Affairs

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MARINE LITTER ASSESSMENT

CleanAtlantic partners have gathered and assessed data, knowledge and gaps regarding marine litter in the Atlantic Area, and identified and mapped key stakeholders and associated initiatives.

MAPS/DATABASES

IEO (2021) Mariner Litter Viewer

Publications

Gago, J., Booth, A.M., Tiller, R., Maes, T., Larreta, J. (2020). Microplastics Pollution and Regulation. In: Rocha-Santos, T., Costa, M., Mouneyrac, C. (eds) Handbook of Microplastics in the Environment. Springer, Cham.

García-Alegre A, Román-Marcote E, Gago J, González-Nuevo G, Sacau M, Durán Muñoz P. (2020) Seabed litter distribution in the high seas of the Flemish Pass area (NW Atlantic). Scientia Marina, 84(1):93-101.

Amaia Mendoza, Juan Luis Osa, Oihane C. Basurko, Anna Rubio, María Santos, Jesús Gago, François Galgani, Cristina Peña-Rodriguez (2020) Microplastics in the Bay of Biscay: An overview, Marine Pollution Bulletin, Volume 153, 110996, ISSN 0025-326X.

REPORTS

CEDRE (2020) Overview of marine litter status in the Atlantic Area: beach litter

IEO (2020) Assessment of seabed litter data recorded by scientific observers onboard fishing vessels

IEO (2020) Assessment between trawl gears baka and GOV for the study of seabed litter

CEDRE (2021) Identification of the initiatives, measures and actions to reduce the presence of litter in the marine environment

CETMAR (2021) Pilot action to investigate the presence of seafloor litter in the Ria of Vigo by using a modified trawling fishing gear coupled with of a video recording system.

IFREMER (2021) Spatial and temporal variability in floating litter in North Sea / English Channel and Bay of Biscay / Celtic Sea 2015-2020.

IFREMER (2021) Development of sustainable tools (Database and software) for Marine Litter Data management

IEO (2021) Overview of the marine litter status in the Atlantic Area: beach, floating and seabed litter

IEO (2021) Overview of the marine litter status in the Atlantic Area: floating litter

MONITORING THE STATE OF MARINE LITTER

The objective of this working stream was to reinforce and support harmonized monitoring of marine litter in the framework of the MSFD. To do so, CleanAtlantic has built interfaces and applications to collect data, has reviewed and improved monitoring protocols and developed tools to monitor the distribution and abundance of marine litter.

CONFERENCES

Fronkova L. (2019) What Is the Potential of Satellite Data in Mapping Plastic Litter Hotspots? Atlantic from Space Workshop, Southampton, UK. 23-25 January 2019

REPORTS

ARDITI (2021) Monitoring the presence of marine litter in the marine environment

IEO (2021) Overview of the work carried out in CleanAtlantic on improving marine litter monitoring: WP 5.2.1. – Improving methods for marine litter monitoring in the Atlantic Area: seabed, floating and coastal litter; WP 5.2.2. – New tools for the monitoring of marine litter

IEO (2021) Optimized protocol and template for monitoring floating macrolitter by scientific observers onboard research vessels

IEO (2021) Monitoring floating microlitter in offshore waters by manta-trawl (collaboration with iFADO project)

IFREMER (2021) Spatial and temporal variability in floating litter in North Sea / English Channel and Bay of Biscay / Celtic Sea 2015-2020

IFREMER (2021) Development of sustainable tools (Database and software) for Marine Litter Data management

APPS

ARDITI (2021) Floating Litter Reporter: facilitating litter monitoring for maritime stakeholders

CEFAS (2021) Seafloor litter App for CEFAS Scientist

INTECMAR (2020) Marine litter LOC-app

PUBLICATIONS

Olga Carretero, Jesús Gago, Ana Virginia Filgueiras, Lucía Viñas (2022) The seasonal cycle of micro and meso-plastics in surface waters in a coastal environment (Ría de Vigo, NW Spain), Science of The Total Environment, Volume 803.

INTECMAR (2021) Analysis of strategies for the monitoring and evaluation of accumulations of marine litter on the coast

IEO (2020) Assessment of seabed litter data recorded by scientific observers onboard fishing vessels

IEO (2020) Assessment between trawl gears baka and GOV for the study of seabed litter

IFREMER (2020) Strategy and constraints to support monitoring of Marine Litter Harm: Towards a protocol for the observation of marine organisms entangled/strangled/covered by marine litter during ROV operations

CEFAS (2019) Monitoring the presence of marine litter in the marine environment: potential of remote sensing

MODELLING MARINE LITTER

Through this working stream partners produced regional maps of marine litter and hotspots of floating litter. These maps were based on mapping the circulation of floating masses of marine litter and the role of prevailing currents and winds. Hotspots and accumulation of marine litter in coastal areas were also identified.

REPORTS

INTECMAR (2021) Distribution of marine litter along the Ría de Arousa coastline using modelling and mapping

INTECMAR (2020) Guide for shoreline segmentation in buffers using QGIS

SOFTWARE

IST & USC (2021) MOHID Lagrangian Tool: Software necessary to include marine litter processes in an open source Lagrangian transport tool

PUBLICATIONS

de Pablo, H., Sobrinho, J., Garaboa-Paz, D., Fonteles, C., Neves, R., & Gaspar, M. B. (2022). The Influence of the River Discharge on Residence Time, Exposure Time and Integrated Water Fractions for the Tagus Estuary (Portugal). Frontiers in Marine Science.

Cloux, S., Allen-Perkins, S., de Pablo, H., Garaboa-Paz, D., Montero, P., Pérez Muñuzuri, V. (2022) Validation of a Lagrangian model for large-scale macroplastic tracer transport using mussel-peg in NW Spain (Ría de Arousa), Science of The Total Environment, 822: 153338.

Cardoso C., Caldeira R.M.A. (2021) Modelling the Exposure of the Macaronesia Islands (NE Atlantic) to Marine Plastic Pollution, Frontiers in Marine Science, 8.

Pereiro, D., Souto, C., Gago, J. (2019) Dynamics of floating marine debris in the northern Iberian waters: A model approach, Journal of Sea Research, 144: 57-66.

CONFERENCES

Pereiro Rodríguez, D., Souto Torres, C., Gago Piñeiro, J. (2018) Dynamics of floating marine debris in the northern Iberian waters: A model approach. MICRO 2018, Fate and Impact of Microplastics: Knowledge, Actions and Solutions. Lanzarote, 19-23 November 2018.

Cloux González S., Garaboa Paz A., Perez Muñuzuri V. (2019) Marine litter modelling and hotspots detection in the Atlantic Area. Atlantic from Space Workshop, Southampton, UK. 23-25 January 2019.

RISKS AND IMPACTS

CleanAtlantic worked on assessing risks and impacts of marine litter in marine biota, and in the role of marine litter as a non-indigenous species vector. The consortium also studied the economic impact of this threat on tourism, fisheries and aquaculture.

CONFERENCES AND SIMPOSIUMS

Canning-Clode, J., Gestoso, I., Ramalhosa, P., Monteiro, J., Lima, M. J., Caldeira, R. (2018) Hitch-hikers on marine debris: understanding new arrivals in an offshore island. X Conference of Marine Bioinvasions, Puerto Madryn, Patagonia (Argentina), 16-18 Octubre 2018.

Gago, J., Portela, S., Filgueiras, A.V., Macías, D., Salinas, M.P. (2018) Ingestion of plastic debris (Macro and micro) by longnose lancetfish (Alepisaurus ferox) in the North Atlantic Ocean. MICRO 2018, Fate and Impact of Microplastics: Knowledge, Actions and Solutions. Lanzarote, 19-23 November 2018.

REPORTS

ARDITI (2021) Marine Litter and offshore Aquaculture: an interview survey-based case study in Madeira

ARDITI (2021) Evaluation of marine litter as transport facilitator for nuisance biota

CEFAS (2021) Review of economic sectors impacted by marine litter in the Atlantic Area: Cost-benefit analysis; General overview of economic impacts and policy recommendations; Guidelines.

CEFAS (2020) Towards a protocol for the observation of microplastics in Biota

IFREMER (2020) Strategy and constraints to support monitoring of Marine Litter Harm: Towards a protocol for the observation of marine organisms entangled/strangled/covered by marine litter during ROV operations

CEFAS (2019) Review of Economic Sectors Impacted by Marine Litter in the Atlantic Area

PUBLICATIONS

Grilli, G., Andrews, B., Ferrini, S., Luisetti, T. (2022) Could a mix of short- and long-term policies be the solution to tackle marine litter? Insights from a choice experiment in England and Ireland, Ecological Economics, 201: 107563.

Soliño, L., Vidal-Liñán, L., Pérez, P., García-Barcelona, S., Baldó, F., Gago, J. (2022) Microplastic occurrence in deep-sea fish species Alepocephalus bairdii and Coryphaenoides rupestris from the Porcupine Bank (North Atlantic).Science of The Total Environment, 834.

Santos-Echeandía, J., Zéler, A., Gago, J., Lacroix, C. (2021) The role of cigarette butts as vectors of metals in the marine environment: Could it cause bioaccumulation in oysters?, Journal of Hazardous Materials, 416: 125816.

Filgueiras, A.V., Preciado, I., Cartón, A., Gago, J. (2020) Microplastic ingestion by pelagic and benthic fish and diet composition: A case study in the NW Iberian shelf, Marine Pollution Bulletin, 160: 111623.

Gago, J., Portela, S., Filgueiras, A.V., Pauly Salinas, M., Macías, D. (2020) Ingestion of plastic debris (macro and micro) by longnose lancetfish (Alepisaurus ferox) in the North Atlantic Ocean, Regional Studies in Marine Science, 33: 100977.

Canning-Clode, J., Sepúlveda, P., Almeida, S., Monteiro, J. (2020) Will COVID-19 Containment and Treatment Measures Drive Shifts in Marine Litter Pollution?. Frontiers in Marine Science, 7.

Maes, T., van Diemen de Jel, J., Vethaak A., D., Desender, M., Bendall, V. A., van Velzen, M., Leslie, H. A. (2020) You Are What You Eat, Microplastics in Porbeagle Sharks From the North East Atlantic: Method Development and Analysis in Spiral Valve Content and Tissue. Frontiers in Marine Science, 7.

WASTE MANAGEMENT, CLEANING AND REMOVAL

CleanAtlantic has been working in advancing in the reduction of the presence of marine litter in the Atlantic Area in collaboration with maritime stakeholders (sea professionals, ports and local authorities).

REPORTS

CEDRE (2022) Operational guide for the clean-up of marine litter on the coastline.

CEDRE (2021) Identification of litter accumulation sites and clean-up techniques on the French coastline.

CETMAR (2021) Applicability of a modular basic ROV to detect marine litter in Galician shores: constraints and improvements.

CETMAR (2021) Pilot action aimed to implement a fishing for litter scheme with the engagement of artisanal fleets and shellfish gatherers operating in the Ría de Arousa (Galicia).

CETMAR (2021) Pilot action to investigate the presence of seafloor litter in the Ria of Vigo by using a modified trawling fishing gear coupled with of a video recording system.

CETMAR (2021) “Fishing For Litter”: A selection of resources based on the CleanAtlantic Knowledge Tool.

CETMAR (2021) “Abandoned, Lost or otherwise Discarded Fishing Gear”: A selection of resources taken from the CleanAtlantic Knowledge Tool.

CETMAR (2021) “Waste prevention and management from fishing, aquaculture and ports”: A selection of resources based on the CleanAtlantic Knowledge Tool.

DRAAC (2021) Caracterização dos fluxos de materiais de artes de pesca na Região Autónoma da Madeira (Pilot study on fishing-gear life cycle in Madeira).

CEDRE (2020) Overview of marine litter status in the Atlantic Area: beach litter

CEFAS (2020) Reducing ALDFG.

EDUCATIONAL MATERIALS

CEFAS (2021) Education Pack.

IEO-CSIC (2021) Recurso Educativo. Propuestas para dar a conocer el problema de la basura marina. Nivel I

IEO-CSIC (2021) Recurso Educativo. Propuestas para dar a conocer el problema de la basura marina. Nivel II

IEO-CSIC (2021) Protocolo para la categorización de basura marina en playas y guía fotográfica

CETMAR (2019) CleanAtlantic Factsheets: Top ten items in beach litter

TRAINING AND AWARENESS RAISING

One of the objectives of CleanAtlantic was to increase awareness on local and regional stakeholders about the sources, impacts and solutions for marine litter and on how they can actively contribute to prevent, monitor and reduce it.

APPS

IEO (2021) Twilitter.

PUBLICATIONS

Otero, P., Gago, J., Quintas, P. (2021) Twitter data analysis to assess the interest of citizens on the impact of marine plastic pollution, Marine Pollution Bulletin, 170: 112620.

EDUCATIONAL MATERIALS

CEFAS (2021) Education Pack.

CEDRE (2021) Cluedo Butt.

IEO (2021) Recurso Educativo. Propuestas para dar a conocer el problema de la basura marina. Nivel I.

IEO (2021) Recurso Educativo. Propuestas para dar a conocer el problema de la basura marina. Nivel II

IFREMER (2021) Dossier pédagogique

IEO (2021) Protocolo para la categorización de basura marina en playas y guía fotográfica

CETMAR (2019) CleanAtlantic Factsheets: Top ten items in beach litter.

Marine Institute (2019) Marine Litter Interactive Educational Stand.

PROTOCOLS AND GUIDELINES

CleanAtlantic has developed protocols for monitoring floating marine litter and for detecting microplastics in marine biota. The partnership also worked on the definition of guidelines for the clean-up of marine litter in the coastline.

REPORTS

CEDRE (2022) Operational guide for the clean-up of marine litter on the coastline.

IEO (2021) Optimized protocol and template for monitoring floating macrolitter by scientific observers onboard research vessels.

CEFAS (2020) Towards a protocol for the observation of microplastics in Biota.

TOOLS

CleanAtlantic has developed databases, software, map viewers and a number of Apps for mapping, monitoring, analysing and modelling marine litter. Other tools developed by the project have allowed mapping existing knowledge related with marine litter and initiatives and to assess the interest of citizens in marine litter.

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Otero, P., Gago, J., Quintas, P. (2021) Twitter data analysis to assess the interest of citizens on the impact of marine plastic pollution, Marine Pollution Bulletin, 170: 112620.

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IFREMER (2021) Development of sustainable tools (Database and software) for Marine Litter Data management.

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CEFAS (2021) Seafloor litter App for CEFAS Scientist.

IEO (2021) Twilitter.

INTECMAR (2020) Marine litter LOC-app.

MAPS/DATABASES

CEDRE (2021) CleanAtlantic Initiatives Database

CETMAR (2021) CleanAtlantic Knowledge Tool

IEO (2021) Mariner Litter Viewer