The Plastic Busters MPAs marine litter monitoring and assessment results in Med MPAs

17 June, 2021 - PLASTIC BUSTERS MPAs CAPITALIZATION EVENT

Presented by M. Cristina Fossi, University of Siena, Italy





Why Plastic Busters initiative?



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?

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

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blueMed

A Plastic-free healthy Mediterranean Sea the BLUEMED R&I Pilot **ENI-CBC**









SDSN-MED Flagship project







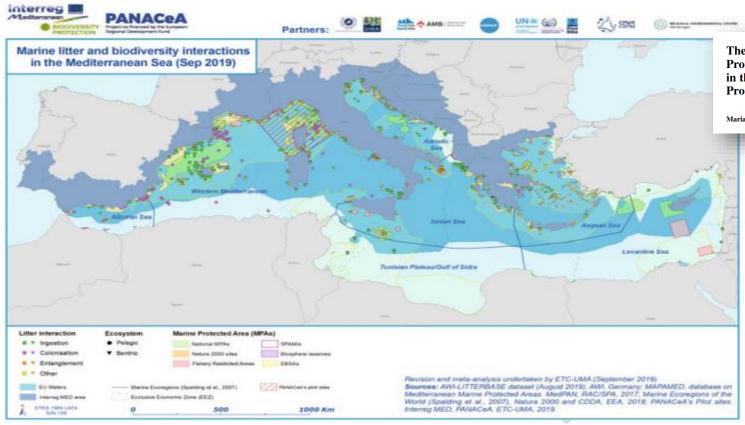


2016

MED-Interreg



The Impact of Marine Litter in Marine Protected Areas (MPAs) in the Mediterranean Sea



The Impact of Marine Litter in Marine Protected Areas (MPAs) in the Mediterranean Sea: How Can We Protect MPAs?

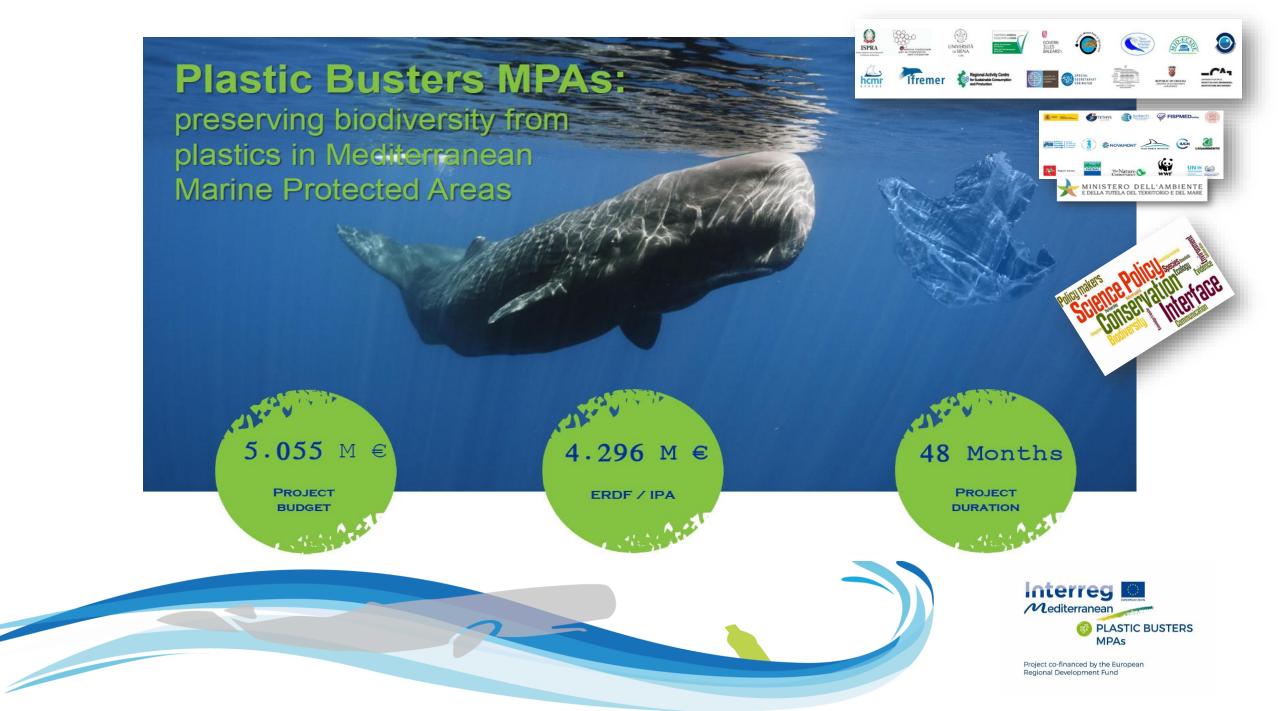
Maria Cristina Fossi and Cristina Panti

Mare Plasticum – The Plastic Sea Province Plastic Sea Province Plastic Sea Province Plastic Sea Province Plastic Sea

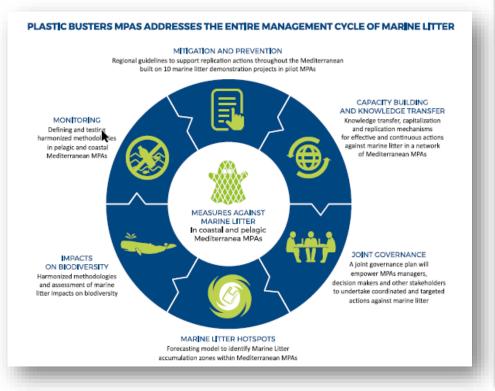
In the whole Mediterranean basis <u>1231</u> <u>MPAs</u> and OECMs (Other Effective area- based Conservation Measures) cover <u>179,798 km</u> for a total surface of 7.14% under a legal designation. <u>Many</u> of these areas are heavily subjected to <u>marine litter pressure.</u>



Project co-financed by the European Regional Development Fund



Plastic Busters MPAs general objectives Novelty - Whole Management Cycle Of Marine Litter



- 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 located in Italy, France, Spain, Croatia, Albania and Greece.
- The project will support the implementation of the MSFD and the Barcelona Convention Regional Plan on Marine Litter Management in the Med.



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Plastic Busters MPAs WP4: Novelty - Harmonized Diagnosis in the Environment

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





MARINE LITTER MONITORING



Plastic Busters MPAs WP4: Novelty - Harmonized Diagnosis in Biota

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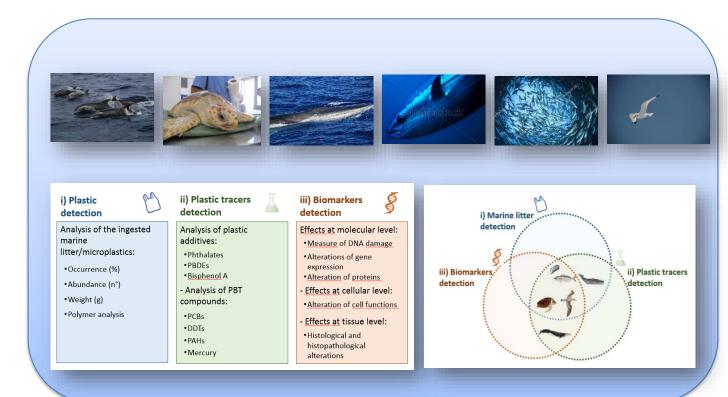
Testing the ML forecasting model

4.5

Preparation of the demo projects

4.6

Piloting ML prevention and mitigation measures



MARINE LITTER IMPACTS ON BIOTA



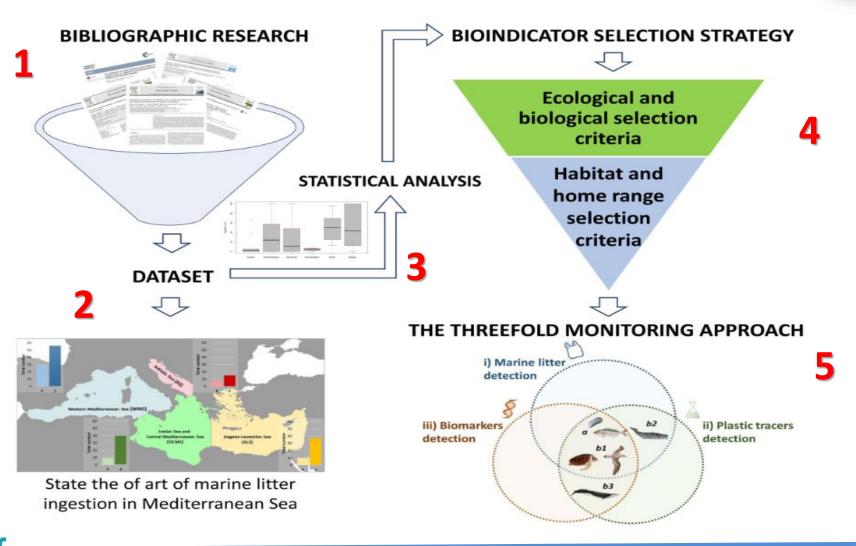
Project co-financed by the European Regional Development Fund

1) Identification of marine litter bioindicators

Bioindicators for monitoring marine litter ingestion and its impacts on Mediterranean biodiversity¹⁰, and the second s

onmental Pollutio

See





2) Percentage and ranking of marine litter ingestion in Med species calculated on the field data

354 specimens were analyzed with the same standardized protocol

Marine debris were found in all the five species with a percentage of occurrence ranging from 10.7% in swordfish to 76.9% in sperm whale.

Swordfish (SWF) = 10.71% (9/84)

Low

Sperm whale (SW) = 76.92% (10/13)

Loggerhead sea turtle (LHT)= 68.82% (53/77)

Blue shark (BSH) = 25.26 (24/95)

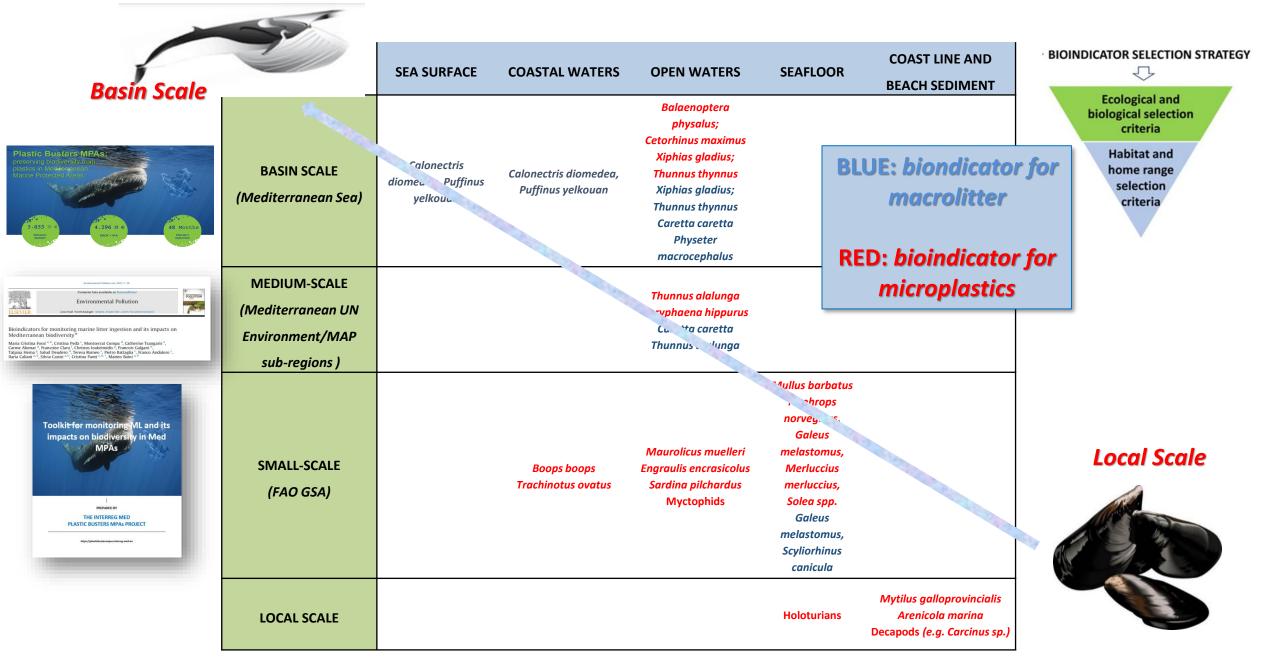
Bluefin tuna (BFT) = 21.18% (18/85)



High



3) Bioindicator selection in relation to habitat and home range



017

EN

Official Journal of the European Union

L 125/43

COMMISSION DECISION (EU) 2017/848

of 17 May 2017

laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment, and repealing Decision 2010/477/EU

D10C3 -The amount of litter and micro-litter ingested by marine animals is at a level that does not adversely affect the health of the species concerned



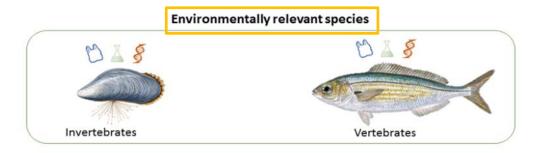


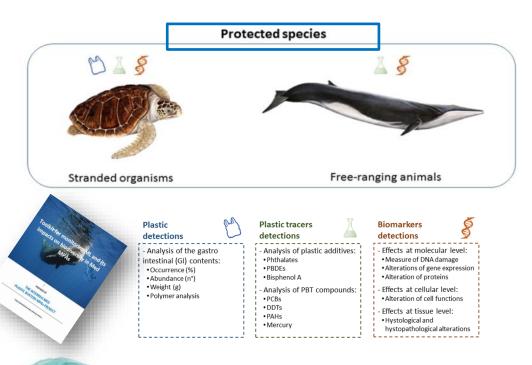
The quantification of marine litter ingestion is not enough... we need to investigate toxicological effects



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.







Plastic Busters MPAs:

Main findings expected by the application of the PBMPAs approach are...

- ✓ **DIAGNOSTIC PHASE**: development of effective methodologies to **diagnose the marine litter** (including microplastics) **presence and impacts on biodiversity** inhabiting Mediterranean MPAs (Deliv. 3.3.1), including the identification of Marine Litter hotspots (Deliv. 3.5.1).
- ✓ **MITIGATION PHASE**: development of efficient tailor-made surveillance, prevention and mitigation measures in Med MPAs (Deliv.3.6.1) designed according to the diagnostic actions carried out during the monitoring phase. Identification of a series of measures to prevent and mitigate the impacts of marine litter in the hotspot areas, while capitalizing on previous projects results (e.g. Interreg MED ACT4LITTER, MEDSEALITTER, DG-ENV INDICIT, IPA-Adriatic DeFishGear, etc.).



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Plastic Busters MPAs activities in MPAs *Novelty – Risk Assessment – From Diagnosis to Mitigations*



WP4 -Testing

De Cabrera (SP)

Bonifacio (FR)

Pelagos Sanctuary (IT,FR,MC)

•Zakynthos National Marine Park (GR)

Parque Nacional Del Archipiélago

•Reserve Naturelle des Bouches de

Parc National de Port-Cros (FR)

Tuscan Archipelago (IT)

WP5-Transferring

Pelagie Islands MPA (IT)
Res-Lošinj MPA (HR)
Sazan-Karaburun (AL)





Monitoring activities in <u>small scale MPAs</u>: **Contemporation Contemporation C**



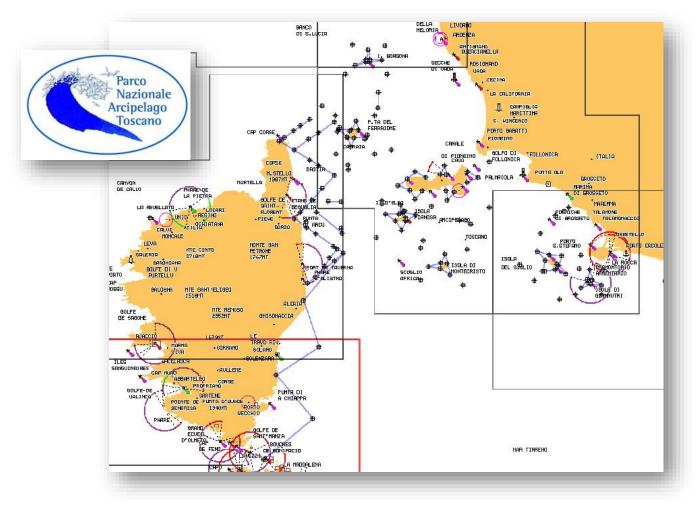








Monitoring activities in <u>Medium scale MPAs</u>: Tuscan Archipelago National Park











PLASTIC BUSTERS

MPAs



Monitoring activities in <u>Large pelagic and</u> ^A <u>coastal areas</u>: SPAMI - *Pelagos Sanctuary*





Plastic Busters MPAs:

COMMON

NENDIN AUTONOMA DELA MADRIDA

LASTIC BUSTER

Synergy

Joint strategy for monitoring marine litter and its impact on biodiversity

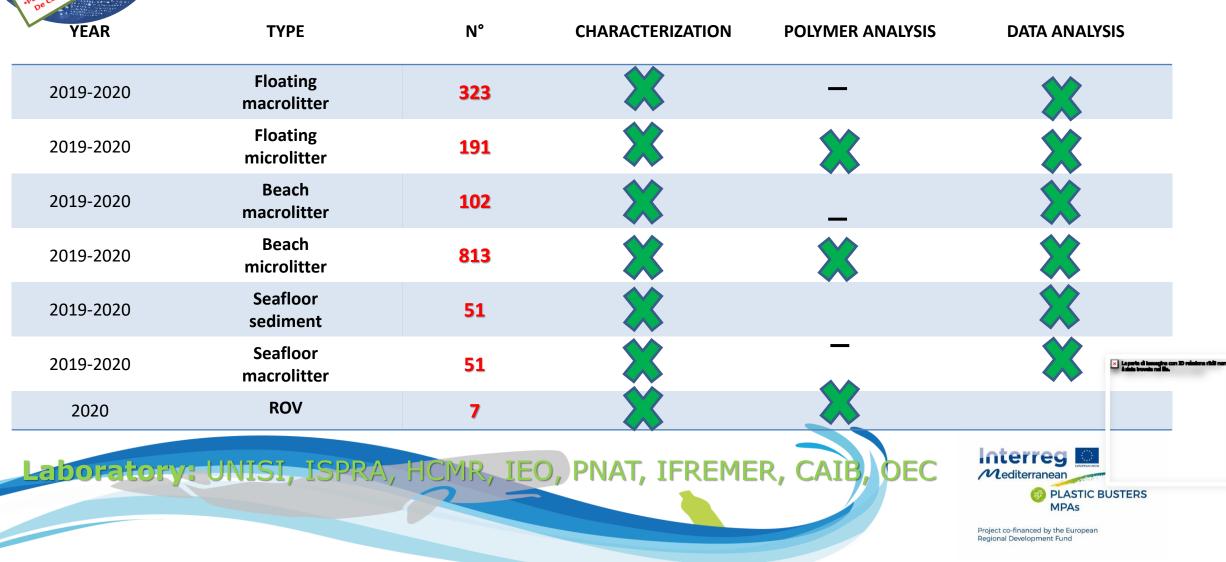
SYNERGY BETWEEN MPAS MANAGER AND RESEARCHERS



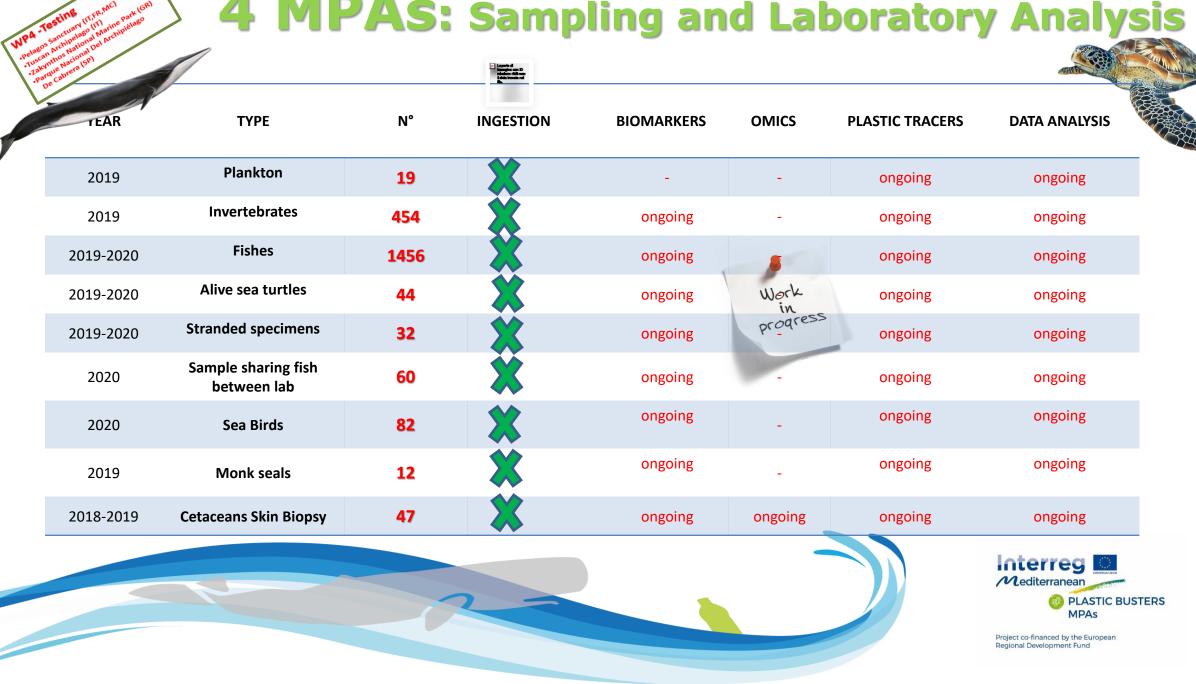
ECTED AREAS



4 MPAS: Sampling and Laboratory Analysis

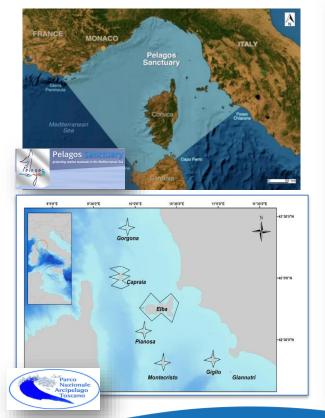


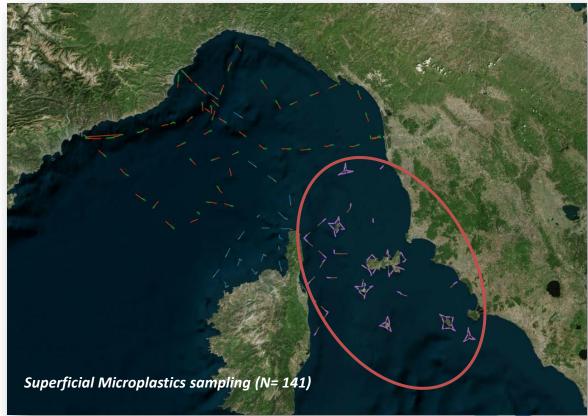
4 MPAS: Sampling and Laboratory Analysis



Plastic Busters MPAs: *Pelagos Sanctuary and PNAT Activities*







 May –June –July -September 2019
 ✓ 34 days of activity
 ✓ 2226 NM
 ✓ 34 Researchers
 ✓ 8 Institutions (UNISI, ISPRA, IFREMER, EOC, PNAT, LAMMA, CIMA, Pelagos Secr.)



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Simultaneous monitoring of FMML- MPs - Biota

		STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7	STEP 8
		30' (1.5 NM)	30' (2.5 NM)	Shipping (3.5 NM)	30' (2.5 NM)	30' (1.5 NM)	(6 NM) Shipping	30' (2.5 NM)	30' (1.5 NM)
			15' (1.7 NM) / 15' (1.7 NM)	l	15' (1.7 NM) 15' (1.7 NM)			15' (1.7 NM) 15' (1.7 NM)	
			/ /			I Y		\l	
	Macroplastic								
	sighting								1
MPs	1 Nautical miles			11 Nautio		21 Nautical miles			
	Manta trawl								

- 1. **Microplastics and macroplastics simultaneous sampling/survey**. Transect of 30 minutes, starting 1 NM far away from the coast.
- 2. **Macroplastics (ML) survey**. Transect of **30 minutes** (record the GPS coordinates every 15 minutes).
- 3. Sailing up to 7.5 nautical miles far away from the coast.
- 4. **Macroplastics (ML) survey**. Transect of 30 minutes (record the GPS coordinates every 15 minutes).

5. Microplastics and macroplastics simultaneous survey/sampling. Transect of 30 minutes, starting 1 NM far away from the coast.

Sampling activities described in sections 3 - 4 - 5 repeated, until reaching the daily total amount of nautical miles.

During the whole sampling campaign megafauna observations will be carried out.



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Experimental design: Multiple sampling



Cetaceans Skin Biopsy sampling (N= 47)



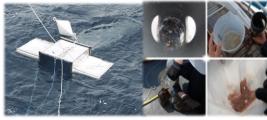
Neustonic Bioindicator species sampling (day time) (N= 167 P.)

200

Myctophidae Bioindicators sampling (night time) (N=36P.)

Impact on Biodiversity Impact on Fisheries

Superficial Microplastics sampling (N= 141)







Biota sighting Cetaceans, Turtles, Birds and other species (N= 300)



Costal Bioindicators Mediterranean Mussel (N= 120)



Commercial Fish Species (N= 717)

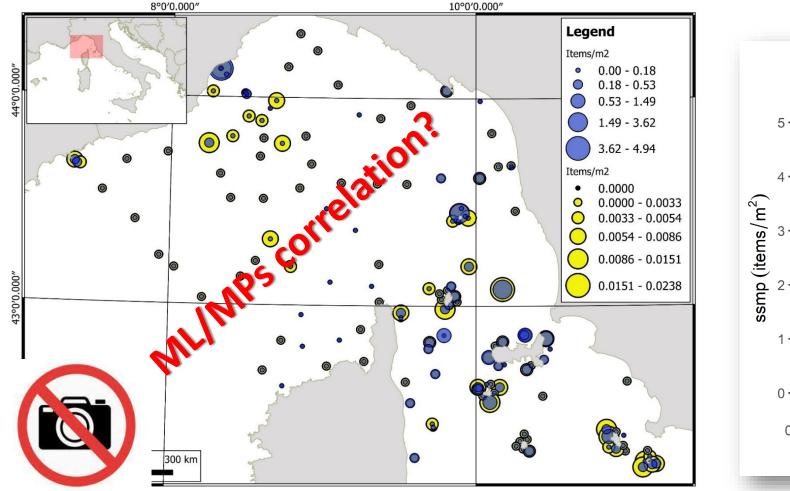


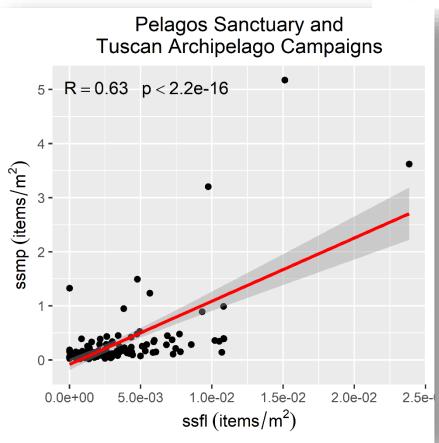


Macro- and Microplastics results

Pelagos and PNAT: Macro-Litter vs Micro-Litter

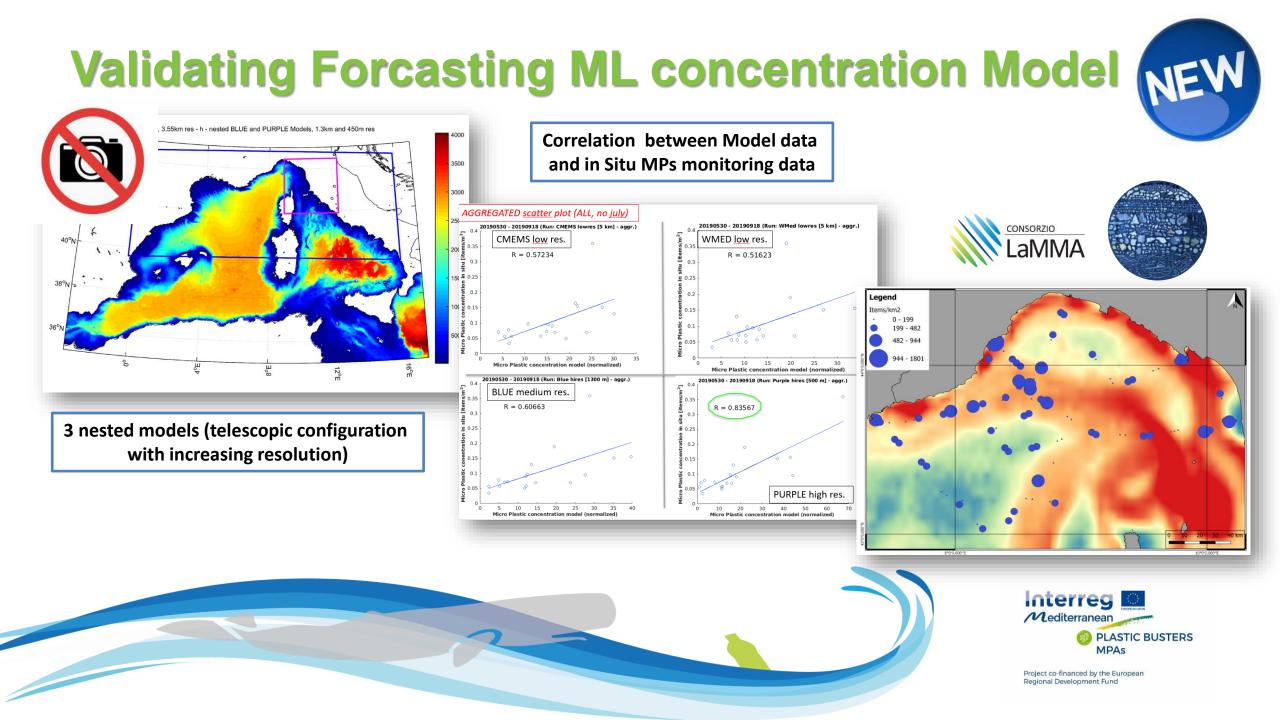








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Monitoring Endangered Species

Monitoring marine litter impacts in Cetaceans

Analysis of the ingested marine litter/microplastics: •Occurrence (%) •Abundance (n°) •Weight (g) •Polymer analysis	Analysis of plastic additives: •Phthalates •PBDEs •Bisphenol A • Analysis of PBT compounds: •PCBs •DDTs •PAHs •Mercury	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	<text><image/><text><text><text><text><text></text></text></text></text></text></text>	ARTINE MAMMAL MARINE MAMMAL COTOXICOLOGY Miltiple Stressors on Population Health
2.5			PREPARED BY THE INTERREG MED PLASTIC BUSTERS MPAs PROJECT Magazingues.sterreg.exet.aw	MARIA CRISTINA FOSSI CRISTINA PANTI
		Free-ranging animals		

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MPAs

PLASTIC BUSTERS







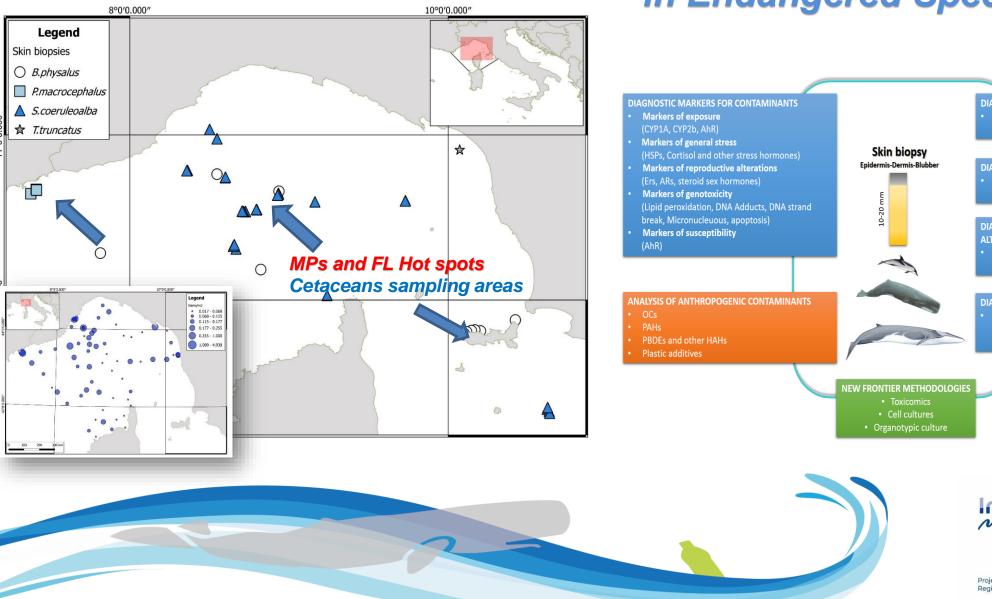






Impact on Cetacens ?

Plastic Tracers and Biomarkers in Endangered Species



DIAGNOSTIC MARKERS FOR FOOD DEPLETION

Markers nutritional status
(Fatty acids, isotopes)

DIAGNOSTIC MARKERS FOR CLIMATE CHANGE

 Markers of stress
 (Fatty acids, stress hormones)

DIAGNOSTIC MARKERS FOR IMMUNE SYSTEM ALTERATION • Markers of immunosuppression

(Cytokines, Immuno-related proteins and genes)

 DIAGNOSTIC MARKERS FOR GENETIC EROSION
 Markers for population stability (nuclear microsatellites, mithocondrial DNA, genomics)

> Work in progress



Neustonic Bioindicators

Neustonic bioindicators









Sampled with manta net during daily surveys

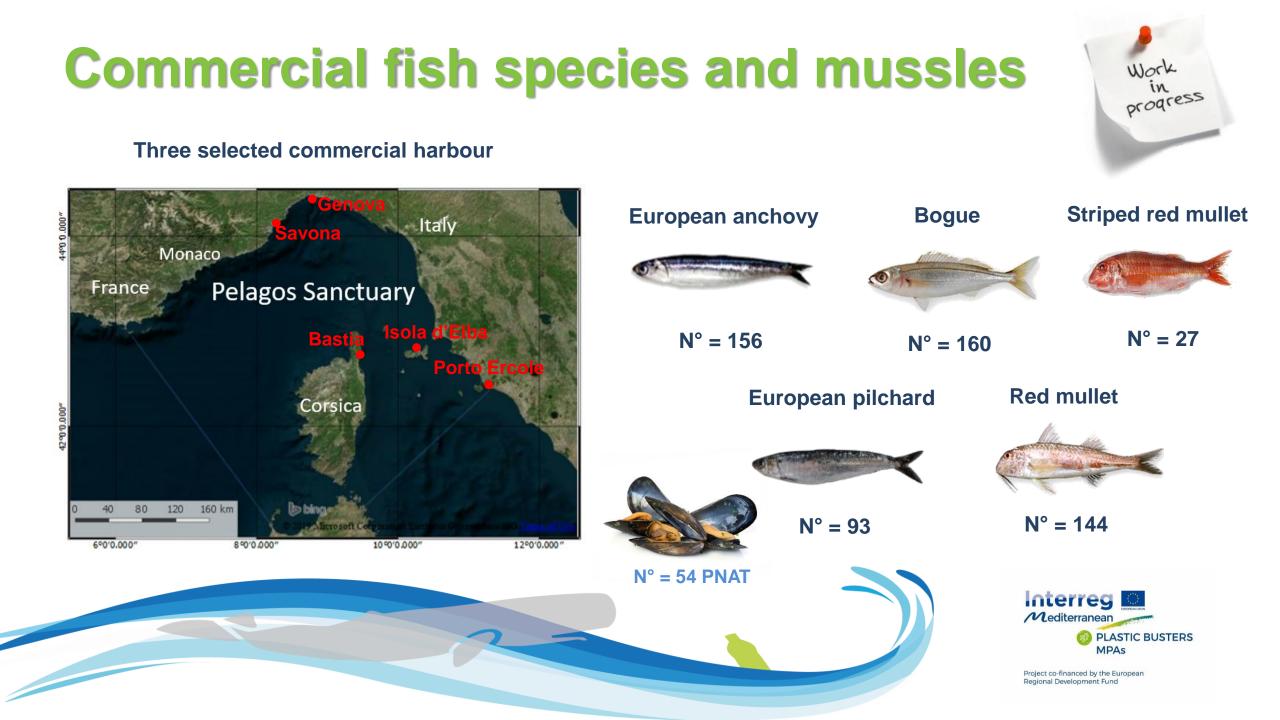




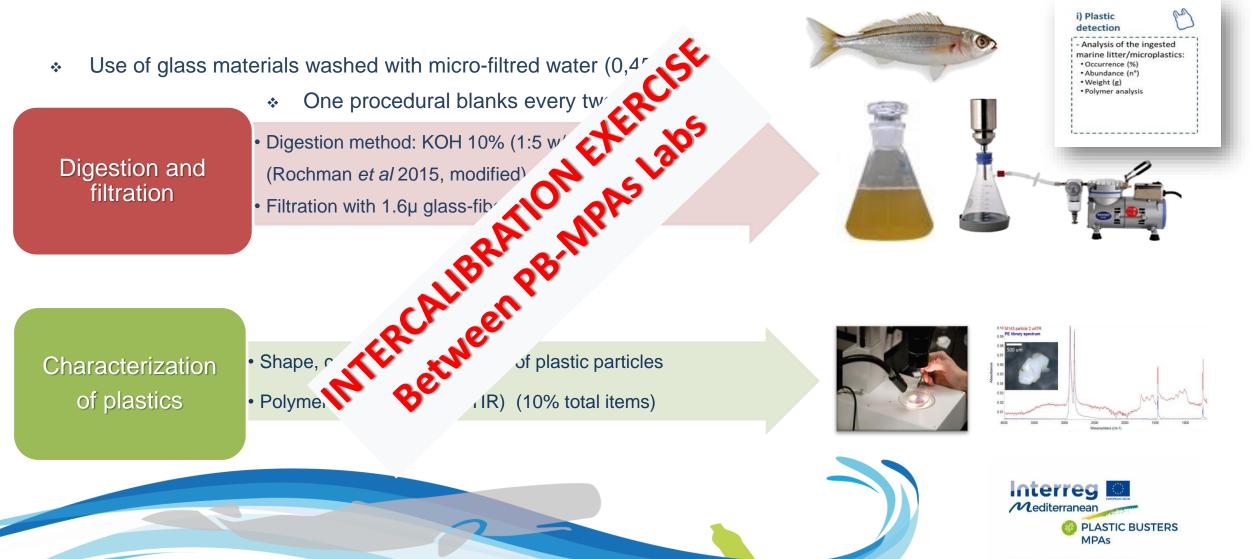


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Commercial fish species



Laboratory analysis: Microplastics ingestion



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Three-Fold Monitoring Approach in NEW **Striped Red Mullet** Work in progress **Zakynthos - HCMR Pelagos/PNAT - UNISI Cabrera - IEO** UNIVERSITÀ i) Plastic **DI SIENA** ii) Plastic tracers iii) Biomarkers 0 detection 0 1240 detection detection - Analysis of the ingested marine litter/microplastics: - Effects at molecular level: - Analysis of plastic additives: Occurrence (%) Measure of DNA damage Phthalates Abundance (n°) Alterations of gene expression PBDEs Alteration of proteins · Weight (g) Bisphenol A Polymer analysis - Effects at cellular level: MPs Occurrence (%) Analysis of PBT compounds: Alteration of cell functions Cabrera • PCBs Plastic additives analysis: Phthalates - Effects at tissue level: • DDTs Hystological and **Zakyntho** · PAHs hystopathological alterations 101-11-3 94-64-2 101-17-8 101-16-8 84-65-3 94-74-2 84-65-3 107-41-7 28555-12-8 117-84-0 Mercury Pelagos/PNAT QX200[™] Droplet Digital[™] PCR System (Bio-Rad) Interreg Mediterranean PLASTIC BUSTERS **MPAs** Project co-financed by the European **Regional Development Fund**



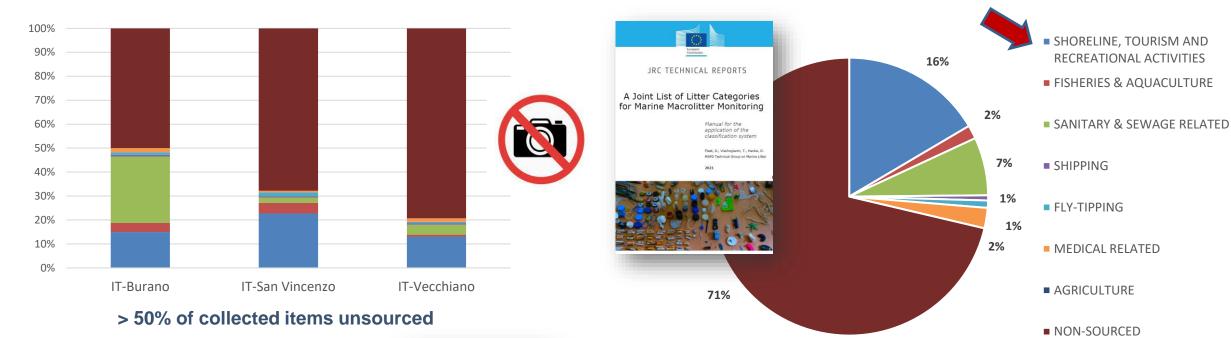
Monitoring Endangered Free-Ranging/Hospitalized Sea Turtles

Monitoring Endangered Free-Ranging/Hospitalized Sea-Birds

Monitoring Stranded Cetaceans Specimens

Monitoring Marine Litter in Beaches

Monitoring Marine Litter in Beaches: Sources



26% of land-based sources items

3% of sea-based sources items



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Shoreline,tourismandrecreationalactivitiesandSanitary & sewagerelatedarethe most abundant sources



From the Diagnosis to the Mitigation

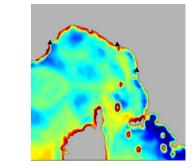
Monitoring Marine Litter HOTSPOTS in Beaches



✓ Data are obtained from **small boats** (5-6 m) operating at low speed and moving at a **distance of 20-100 m from the shore**.

✓ The position of accumulation areas are recorded using GPS for **low accumulation zones** (2-10 litter items/site, usually a 5-30 m stretch distance onshore) **and high accumulation zones** (> than 10 litter items/site).

✓ Maps are finally interpreted to support both the **identification of potential monitoring sites,** association with modelling predictions or identification of priority areas **for removal actions.**



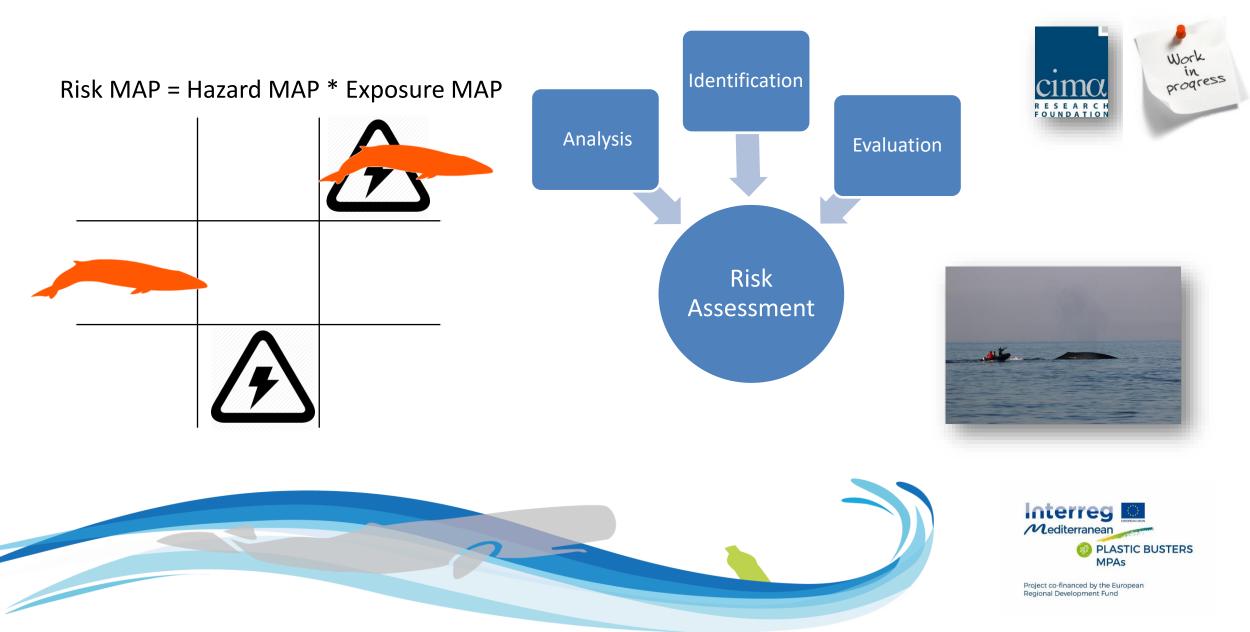




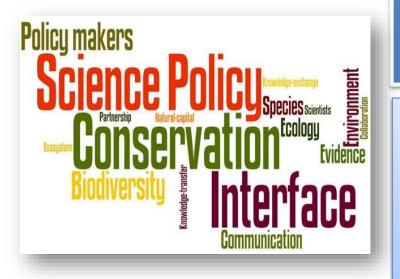


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Risk prediction in the Pelagos Sanctuary



Plastic Busters MPAs WP5: Novelty – Transferring in other MPAs



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 <u>bridge the gap</u> <u>between science, policy and society</u> and connect the information production and knowledge generation to its use in the decision making process at different levels.

✓ 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.





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PB MPAs WP5: means of transferring

On-Site transferring activities (Ongoing)

- Goal is to transfer activities to 10 MPAs, also inviting representatives from other MPAs to allow for an exponential transferring of the project knowledge
- As such, each project partner responsible for the transferring activities in the above 4 MPAs should ensure other MPAs representatives are invited thus triggering the transferring process.



Bonifacio - France (UNISI, OEC)



Capo Milazzo - Italy (ISPRA)



Brijuni - Croatia (UNIST-FGAG)



Karaburun-Sazan - Albania (MM)



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PB MPAs WP5: transferring in Capo Milazzo MPAs

Mediterranean PLASTIC BUSTERS

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Home > News & Events > News > Live streaming: Plastic Busters MPAs takes you on a journey of learning, knowledge sharing and collective action towards a litter-free Mediterranean

LIVE STREAMING: PLASTIC BUSTERS MPAS TAKES YOU ON A JOURNEY OF LEARNING, KNOWLEDGE SHARING AND COLLECTIVE ACTION TOWARDS A LITTER-FREE MEDITERRANEAN

27/05/2021

• Join the first marine litter monitoring campaign streamed online and follow the team at sea, on the coast and in the laboratory.

• The 3-day-long activities will be conducted in the recently established MPA of Cape Milazzo in Sicily.

 The research activities, entail beach macrolitter surveys, surveys of floating macrolitter and microlitter, surveys on the presence of macrolitter on the seafloor. The impacts of marine litter on biota will be also investigated.

 This marine litter research expedition is a demonstration of the project's transferring phase aiming to pass on the knowledge and skills for harmonized marine litter monitoring to Mediterranean MPAs.











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PLASTIC BUSTERS ON BASIN SCALE

TRANSFERING/CAPITALIZATION OF PLASTIC BUSTERS MPAs



PLASTIC BUSTERS ON BASIN SCALE





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



Tunisia, Italy, Lebanon

Budget € 2.223.421,48







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



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

UNIVERSITÀ coastal areas University of Siena Italy

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- ✓ 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).



COMMON WP3 - Improving knowledge of litter sources and impact on marine ecosystems in 5 pilot coastal areas

	ACTIVITY TITLE	DESCRIPTION
CONTINUON Cooperating across borders in the Medilerranean	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 focu on the assessment of the amounts, types, sources, impacts on biota and distribution patterns of ML in Med area (focusing particularly on the 5 Project areas in Italy, Tunisia and Lebanon), while also harmonizing ML monitoring in Mediterranean basin.
Plastic Busters MPAs: preserving biodiversity from plastics in Methomatics in viarine Protected Areas	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 coasta 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 A 3.1.4 Data fine-tuning and studies delivery	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) fina assessment and risk analysis of the impacts of ML on C. caretta and C. mydas This activity consists in data fine-tuning and conclusions about sources and impact of ML. All partner will take par 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 or marine biodiversity; b) a final evaluation of the social and economic impact of ML c) propositions of ML mitigation measures at local level and at basin level
INDICATOR * IMPACT * TAXA	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 a quantifying and characterizing ML and beach litter at Mediterranean. The platform, in EN and FR, will gathe participants to the CSAs, to collect data from each country and will host the monitoring manual ((A 2.5.1), as well a 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





COMMON



COMMON – Three Fold Monitoring Approach in Sea Turtle

DIAGNOSTIC MARKERS FOR CONTAMINANTS

Markers of exposure

(different CYP isoforms, porphyrins)

Markers of general stress

(lysosomal membrane stability, HSPs, cortisol, IDH, LDH,GGT)

• Markers of oxidative stress

(LPO, CAT)

- Markers of genotoxicity
 (DNA strand breaks, micronuclei, apoptosis)
- Markers of neurotoxicity (inibition of plasmatic esterases)

DIAGNOSTIC MARKERS FOR IMMUNE SYSTEM ALTERATION

Markers of immunotoxicity

(blood immune cells, immuno related proteins enzymes and genes)

DIAGNOSTIC MARKERS FOR REPRODUCTION FUNCTIONALITY

Markers for reproductive system
 (hormone receptors, sex hormones,

vitellogenin)







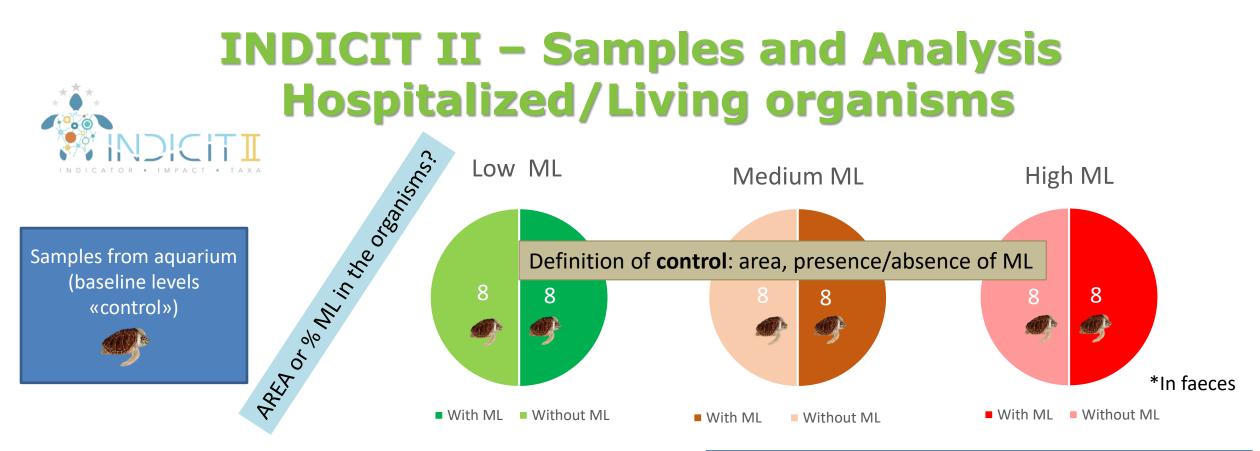


COMMON

ANALYSIS OF ANTHROPOGENIC CONTAMINANTS

- OCs
- PAHs
- PBDEs and other HAHs
- Plastic additives







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- Skin biopsy: Phthalates; Molecular Biomarkers.
- Blood: Phthalates, Comet assay, ENA assay, Molecular Biomarkers.
- Excreta: Porphyrins, Phthalates.

Data on: health status, FO% and O% composition of ML, number and weight of ML itmes should be provided by INDICIT partners to correlate data with the contaminant levels and effects



Dissemination and communicating awareness: a) scientific papers Analyzed by author name 2000-2021

Fossi M.C. Romeo T. Contas Nameron Ocean and Coastal Management Baini M. The Interreg Guerranti C. Mediterranean Assessing and mitigating the harmful effects of plastic pollution: the Galgani F. collective multi-stakeholder driven Euro-Mediterranean response UNIVERSITÀ PLASTIC BUSTERS Maria Cristina Fossi **. Thomais Vlache Giorgio Zampetti[®], Gaetano Leone Renzi M. MPAs **DI SIENA** Panti C. 1240 Deudero S. Andaloro F. Alomar C. Sanchez-Vidal A. Canals M. 21st Meeting to the Contracting Parties to the Barcelona Conventi Bottari T. "A Collective Multi-Stakeholder Driven Mediterranean Response to Marine Litter de Lucia G.A. Monday, 2 December 2019, 13:00 - 15:00, Sala Sirena Tsangaris C. arsità dagli Studi della Tuscia Vitori Savoca S. Universitat Autònoma de Barcelor Iniversità degli Studi di Firen Matiddi M. stitut de Recherche Dunuv de Lôme IRI Marsili L. IRD Institut de Recherche nour le Des Iniversity of Exet Mancuso M. University of Ferrar ersità degli Studi di Catani Fastelli P. 15 Number of publications 8 10 12 14 16 n 6 Number of publications

Kw: "microplastics" and "Mediterranean Sea" Scopus

Dissemination and communicating awareness : b) science policy interface

 ✓ Good communication between policy makers and scientists is a crucial requirement for developing policies that costeffectively achieve measurable outcomes in conservation.



Dissemination and communicating awareness : b) science policy interface











AdriCleanFish

COMMO

Il tema del Marine Litter: progettualità e Legge «SalvaMare»

Maria Cristina Fossi

Università degli Studi di Siena Dipartimento di Scienze Fisiche della Terra e dell'Ambiente







Settembre 2020

PLASTIC BUSTERS TEAM









