Plastic Busters MPAs Info Day

MARLICE 2019

International Forum on Marine Litter and Circular Economy

THE PLASTIC BUSTERS MPAs IN A NUTSHELL AND FIRST OUTCOMES

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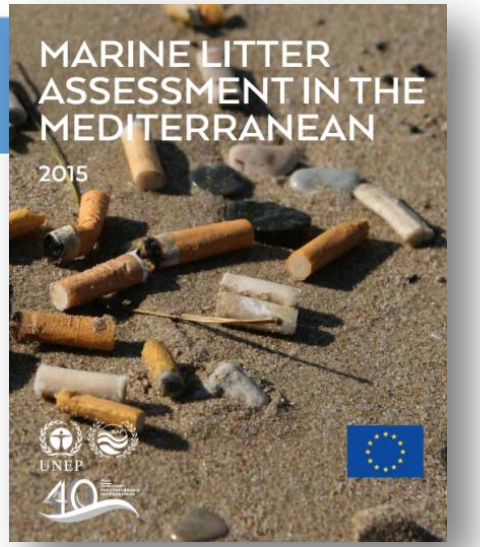
MARINE LITTER IN THE MEDITERRANEAN SEA



- An highly urbanized and developped coastline
- A closed basin
- 30% of the maritime traffic
- A touristic destination
- Large rivers (Rhône, Nile, Po)

THE MOST AFFECTED AREA WORLWIDE FOR MARINE LITTER

- Some of the largest amounts of Municipal Solid Waste (MSW) are generated annually per person in the Mediterranean Sea (208 – 760 kg/Year)
- An estimated 731 tons of plastic is littered every day, with important differences depending on country
- Cigarette butts may reach 40% of stranded litter
- the highest densities of marine litter stranded on the sea floor, up to 100,000 items / km² (French Coast) are found in the Mediterranean Sea
- the highest densities of floating microplastics , up to 4680,000 items / km² (Southern Adriatic) are found in the Mediterranean Sea

UNEP
UNITED NATIONS
ENVIRONMENT PROGRAMME
MEDITERRANEAN ACTION PLAN

Marine litter impact: what happens in the Mediterranean sea?

7 plastic items in the stomach

145 plastic items in the stomach

5 Kg *of plastic in the stomach*

More than 91 marine vertebrate species affected by marine litter in the Mediterranean basin


Environmental Pollution

Bioindicators for monitoring marine litter ingestion and its impacts on Mediterranean biodiversity

MEDITERRANEAN SEA: ONE OF THE MOST AFFECTED AREAS FOR MARINE LITTER

Impact on Biodiversity?

Identification of Bioindicators?

Identification of Hot Spots Areas?

Impact on MPAs?

Impact on Fisheries?

Impact on Human Health?

Identification of reduction and mitigation measures

Why Plastic Busters ?

Plastic Busters on basin scale

A crucial aspect of the marine litter issue, underlined by the **Barcelona Convention within the Regional Plan for Marine Litter** (Istanbul 2013) is that: "Marine pollution knows no border, pollution in one country affects all other 21 countries, hence there is a need for a regional approach".

Plastic Busters is the first project at basin scale that binds the Southern and Northern Mediterranean countries on the issue of Marine Litter under the umbrella of UNEP/MAP and UfM, with 10 countries already involved in the project and 12 countries endorsing the project.

Diagnosis of the problem to identified specific solutions

- Impact on Biodiversity?
- Impact on Fisheries?
- Identification of Hot spot areas?
- Impact on Human?

PLASTIC BUSTERS

Project coordinator
Maria Cristina Fossi
Biomarker Laboratory, University of Siena, Italy

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SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK Mediterranean

United Nations Environment Programme
Coordinating Unit for the Mediterranean Action Plan
UNEP

Ref: IM/es/lc

Athens, 18 November 2016

Subject: Accreditation as UNEP/MAP Partner of the Sustainable Development Solutions Network (SDSN) Mediterranean, hosted by the University of Siena (UNISI)

SDSN-MED

Flagship project

SUSTAINABLE DEVELOPMENT GOAL 14

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK Mediterranean

ONU

2013

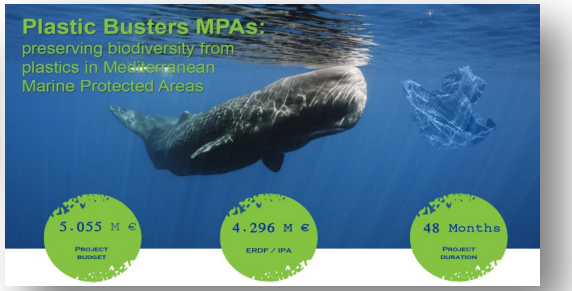
UfM Labelling

Union for the Mediterranean
Union pour la Méditerranée
الإتحاد من أجل المتوسط

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

2016

MED-Interreg



2018

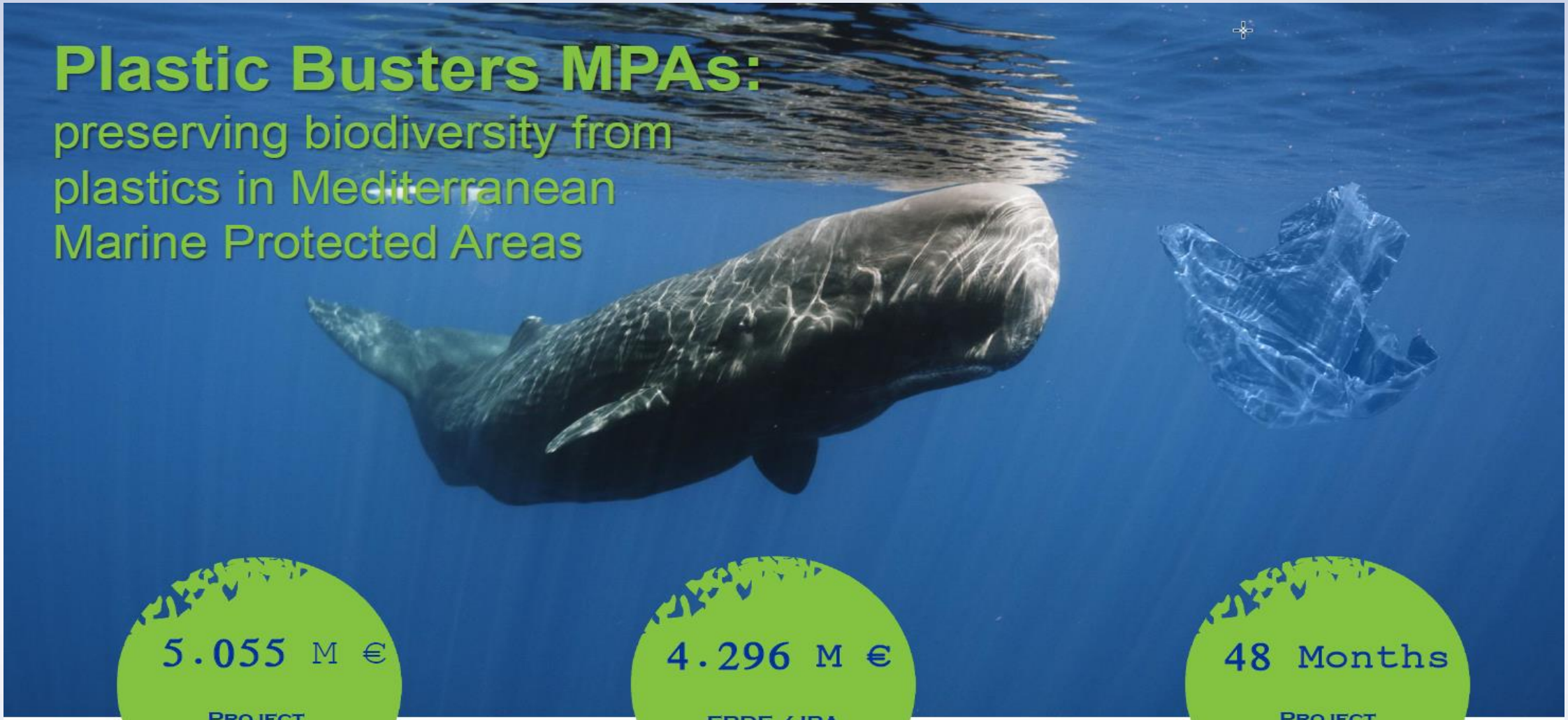
ENI -CBC

ENI CBCMED
Cooperating across borders in the Mediterranean

2019

Plastic Busters MPAs:

preserving biodiversity from plastics in Mediterranean Marine Protected Areas



5.055 M €
PROJECT BUDGET

4.296 M €
ERDF / IPA

48 Months
PROJECT DURATION

Interreg Mediterranean

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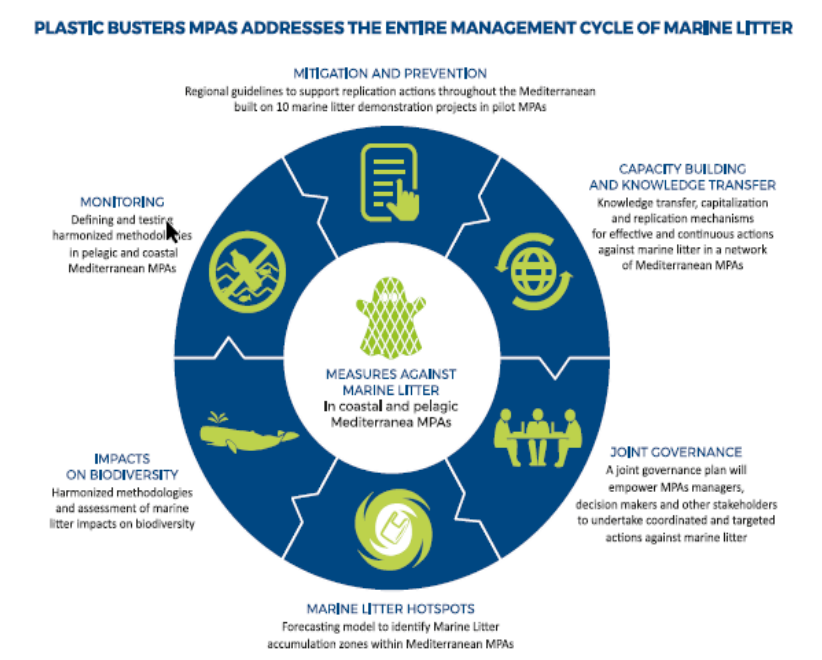
Plastic Busters MPAs: general objectives



PlasticBusters MPAs, is a 4-year-long project Interreg Mediterranean funded project aiming to contribute to **maintaining biodiversity and preserving natural ecosystems** in pelagic and coastal **marine protected areas** (MPAs), by defining and implementing a **harmonized approach against marine litter**.

The project entails actions that address the **whole management cycle of marine litter**, from **monitoring and assessment** to **prevention and mitigation**, as well as actions to **strengthen networking** between and among pelagic and coastal MPAs.

Plastic Busters MPAs: main objectives

The main objectives will be achieved through a multidisciplinary and integrated approach (developed in PLASTIC BUSTERS UfM project) that focuses on:

A. **defining harmonized methodologies** at regional and national level for **ML monitoring**
B. **identifying ML hotspots such as 'gyres' and 'fronts' in the MPAs**, where ML accumulates and **marine species live and feed**
C. **assessing the impact of ML on biodiversity** in MPAs
D. **implementing ML prevention and mitigation measures**
E. **setting up a joint governance plan for managing ML** in pelagic and coastal Med MPAs.

- The project will also **capitalize on results and outputs delivered by relevant initiatives and projects.**
- The project will support the **implementation**of the **MSFD** and the **Barcelona Convention Regional Plan on Marine Litter** Management in the Med.

Plastic Busters MPAs Consortium

Partner number	Name of the partner	Abbreviation of the organisation
LP1 ISPRA	Italian National Institute for Environmental Protection and Research	ISPRA
PP1	University of Siena - Department of Physical Sciences, Earth And Environment	UNISI
PP2	Corsican Agency For Environment - OEC	OEC
PP3	Regional Government of the Balearic Islands. Department of Environment, Agriculture and Fisheries	CAIB
PP4	Management Agency of Zakynthos National Marine Park	Ε.Θ.Π.Ζ.
PP5	Tuscan Archipelago National Park	PNAT
PP6	Mediterranean Information Office for Environment, Culture and Sustainable Development	MIO-ECSDE
PP7	Spanish Oceanographic Institute - Balearic Centre of Oceanography	IEO
PP8	Hellenic Centre for Marine Research- Institute of Oceanography	HCMR
PP9	French Research Institute for Explotation of the Sea – Département Océanographie et Dynamique des Ecosystèmes–Laboratoire Environnement Ressources des régions Paca et Corse	IFREMER
PP10	Catalan Waste Agency – Regional Activity Center for Sustainable Consumption and Production	ARC-SCP/RAC
PP11	Hellenic Ministry of Environment and Energy, Special Secretariat for Water	EGU
PP12	Albanian Ministry of Environment - Directorate of Biodiversity and Protected Areas	MM
PP13	Ministry of Environmental and Nature Protection of Croatia	
PP14	University of Split, Faculty of Civil Engineering, Architecture and Geodesy	UNIST-FGAG

Dr. Teresa Romeo, as project coordinator (Lead Partner - ISPRA) and **Prof. M. Cristina Fossi** UNISI (PP1), as scientific coordinator, will work for four years alongside 13 other partners, coordinating the activities of the **Steering Committee** for the implementation of the entire project.

Interreg Mediterranean PLASTIC BUSTERS MPAs

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Associated Partners and Advisory Board

1. Italian Ministry of the Environment, Land and Sea, Directorate-General for Nature and Sea Protection
2. UN Environment/Mediterranean Action Plan Barcelona Convention Secretariat
3. Tuscany Region – Direction Environment and Energy – Section Protection of nature and the sea
4. Spanish Ministry of Agriculture and Fisheries, Food and Environment
5. Alma Mater Studiorum – University of Bologna
6. Tethys Research Institute
7. ISO TECH LIMITED
8. Federazione Internazionale per lo sviluppo sostenibile - FISPMED ONLUS
9. NOVAMONT
10. Institute for Water of the Republic of Slovenia
11. WWF ITALY ONLUS
12. Stazione Zoologica Anton Dohrn
13. Priority Actions Programme/Regional Activity Centre
14. The Nature Conservancy
15. Blue World Institute of Marine Research and Conservation
16. IUCN Centre for Mediterranean Cooperation
17. Legambiente Onlus

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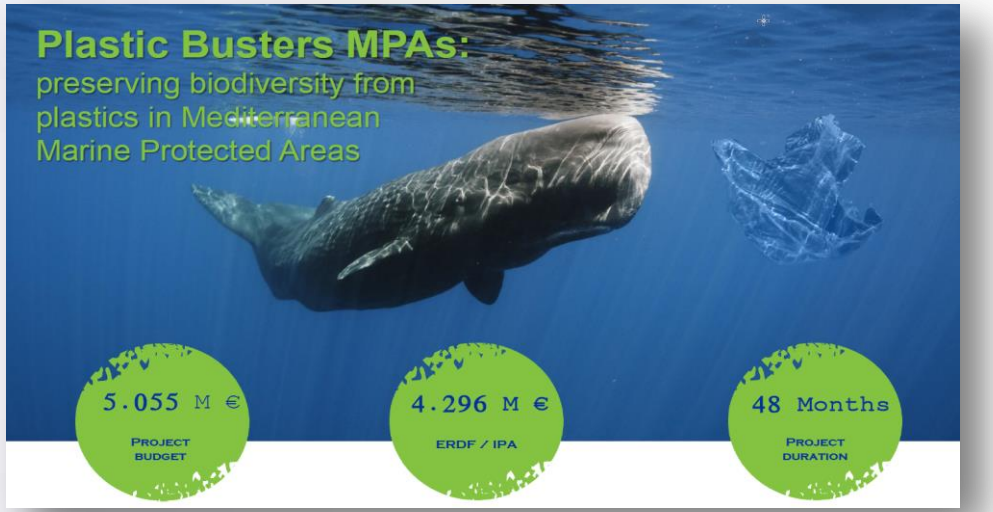
PLASTIC BUSTERS MPAs



- **WP1** • PROJECT MANAGEMENT
- **WP2** • PROJECT COMMUNICATION
- **WP3** • STUDYING
- **WP4** • TESTING
- **WP5** • TRANSFERRING
- **WP6** • CAPITALISING

Plastic Busters MPAs: selected MPAs

Plastic Busters MPAs
Selected MPAs

WP4 -Testing

- Pelagos Sanctuary (IT,FR,MC)
- Tuscan Archipelago (IT)
- Zakynthos National Marine Park (GR)
- Parque Nacional Del Archipiélago De Cabrera (SP)

WP5-Transferring

- Reserve Naturelle des Boched de Bonifacio (FR)
- Parc National de Port-Cros (FR)
- Pelagie Islands MPA (IT)
- Res-Lošinj MPA (HR)
- Sazan-Karaburun (AL)

Plastic Busters MPAs WP4 – Testing

AIM: Diagnosis

The main objectives of this WP, led by ISPRA and UNISI, are to:

- ✓ **test the common monitoring approaches for** ML (including macro-micro-plastics and **impact on biota**) defined in WP3;
- ✓ **validate the ML forecasting model** developed in WP3;
- ✓ **pilot measures to prevent, reduce and remove marine litter in selected sites as defined in WP3**.
- ✓ **ML surveys will be carried in pelagic and coastal MPAs** (e.g. **Pelagos Sanctuary, Tuscan Archipelago, Zakynthos National Marine Park, Parque Nacional Del Archipiélago De Cabrera**) in close collaboration between the partner MPA managers and the partners with strong competences on ML monitoring (ISPRA, UNISI, IFREMER, IEO, HCMR, MIO-ECSDE).
- ✓ **Local and national related institutions will be also involved** (OEC, Hellenic Ministry of Environment, Italian and Spanish Ministry of Environment, UNEP/MAP, etc

Plastic Busters MPAs WP4 - Testing

WP4 -Testing

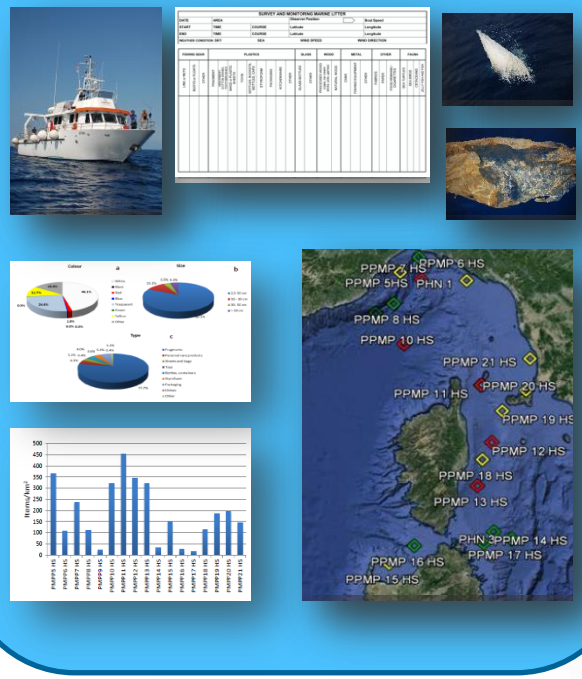
- Pelagos Sanctuary (IT,FR,MC)
- Tuscan Archipelago (IT)
- Zakynthos National Marine Park (GR)
- Parque Nacional Del Archipiélago De Cabrera (SP)

Plastic Busters MPAs WP4: *Diagnosis*

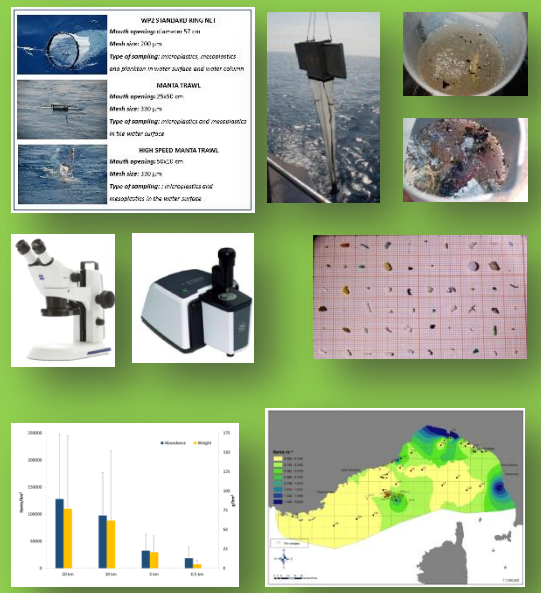
MARINE LITTER MONITORING

4.1 – Coordinating WP 4
4.2 Piloting harmonized ML monitoring in Med MPAs to assess ML (macro- and micro-plastics) in the coastal and pelagic environment
4.3 Piloting harmonized ML monitoring approaches in Med MPAs and hotspots to establish the impacts on biota, including endangered species and fishery resources
4.4 Testing the ML forecasting model
4.5 Preparation of the demo projects
4.6 Piloting ML prevention and mitigation measures

Macroplastics



Microplastics



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Plastic Busters MPAs WP4: Activities

4.1 – Coordinating WP 4
4.2 Piloting harmonized ML monitoring in Med MPAs to assess ML (macro- and micro-plastics) in the coastal and pelagic environment
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MARINE LITTER IMPACTS ON BIOTA

i) Plastic detection

Analysis of the ingested marine litter/microplastics:

- Occurrence (%)
- Abundance (n°)
- Weight (g)
- Polymer analysis

ii) Plastic tracers detection

Analysis of plastic additives:

- Phthalates
- PBDEs
- Bisphenol A

- Analysis of PBT compounds:

- PCBs
- DDTs
- PAHs
- Mercury

iii) Biomarkers detection

Effects at molecular level:

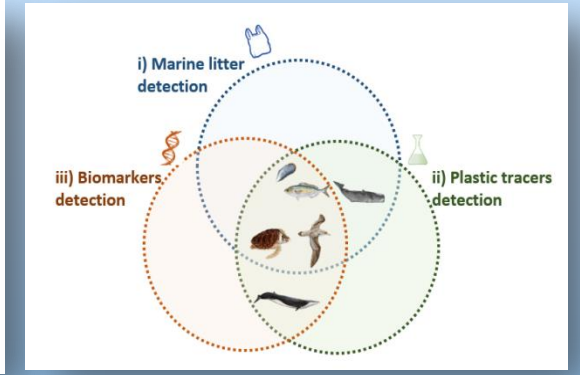
- Measure of DNA damage
- Alterations of gene expression
- Alteration of proteins

- Effects at cellular level:

- Alteration of cell functions

- Effects at tissue level:

- Histological and histopathological alterations



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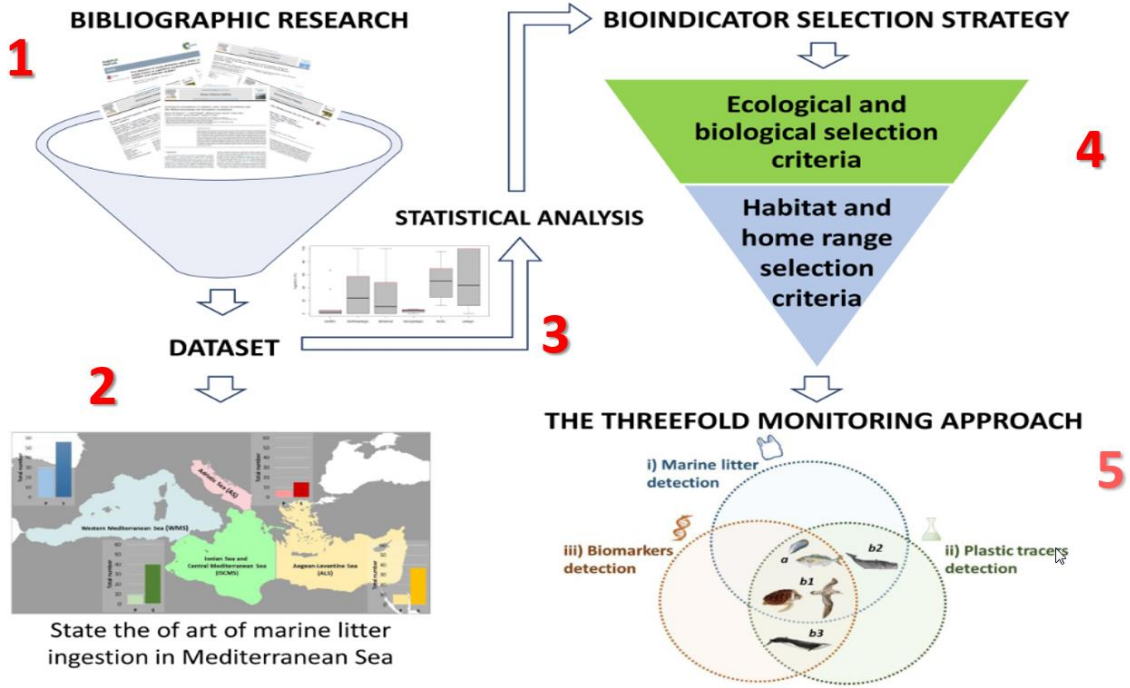
Plastic Busters MPAs WP4: Activities

Identification of marine litter bioindicators

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Bioindicators for monitoring marine litter ingestion and its impacts on Mediterranean biodiversity*

Maria Cristina Fossi [a, b], Cristina Pedà [c], Montserrat Compa [d], Catherine Tsangaris [e], Carme Alomar [d], Francoise Claro [f], Christos Ioakeimidis [g], Francois Galgani [h], Tatjana Hema [g], Salud Deudero [d], Teresa Romeo [c], Pietro Battaglia [c], Franco Andaloro [c], Ilaria Caliani [a, b], Silvia Casini [a, b], Cristina Panti [a, b, *], Matteo Baini [a, b]

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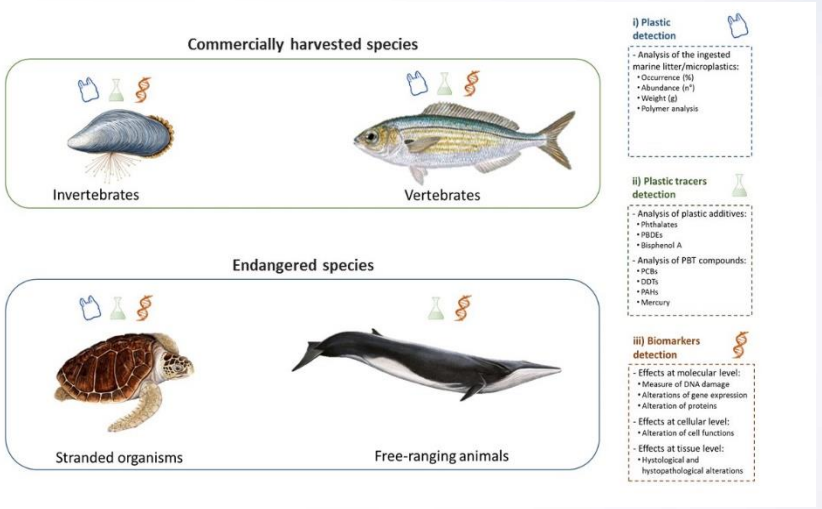
Plastic Busters MPAs WP4: Biota Monitoring

Target species – Secondary species

	SEA SURFACE	COASTAL WATERS	OPEN WATERS	SEAFLOOR	COAST LINE AND BEACH SEDIMENT
BASIN SCALE (Mediterranean Sea)	*Calonectris diomedea* *Puffinus yelkouan*	*Calonectris diomedea* *Puffinus yelkouan*	***Caretta caretta*** *Balaenoptera physalus* *Physeter macrocephalus* *Xiphias gladius* *Thunnus thynnus* *Chelonia mydas* *Dermocheyis coriacea*		
MEDIUM-SCALE (Mediterranean UN Environment/MAP sub-regions)			***Caretta caretta*** *Thunnus alalunga* *Coryphaena hippurus* *Euthynnus alletteratus* *Stenella striata* *Ziphius cavirostris*		
SMALL-SCALE (FAO GSA)	*Isopods* *Jellyfish (Pelagia)*	***Boops boops*** *Trachinotus ovatus*	***Engraulis encrasicolus*** ***Sardina pilchardus*** *Trachurus sp.* *Sardinella aurita* Myctophids	***Mullus surmuletus*** ***Diplodus sp.*** *Pagellus sp.* *Spondyliosoma* *Lithognathus mormyrus* *Galeus melastomus* *Merluccius merluccius*	
LOCAL SCALE				***Paracentrotus lividus*** Holothurians	***Decapods (Pachygrapsus marmoratus)*** *Mytilus galloprovincialis (cages?)*



Plastic Busters MPAs WP4: Biota Monitoring

i) Plastic detection

- Analysis of the ingested marine litter/microplastics:
  - Occurrence (%)
  - Abundance (n°)
  - Weight (g)
  - Polymer analysis

ii) Plastic tracers detection

- Analysis of plastic additives:
  - Phthalates
  - PBDEs
  - Bisphenol A
- Analysis of PBT compounds:
  - PCBs
  - DDTs
  - PAHs
  - Mercury

iii) Biomarkers detection

- Effects at molecular level:
  - Measure of DNA damage
  - Alterations of gene expression
  - Alteration of proteins
- Effects at cellular level:
  - Alteration of cell functions
- Effects at tissue level:
  - Hystological and hystopathological alterations

Plastic Busters MPAs WP4: Activities

MARINE LITTER DISTRIBUTION MODEL

4.1 – Coordinating WP 4
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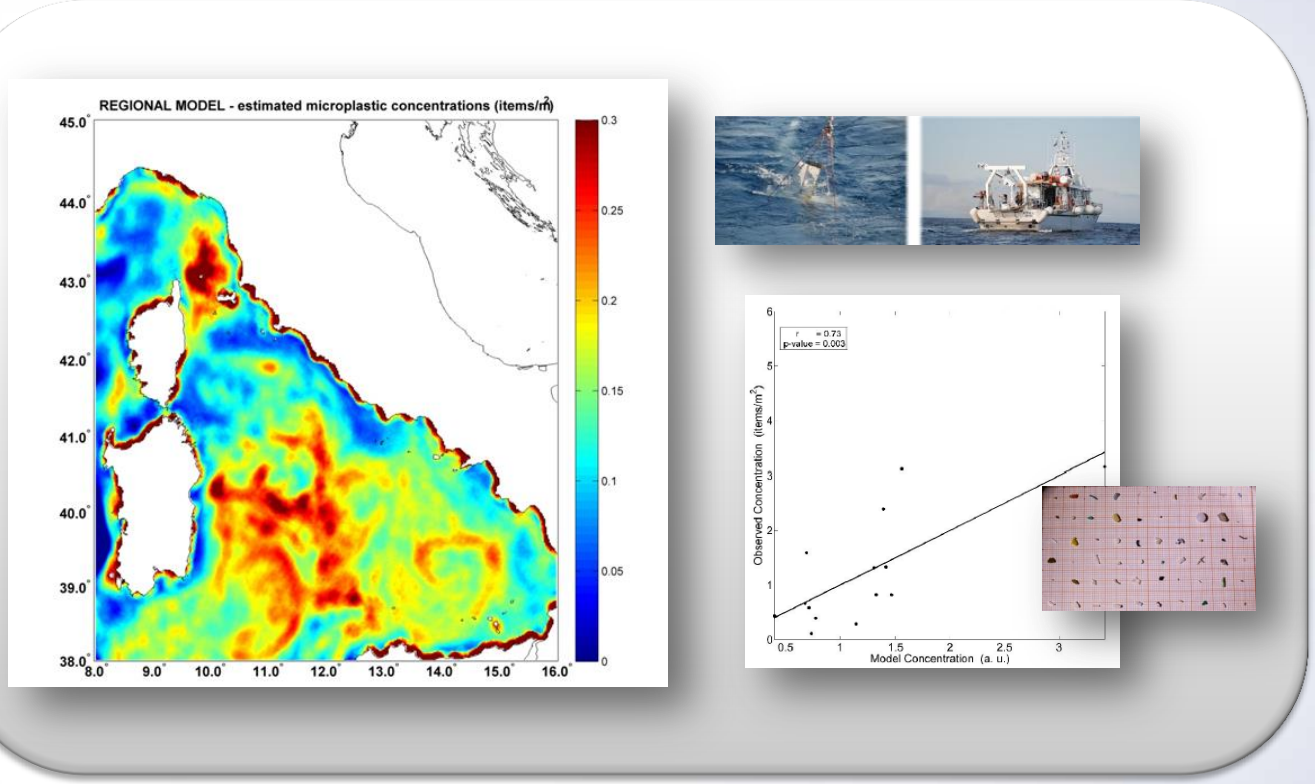

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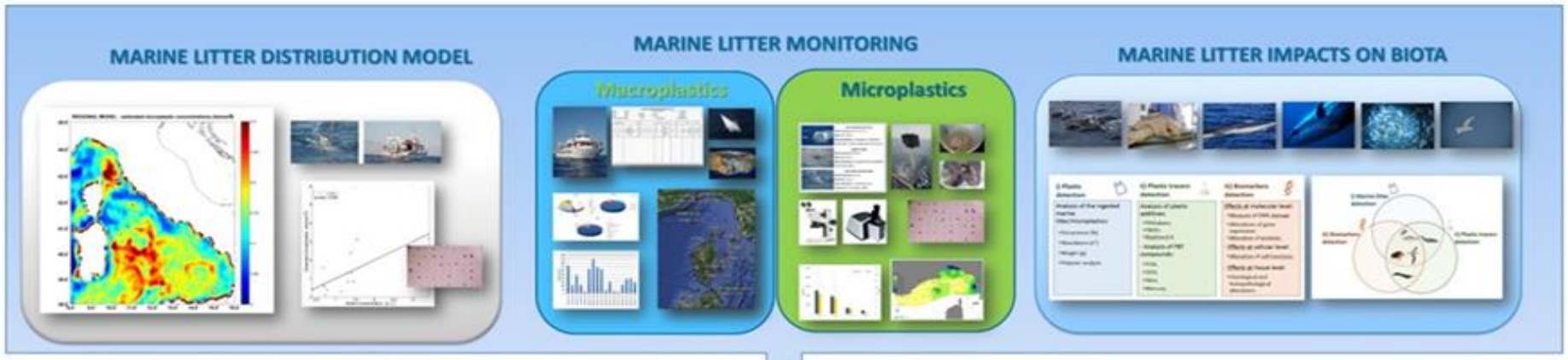
Plastic Busters MPAs WP4: Activities



Plastic Busters MPAs WP4: *Mitigation*

4.1 – Coordinating WP 4
4.2 Piloting harmonized ML monitoring in Med MPAs to assess ML (macro- and micro-plastics) in the coastal and pelagic environment
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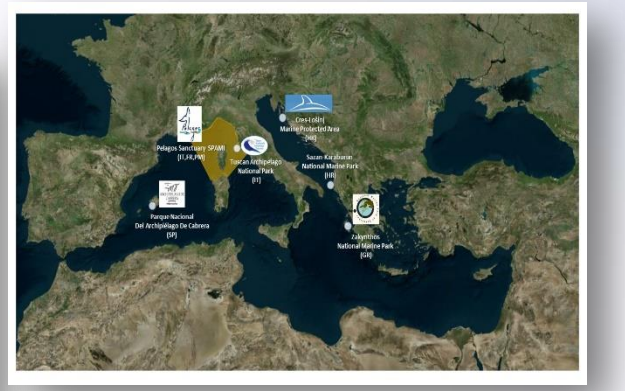


Plastic Busters MPAs WP4 – Testing

AIM: Mitigation

- ✓ **WP4 will apply the Plastic Busters multidisciplinary approach** to demonstrate how the presence, sources and effects of marine litter in MPAs can be detected and how their **impacts on Med biodiversity** (including **endangered species**) can be mitigated with tailored-made measures.
- ✓ **10 demo projects** (selected in WP3) will be implemented by several project partners in selected MPAs of **6 project countries** to mitigate the impact of ML in the project areas and the experience gained will be capitalized upon and will be further applied in several other Med MPAs in the capitalization phase (WP6).
- ✓ Indicatively, some proposed measures to be showcased include **fishing for litter, targeted removal of ghost nets, setting up deposit schemes for beverage packaging, single-use plastic bags reduction, etc.**

Plastic Busters project and circular economy approach:

Which are the most effective actions to put on place for removing/reducing marine litter from the Med and what about their impacts on jobs and economical growth in the Mediterranean sea basin?

It is essential to develop at **basin scale** specific **prevention and mitigation measures/actions** (outlined in the UNEP/MAP Regional Plan on Marine litter Management in the Mediterranean under article 9 and 10) aiming to reduce the input and impacts of marine litter in the Mediterranean coastal and marine environment:

a) Single - use plastic reduction in MPAs;

b) Deposit refund systems for beverage packaging;

c) Fishing for litter, targeted recovery of ghost nets and derelict fishing gear management;

d) Circular economy approach – turning plastic marine litter into products;

e) The no-special-fee system to reduce dumping at sea;

f) Bioremediation and biodegradation process on plastics;

g) Sustainable aquaculture.

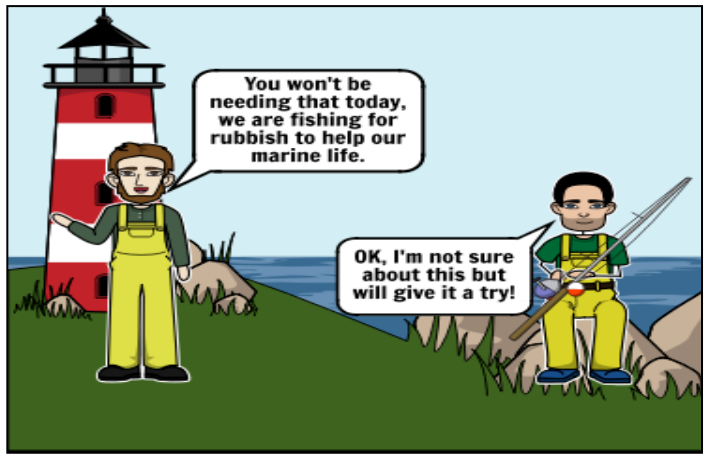
BEST PRACTICE
Fishing for litter activity

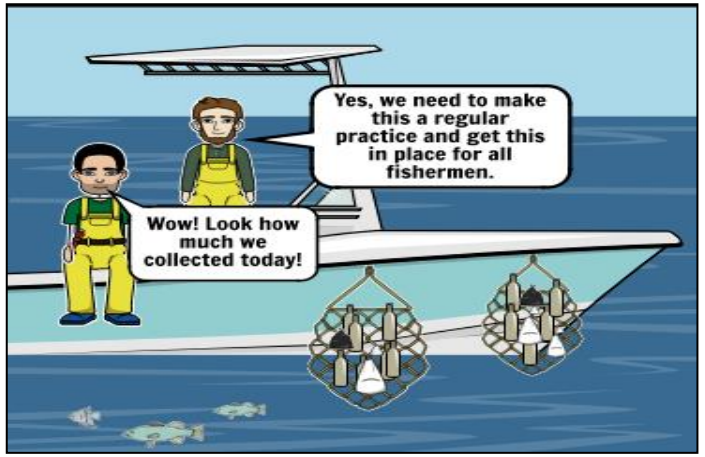
FFL initiatives aim to reduce marine litter involving fishermen and local Authorities

Include Fishing For Litter in marine litter reduction projects

Try to recycle and/or reuse collected materials

Increase awareness-raising and educational activities





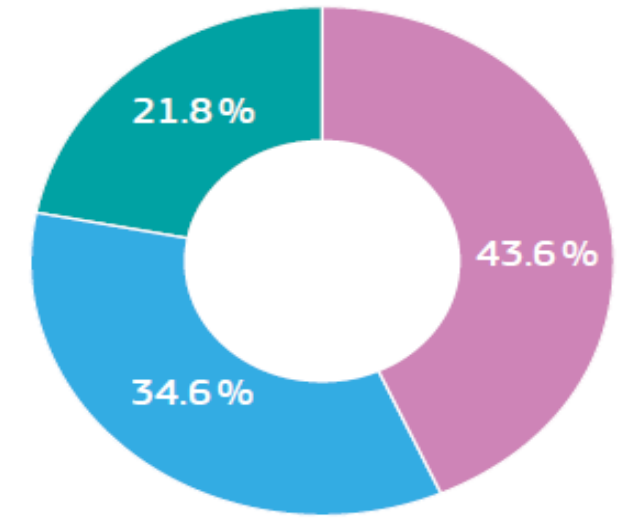
Storyboards by – louwheeler (2016)

From the Diagnosis to the Mitigation

FUTURE DEVELOPMENTS IN AQUACULTURE
Use of biodegradable and compostable plastics?

Marine aquaculture is a significant activity in many European regions. It use huge amounts of plastics as nylon cage nets in fish culture and polypropylene socks in mollusk culture

Develop and test the use of bioplastics in shellfish and fish farming as an alternative to conventional plastic polymers (polyethylene, polypropylene, nylon)



Source: Eurostat and Eumofa

Plastic Busters MPAs WP5: Transferring

5.1 Coordinating the WP5
5.2 Development of protocols on harmonized ML monitoring approaches
5.3 Capacity building and training on how to apply harmonized ML monitoring approaches
5.4 Capacity building and training on how to implement selected ML measures in Med MPAs
5.5. Technical support for transferring the Plastic Busters tested approaches in 10 Med MPAs

Institutional Leader - PP 13 Ministry of Environmental and Nature Protection of Croatia

Operational Leader – UNISI – PP1

TARGET GROUP

- MPAs Managers
- Local public authority
- Regional public authority
- National public authority
- Interest groups including NGOs
- Higher education and research
- Business support organisation
- International organisation, EEIG

Plastic Busters MPAs WP5 - Transferring

WP5 tackles one of the main challenges of our era and one of the main challenges of all science-policy-society projects which is to bridge the gap between science, policy and society and connect the information production and knowledge generation to its use in the decision making process at different levels.

- ✓ WP5 will be implemented with **inputs from WP3 and WP4**. Its actions will be developed in full synergy with those of **WP6** while the promotion of **WP5** knowledge outputs will be supported by the communication vehicles to be developed within WP2.
- ✓ WP5 activities are important for the project success as these are expected to strengthen knowledge exploitation, **networking exchange, stakeholders' collaboration** and dialogue towards concrete, effective and continuous actions against marine litter in Med MPAs.
- ✓ The **transferring activities** will create the enabling environment for a truly transnational **Mediterranean common approach against marine litter in Med MPAs**.
- ✓ They will guarantee that the necessary tools and competences are inplace in order to promote the uptake of the project results **by additional Med MPAs** (see Act.6.3), **policy and decision makers** (see Act.6.4) and other **relevant stakeholder.**

Plastic Busters MPAs WP 6: Capitalizing

6.1 Coordinating of WP6
6.2 Capitalizing and building synergies with other related initiatives
6.3 Promoting the uptake of the project results by Med MPAs
6.4 Promoting institutional uptake of the project results
6.5 Lobbying and advocacy to promote the uptake of the project results

Institutional Leader - PP11 Hellenic Ministry of Environment and Energy, Special Secretariat for Water

Operational Leader – MIO-ECSDE – PP6

THE PLASTIC BUSTERS MPAs
FIRST OUTCOMES

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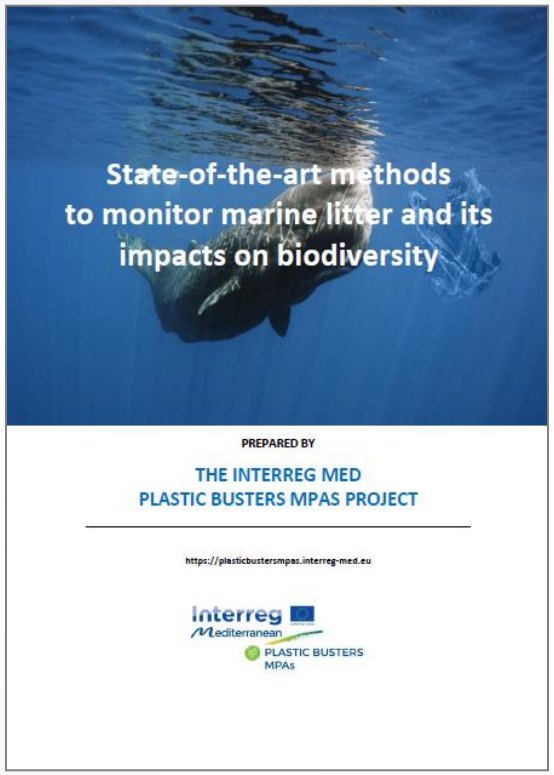
WP3 – Studying: Deliverables



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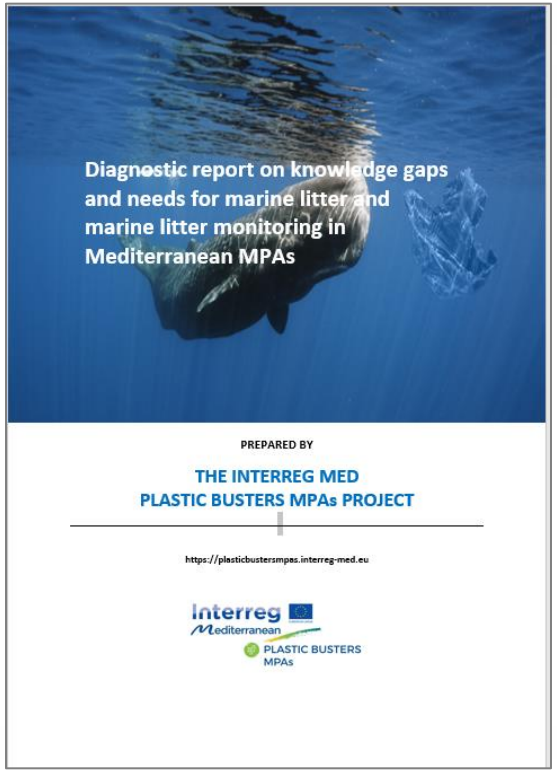


D 3.2.2

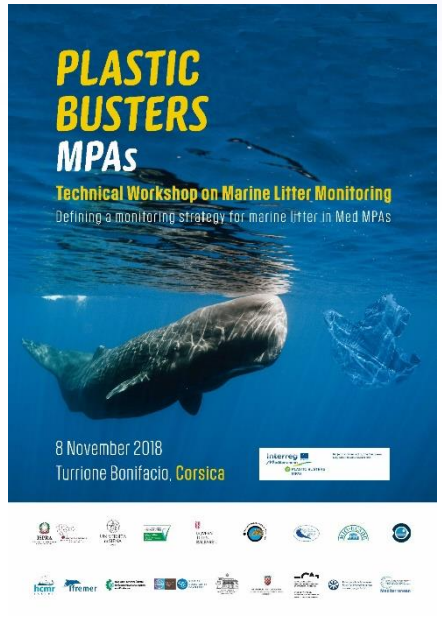
D 3.3.1… and more!!

Plastic Busters Steering Committee Meetings and Workshops

First Steering Committee
16-17 April 2028

Kick-off Meeting
17 April 2018

Siena (Italy)



Second Steering Committee
6-7 November 2018

Technical Workshop on ML
8 November 2018

Bonifacio (France)

Up-coming events:

Third Steering Committee
Milazzo (Italy)
7-8 May 2019

Technical WP4 planning workshop
9 May 2019

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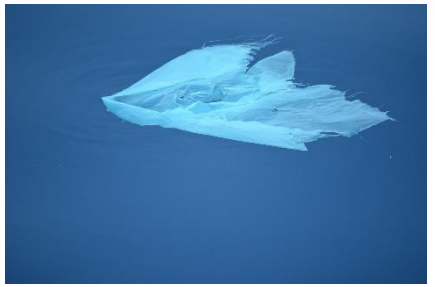
WP3 – Studying: sampling activities

Sampling Activities in the Pelagos Sanctuary:

19-21 June 2018
2 Manta trawls
12 Mictophyds
6 FMML transects
4 Fin whale biopsies
13 Striped dolphin biopsies



11-12 September 2018
6 Manta trawls
9 Mictophyds
11 FMML transects
2 Fin whale biopsies
3 Striped dolphin biopsies
Testing FMML with Drone and thermocamera

WP3 – Studying: sampling activities

Sampling Activities in the Tuscan Archipelago:

15-16 October 2018
UNISI, IFREMER

Beach Litter Monitoring

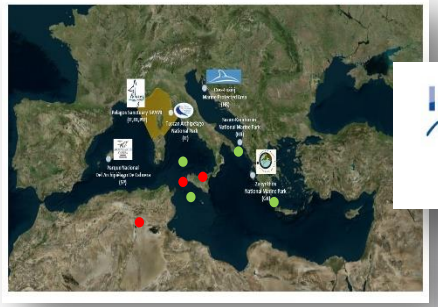
Accumulation areas of stranded litter along the coastline of Elba Island (Tuscany)

Participation of Plastic Busters MPAs Scientific coordinator at International Events - June 2018 – January 2019:

1. Invited speech on "Exposure and Effects of Endocrine Disrupting Chemicals in Marine Mammals" at the "Environmental Endocrine Disruptors" Gordon Research Conference, held in Les Diablerets (Switzerland), 3rd-8th June 2018.
2. Invited speaker at the Regional Meeting on IMAP Implementation: Best Practices, Gaps and Common Challenges. Rome, Italy, 10th-12th July 2018
3. Invited speaker at a Side Even on Marine Litter during the Stockholm Convention meeting held in Geneva, 3rd September 2018.
4. International PolieCo Forum on the economy of wastes, 10th edition titled "Plastica, ancora un futuro?" held on 21st-22nd September 2018 in Ischia, Italy
5. Lead Organizer and presenter at the BlueSeaLand event held in Mazara del Vallo, on 4th-7th October 208 – Plastic Busters MPAs in action in the Mediterranen sea
6. Invited speakers at the 2nd UfM Working Group on Environment and Climate Change, held on 12th-13th November 2018 in Barcelona, Spain.
7. Invited speakers at the 3rd meeting of environmental journalists from News Agencies in the Mediterranean – Shifting towards ecological transition in the Mediterranean – held on 13th-14th November 2018 in Barcelona, Spain.
8. Attendance at the conference "MICRO 2018 Fate and Impact of Microplastics: Knowledge, Actions and Solutions" held on November 19th-23rd, 2018 in Lanzarote, Spain.
9. Video-conference participation at the side event on "Ecosystem¬-based approaches to managing transboundary and cumulative impacts in the Mediterranean, with a focus on marine plastic litter and climate change" held on 27th November 2018 at CBD COP in Egypt.
10. Attendance at the Workshop & Public Hearing "Enhancing EU Policies with Ecosystem-based Approaches" organized by the MED Biodiversity Protection Community (and featured by PANACeA), held on 4th December 2018 in Brussels.
11. Attendance at the Public Hearing "Mediterranean Ecosystems in Danger: Enhancing EU policy response" organized by the SEARICA Intergroup, held on 5th December 2018 at the European Parliament in Brussels.
12. Invited speak at the event "Per un Futuro Sostenibile" organized by Rotary Club Montaperti on 18th January 2019, held in Montaperti, SI (Italy).
13. BluMED Initiative EC - March 2019 in Brussels.
14. UNEP/Map – Montenegreo, April 2019

Plastic Busters Transferring Activities

BRIDGING NORTH AND SOUTH MEDITERRANEAN IN MARINE LITTER MONITORING AND MITIGATION ACTIONS



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PLASTIC BUSTERS ON BASIN SCALE

Union for the Mediterranean
Union pour la Méditerranée
الإتحاد من أجل المتوسط

Interreg Mediterranean

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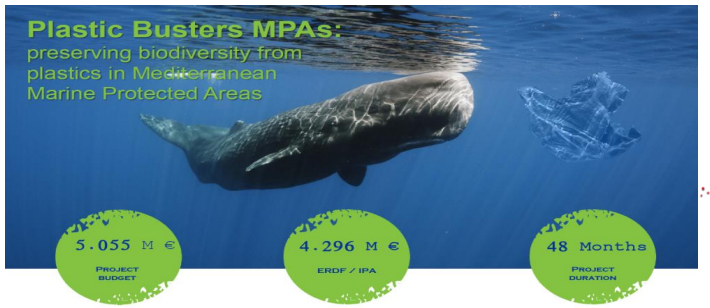

COMMON

NEWS

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PLASTIC BUSTERS ON BASIN SCALE

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Thematic Objectives B.4 - Environmental protection, climate change adaptation and mitigation (Address common challenges in environment)

COastal Management and MOnitoring Network for tackling marine litter in Mediterranean sea

Partners

Legambiente Onlus – ITALY (**LP**)
University of SIENA – ITALY
C.I.H.E.A.M. – Istituto Agronomico Mediterraneo di Bari –ITALY
Institut National des Sciences et Technologies de la Mer – TUNISIA
Amwaj of the Environment Beirut - LEBANON
Tyre Coast Nature Reserve – LEBANON
University of Sousse – TUNISIA

Geographic coverage

Tunisia, Italy, Lebanon

Budget

€ 2.223.421,48

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PLASTIC BUSTERS ON BASIN SCALE

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General objective

The **COMMON** project aims at applying the **Coastal Zone Management principles** to the **marine litter management in 5 pilot coastal areas** through a local coordination and the Mediterranean networking among different stakeholders.

Specific Objectives

1. Testing an integrated strategy for **marine litter management and disposal at coastal level** that could be transferred to the whole Mediterranean area
2. Building **multi-stakeholder networks at basin-level** for tackling marine litter in a coordinate and integrated manner
3. Enhance the capacity of public authorities in **5 pilot areas,** to plan for sustainable management, use and **monitoring marine litter sources, treatment and consequences,** employing an effective participatory approach **involving relevant stakeholders and local communities**

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WP ACTIVITIES

WP1 Management - Legambiente Italy
WP2 Communication – Legambiente Italy
WP3 (Project implementation) Improving knowledge of litter sources and impact on marine ecosystems in 5 pilot coastal areas - University of Siena Italy
WP4 (Project implementation) Institutional capacity building in tackling marine litter throughout ICZM plan - Institut National des Sciences et Technologies de la mer, Tunisia
WP5 (Project implementation) Building permanent stakeholders forums for participative ICZM plans for marine litter - Amwaj of the Environment, Lebanon

PLASTIC BUSTERS ON BASIN SCALE

COMMON

WP3 (Project implementation) Improving knowledge of litter sources and impact on marine ecosystems in 5 pilot coastal areas

University of Siena Italy

The overall objective of this WP is to improve knowledge of ML sources and impact on Mediterranean marine ecosystems focusing in 5 pilot coastal areas: **Tyre (Lebanon), Maremma and Northern Puglia (Italy) and Kuriat Island and Monastir (Tunisia).** The activities of this WP will contribute to **maintain biodiversity** and preserve natural ecosystems in coastal areas, to monitor the source and **impact of ML on fish species** of commercial interest by defining and implementing a harmonized approach against ML. The main outcomes of this WP will facilitate the **identification of ML sources** in order to design effective **mitigation actions** in the 5 pilot coastal areas (activities of WP4 and 5).

PLASTIC BUSTERS ON BASIN SCALE

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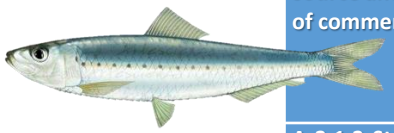
WP3- Improving knowledge of litter sources and impact on marine ecosystems in 5 pilot coastal areas - *University of Siena Italy*



ACTIVITY TITLE	DESCRIPTION
A 3.1.1 Literature review on litter sources and impact on marine ecosystems and harmonization methods.	Within this activity a complete mapping of the state-of-the art of ML sources and impact on marine ecosystems and of the existing methods to monitor ML and its impacts on Mediterranean biota will be made. This activity will focus on the assessment of the amounts, types, sources, impacts on biota and distribution patterns of ML in Med areas (focusing particularly on the 5 Project areas in Italy, Tunisia and Lebanon), while also harmonizing ML monitoring in Mediterranean basin.
A 3.1.2 Studies and data collection on the source and impact of ML on marine species of commercial interest	This activity will focus on studies on sources and impact of ML on fish species of commercial interest in the 5 coastal zone areas. Harmonized ML monitoring approaches will be applied to perform: a) ML sources analysis and sampling; a) fish species sampling in collaboration with local fishermen; b) ecotoxicological investigation (plastic ingestions, contaminants, biomarkers) in edible species; d) detection of the impact of ML on fishery and aquaculture resources in relation to the ML sources
A 3.1.3 Studies and data collection on the impact of marine litter on sea turtles in the Mediterranean sea	This activity will focus on studies and data collection on the impact of ML on sea turtles in the 5 project pilot areas. Harmonized ML monitoring approaches will be applied to perform: a) survey and sampling of stranded and hospitalized (rescue centres) sea turtle; b) ecotoxicological investigation of the impact of ML (plastic ingestion, POPs, plastic additives, biomarkers) in the target species; e) final assessment and risk analysis of the impacts of ML on C. caretta and C. mydas
A 3.1.4 Data fine-tuning and studies delivery	This activity consists in data fine-tuning and conclusions about sources and impact of ML. All partner will take part in drawing studies about ML linkage with human activities and about ML impact at social, economic and environmental level. For each pilot area will be made a) a final assessment of the environmental impacts of ML on marine biodiversity; b) a final evaluation of the social and economic impact of ML c) propositions of ML mitigations measures at local level and at basin level
A 3.2.1 Citizen science activities aimed to quantify and characterize ML on beaches and coastal zones	A shared IT platform, linked to the website, will allow coordinating the citizen science activities (CSA) aimed at quantifying and characterizing ML and beach litter at Mediterranean. The platform, in EN and FR, will gather participants to the CSAs, to collect data from each country and will host the monitoring manual ((A 2.5.1), as well as a review of all technical documents and all news concerning ML. CSA will be launched once a year and will involve at least 70 Mediterranean organisations

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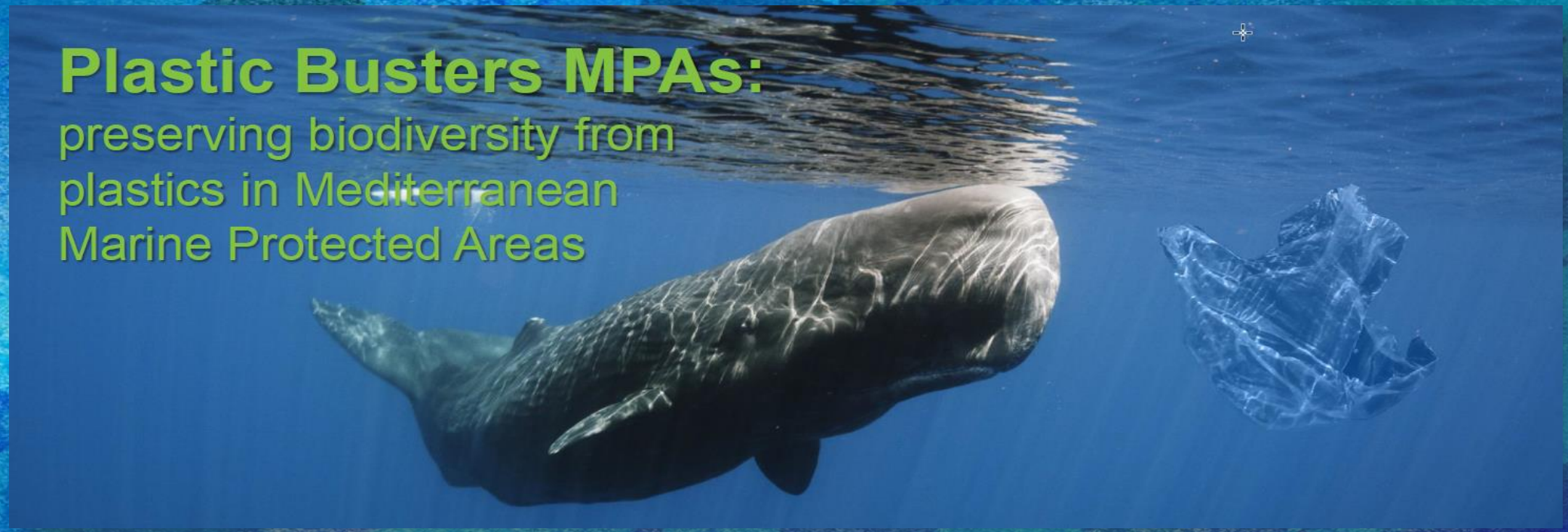

@PlasticsB_MPAs

@PlasticBustersMPAs

Fossi@unisi.it

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Thanks !

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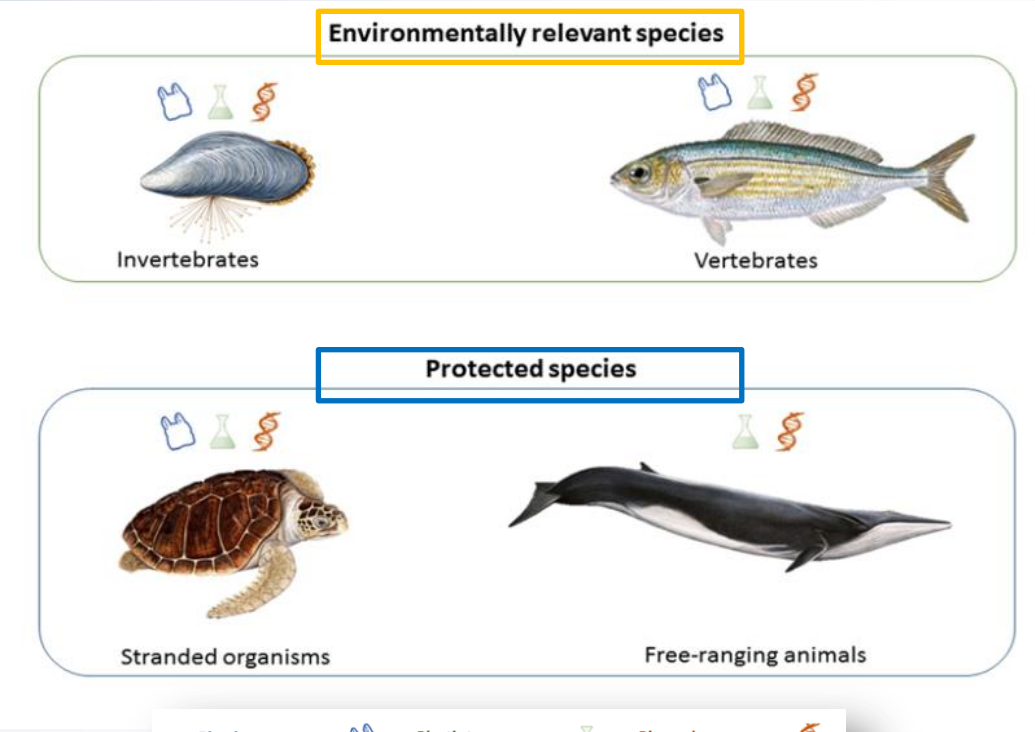
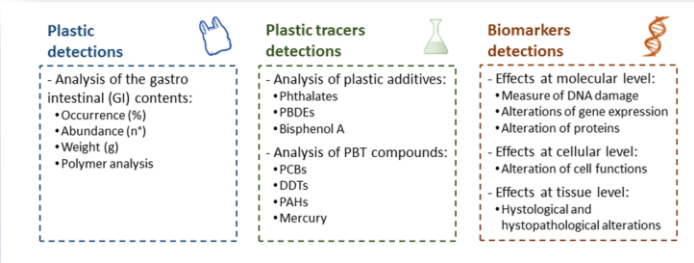
THE THREEFOLD MONITORING APPROACH





The simultaneous investigation in bioindicator species of:

A) the analysis of **gastro-intestinal content** to evaluate the **marine litter** ingested by the organisms;

B) the analysis of **plastic additives** and PBT compounds used as plastic tracers;

C) the analysis of the effects by **biomarkers responses** at different level of biological organization

… will allow a **more complete assessment of the real impact** related to plastic debris ingestion by marine organisms.


Environmental Pollution

Bioindicators for monitoring marine litter ingestion and its impacts on Mediterranean biodiversity

PLASTIC BUSTERS ON BASIN SCALE

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AIM

The **COMMON** project aims at applying the **Coastal Zone Management (ICZM)** principles to the **marine litter management**, improving the environmental performance of **5 pilot coastal areas in Italy (2), Tunisia (2) and Lebanon (1),** testing a model that could be transferred to the whole Mediterranean area.
Thanks to an improved knowledge of the marine litter phenomenon, specific **training** and **capacity building activities** addressed to local and **regional authorities**, **MPAs, Turtles Rescue Centres and citizens, thematic awareness campaign and material, targeted networking activities at basin level,** COMMON project will engage local communities in incorporating marine litter management and disposal in coastal planning with the ICZM approach.
The project specific objective is to **enhanced the capacity of public authorities** in the 5 selected areas to plan for **sustainable management**, use and **monitoring of marine litter sources**, treatment and consequences , employing an effective participatory approach **involving relevant stakeholders** and local communities according to the **Plastic Busters strategy.**