



# INDICIT

INDICATOR • IMPACT • TURTLE

## Objectives and results

Dissemination meeting, Athens, 4th Dec 2018

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[indicit-europa.eu](http://indicit-europa.eu)



European  
Commission



Project number: 11.0661/2016/748064/SUB/ENV.C2

# INDICIT: Indicator Impact Turtle

## Implementing indicators of marine litter impact on biota

*In brief...*



➤ February 2017-January 2019

➤ Support the implementation of EU's MSFD Descriptor 10  
“Marine Litter”

+ Barcelona and OSPAR Regional Sea Conventions

⇒ Impact indicators

- Implementation of indicators of marine litter on sea turtles and biota
- Harmonizing approaches
- Developing a set of standardized tools for the monitoring of impacts



# INDICIT consortium

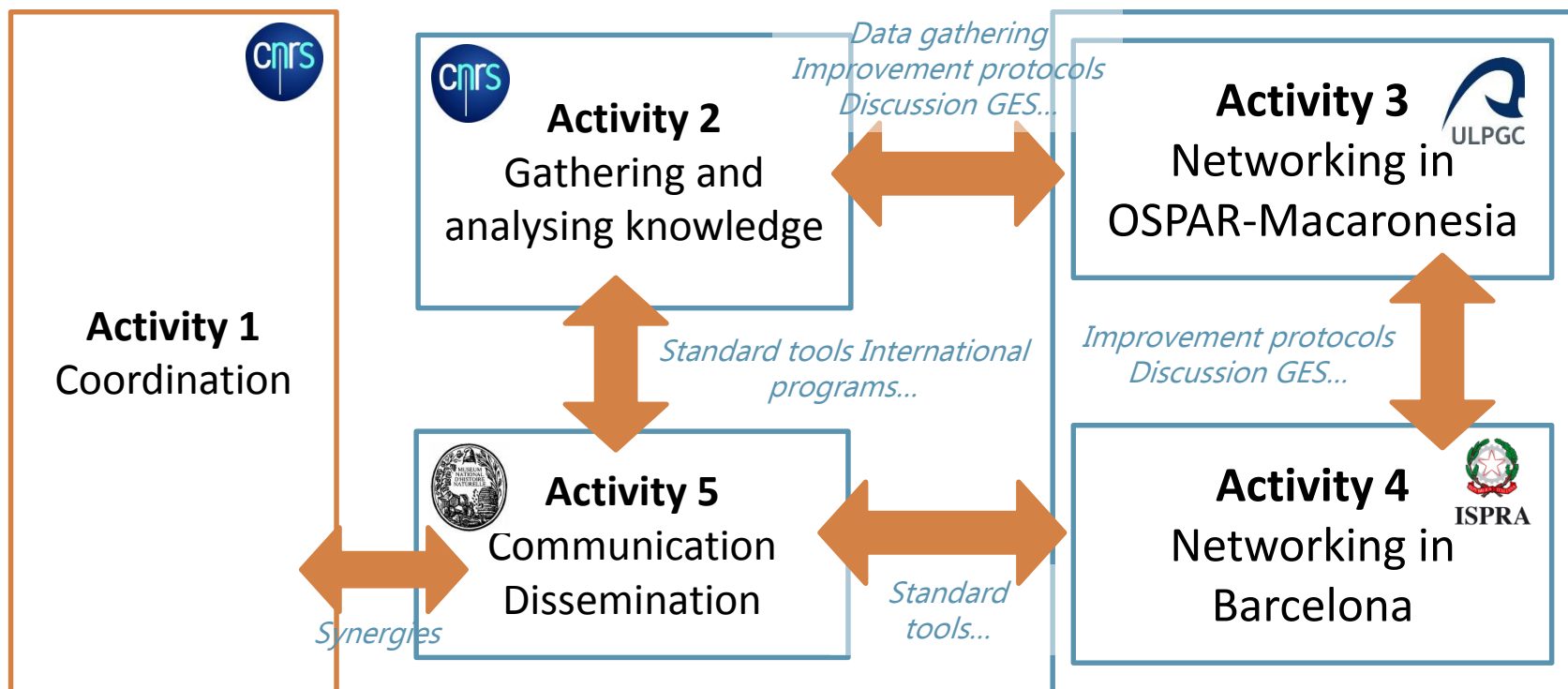
## 10 partner institutions





# Strategy and structure

## 5 Work packages



# INDICIT: Indicator Impact Turtle

## Implementing indicators of marine litter impact on biota



### 1. “Litter ingested by sea turtle”

⇒ pilot studies, GES baseline, criteria, implementation

+ 2 new indicators -> **Feasibility studies**



### 2. “Entanglement with debris by marine biota”



### 3. “Micro-debris ingested by sea turtles and fish”

# INDICIT progress

## Feasibility and pilot studies (Deliverable D2.6.)



## Indicator Litter ingested by sea turtles (pilot)

- State-of-art indicator's constraints
- Existing network
- Descriptive analyses from already existing non standard data



## Entanglement of marine biota in litter

- State-of-art + questionnaire
- Identification of relevant taxa / species
- Identification of indicator's constraints
- Existing networks and monitoring means



## Micro-debris ingestion by fish and sea turtles

- State-of-art
- Identification of relevant fish species
- Evaluation of relevant methods considering field and lab contamination.

<https://indicit-europa.eu/indicit-documents/>



# INDICIT progress

## *Feasibility and pilot studies (Deliverable D2.6.)*



<https://indicit-europa.eu/indicit-documents/>

### *Entanglement of marine fauna in debris*



Picardie Nature

26 Megafauna species in study area  
+ invertebrates

- Identification of data producers/ sampling platforms, useful for MSFD TSG ML
- Target taxa/species
- Existing (non standardized) data
- Need standardized methodology (passive ≠ active; typology of debris)
- Need time + funds to involve identified networks



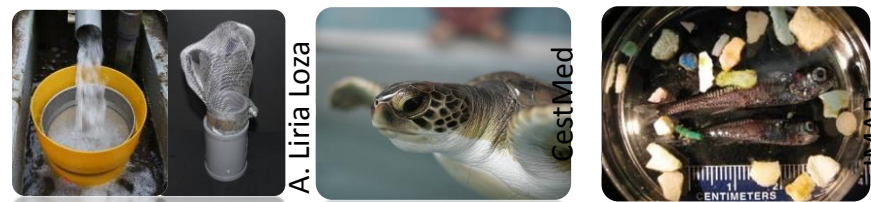
# INDICIT progress

## *Feasibility and pilot studies (Deliverable D2.6.)*



<https://indicit-europa.eu/indicit-documents/>

### *Micro-debris ingestion in fish and sea turtles*



159 fish species + sea turtles

- Identification of sampling technics
- Identification of target fish species
  - Would allow target other areas (e.g., HELCOM)
  - Would allow target debris <<1mm
- Proposition of methodologies (sea turtles)
  - Already existing and trained network
  - Debris 1-5 mm
- Need standard protocol and data



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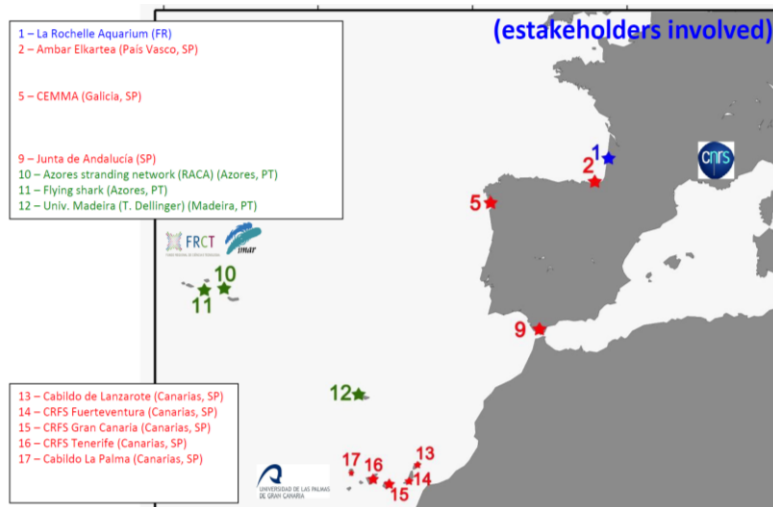


# INDICIT progress

## *Networking in OSPAR-Macaronesia (Activity 3)*

- Creation of a new network in the Atlantic area
- Numerous training sessions
- Improve standard protocol
- Discuss the GES scenarios

*A large area covered*



- Several other contacts

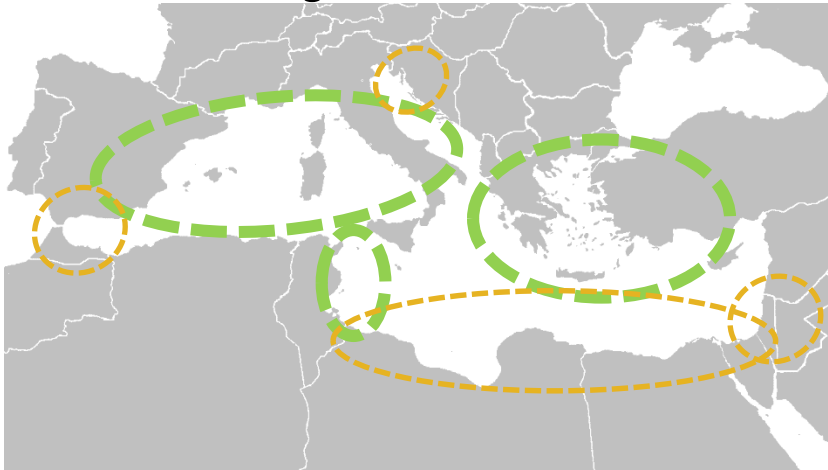
- 30 stakeholders involved/contacted
  - 5 rescue centres
  - 11 stranding networks
  - 5 both activities
  - 3 Research centres
  - 5 Regional authorities
- Identification available data
- Sharing in common database



# INDICIT progress

## *Networking in UNEP/MAP EcAp process (Barcelona convention)* *(Activity 4)*

*A large area covered*



Several other contacts

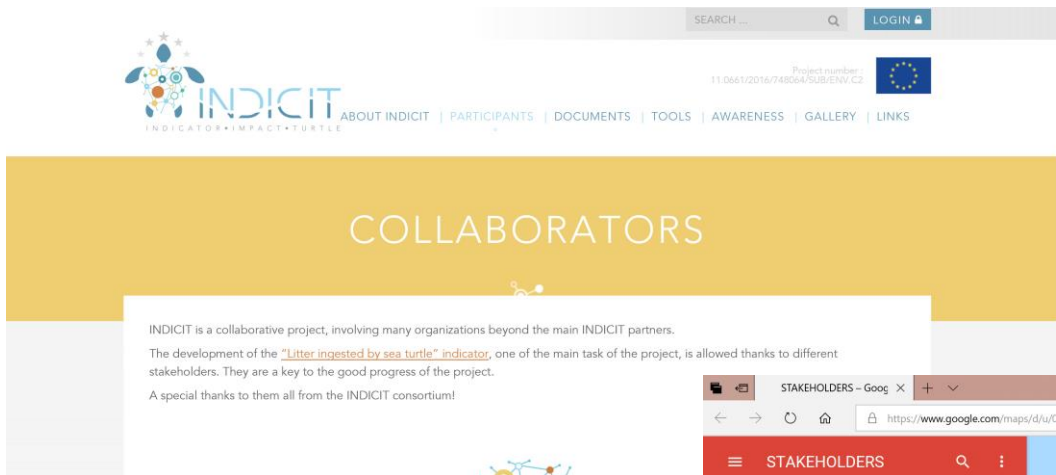
- Numerous training sessions
- Improve standard protocol
- Discuss the GES scenarios

- **29 stakeholders involved/contacted**
  - 9 rescue centres
  - 8 stranding networks
  - 1 both activities
  - 7 Research centres
  - 4 Regional authorities
- Identification
- Sharing in common database

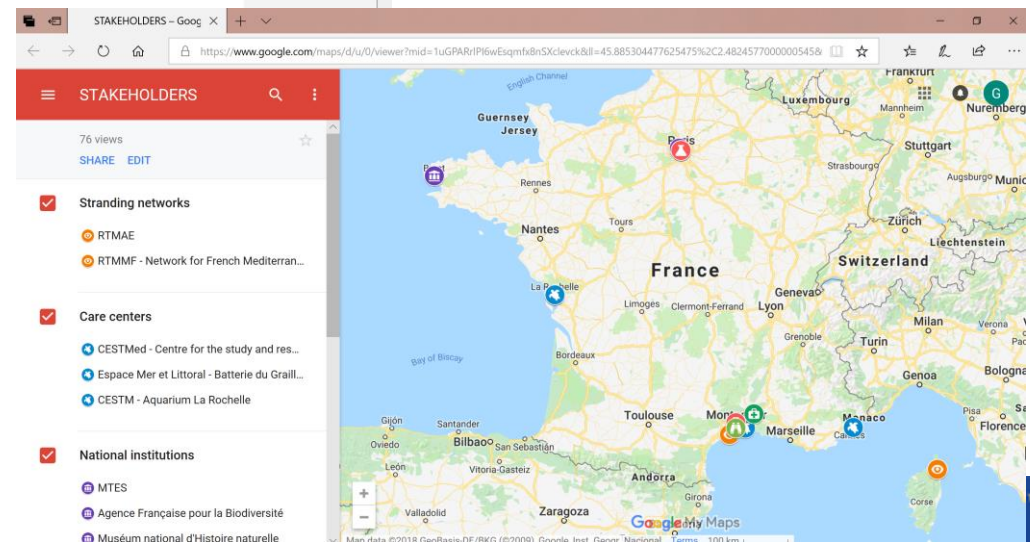


# INDICIT progress

## *Deliverables 3.8 and 4.8* List of identified stakeholders



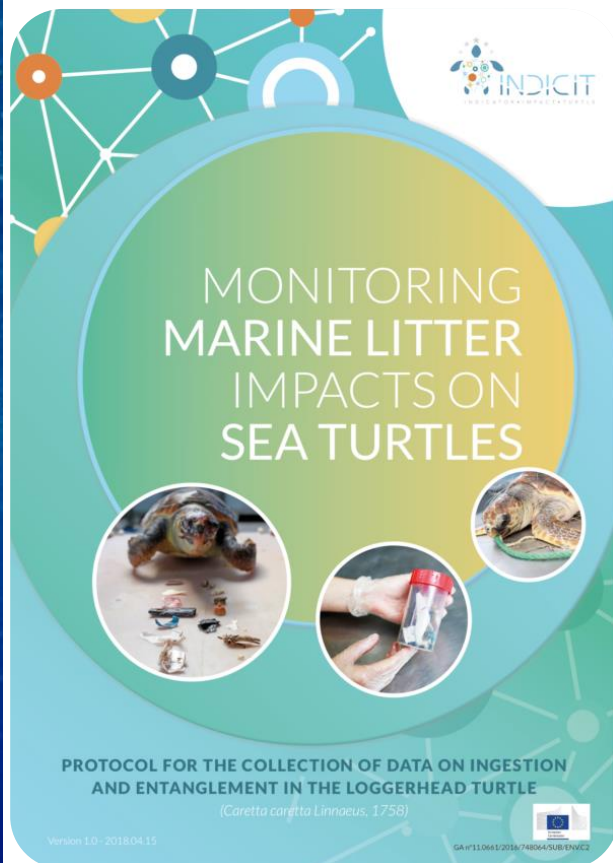
Collection of conditions for involvement  
Challenges relative to spatial configuration, time, expenses, training, involvement in expert groups, publication, sharing agreement...





# INDICIT progress

## Standard protocol (Deliverable D2.7)



## Improved thanks to collaborators

### Basic data (→ Litter ingested sea turtles)

- Debris >1mm
- Classification and quantification



### Optional data (→ Adjust indicator's constraints; collect data on other impacts)

- Litter description
- Biometry, health status, injuries, digestive capacity
- Entanglement
- Micro-debris (1-5 mm) ingestion



## 2 approaches

- From dead individuals (necropsies)
- From alive individuals (feces)



<https://indicit-europa.eu/protocols/>



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# INDICIT progress

## *Dissemination of a standard protocol (Deliverable D5.11)*



Tool kit for standardized  
monitoring of debris impacts on  
marine fauna

<https://indicit-europa.eu/protocols/>

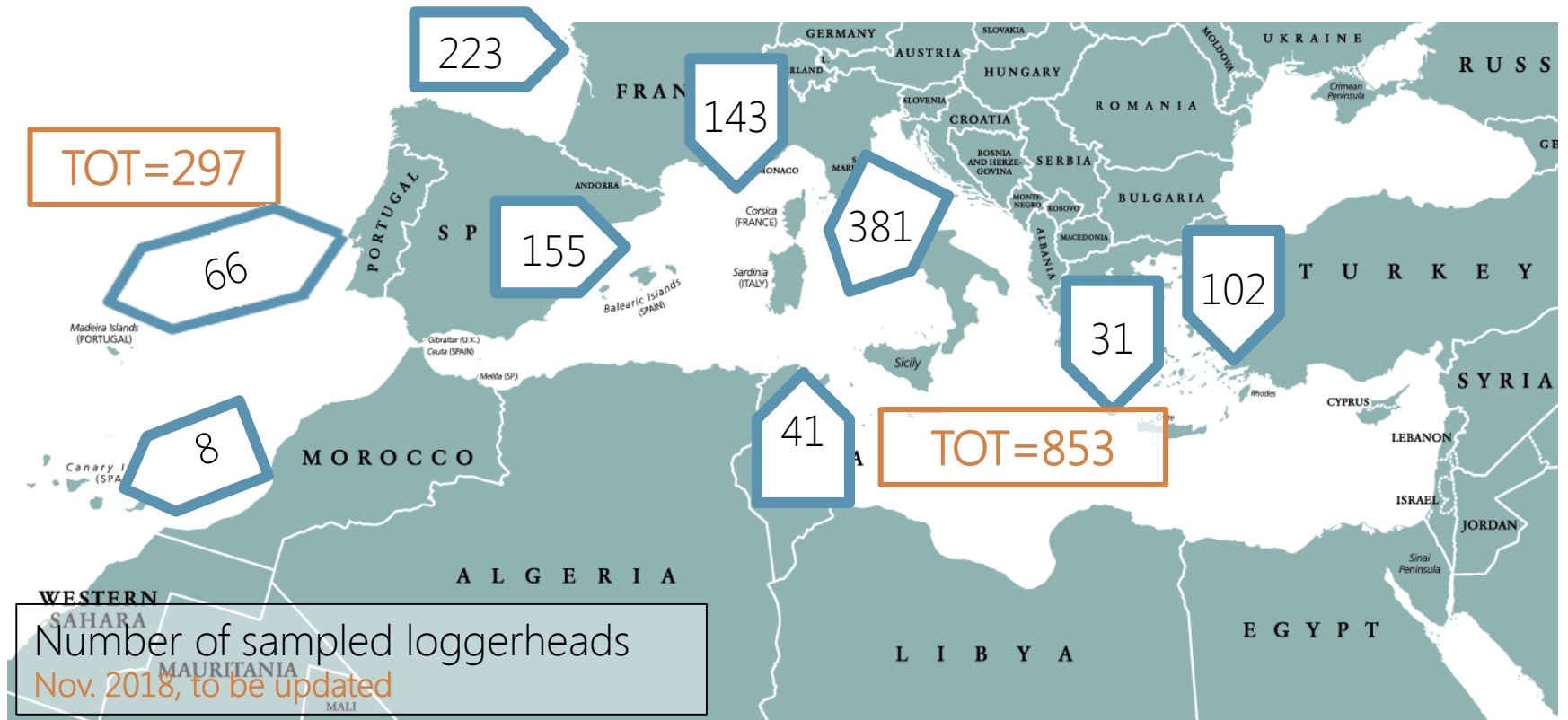


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# INDICIT progress

*A large standard dataset (Common databases - deliverable D2.9)*

1256 data on alive + dead loggerheads + leatherbacks

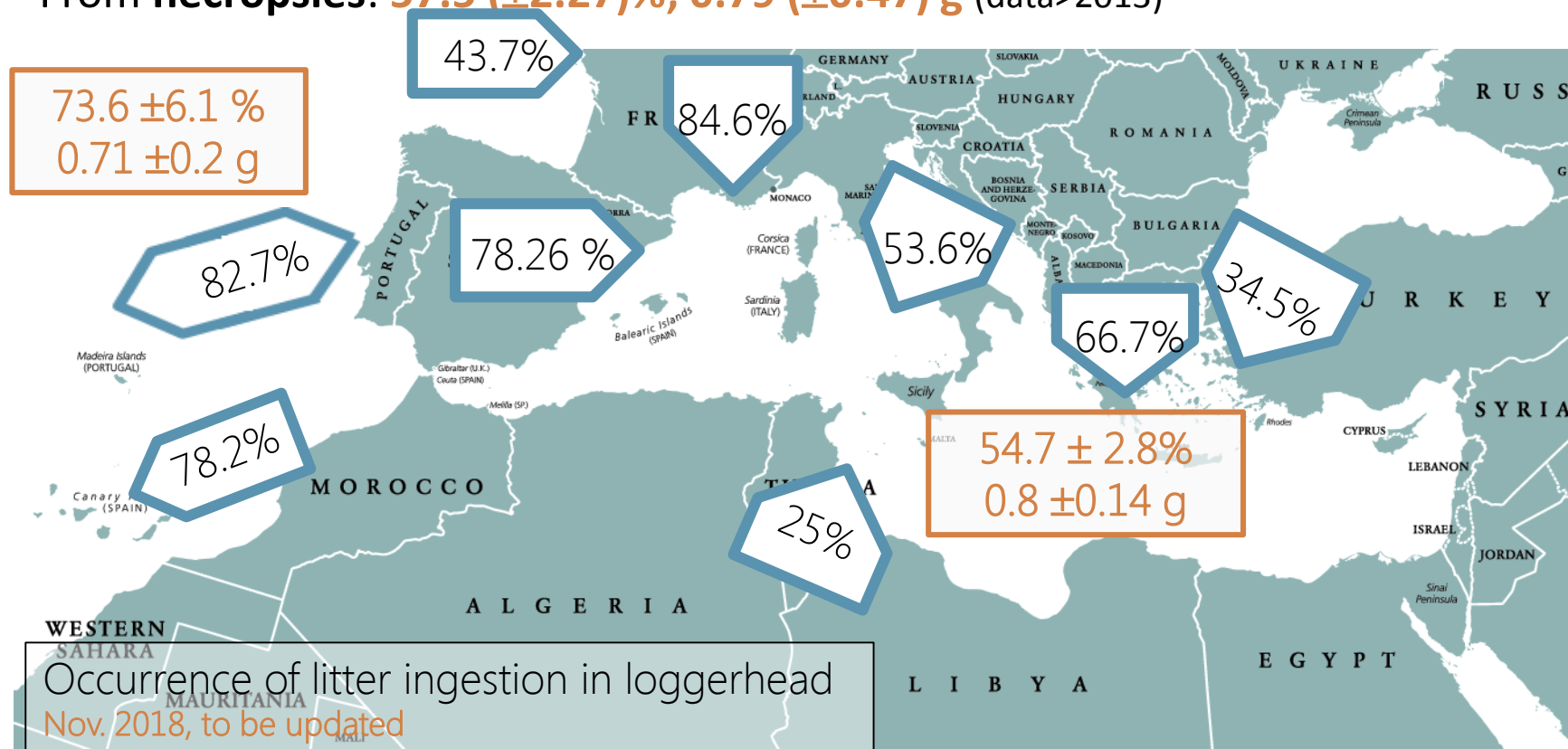




# INDICIT progress

## *A high occurrence of debris ingestion in Caretta*

From **necropsies**: **57.5 ( $\pm 2.27$ ) %**; **0.79 ( $\pm 0.47$ ) g** (data > 2013)



# INDICIT progress

*Mostly plastics with a high diversity of current single-use items*



Litter ingested by loggerhead – mainly plastics (bags, cups, lollipops, packaging, fragments...) Nov. 2018, to be updated



# INDICIT progress

## *Awareness (Activity 5)*

- News (site + Facebook)
- Documentary (in progress)
- Press articles
- Pedagogical material, e.g. “Turtle story” scenario, in several languages
- INDICIT Challenge for World Ocean Day and World Sea Turtle Day (June 18)





# INDICIT progress

## *Assessment of GES and criteria (deliverables D2.7, 3.7, 4.7)*

- **Examples**
- Scenario 1 *"There should be less than X% of loggerheads having more than Y g or more of plastics in the digestive tract in a sample of min 50 loggerheads from each area (RSC)"*
  - 48.76% have more than 0.88 g
- Scenario 2 *"There should be less than X% of loggerheads with more plastics than food remains"*
  - Among indiv. With ingested debris: 73.42%
- → Other scenarios considering body condition being discussed and evaluated
- Consideration of acquired knowledge on the factors influencing litter ingestion

# INDICIT progress

## *Synergies with other programs*

- Interaction and collaboration with other experts/programs (MISTIC SEAS, MARCET...) → **Proposals for harmonized approaches** (e.g., common protocols, GES unit, risky areas, data banking...)



- Developed by Ifremer in 2015 for French dataset for MSFD Descriptor 10 "Marine Litter" and being adapted for D10C3/4 based on INDICIT protocol

A screenshot of the INDICIT software interface. The top section is titled "Observation list" and contains a table with columns: Program, Station, Date, Survey time, Biomass, Comment, Status, and Sharing. Below this is a "Sampling operation list" section with a table for "Selections on the animal's body conditions". The bottom section is a detailed data entry form with various tabs and fields for recording observations, including species, conservation status, and body conditions. The interface is in French and includes a sidebar with navigation options.

Program	Station	Date	Survey time	Biomass	Comment	Status	Sharing
MIL Inguetel/marsh/leasant	123.8-000.8888888888	0001/2018	10:30	Part 1001			
MIL Inguetel/marsh/leasant	123.8-000.8888888888	0001/2018	11:00	Grat 00.00			

Sampling equipment	Time	Real latitude	Real longitude	Species	Conservation status	Main	By catch	Discovery	Probable cause of	Entanglement	Litter causing	Health	Affected	Part of the
Haul	11:00	42.20	0.00	Corsetta Corsetta	Alive	Fracture	Straight thread	Stranding	Bycatch/fisheries	Active	Pieces of net	Poor condition	RTF	Thin
				Demersale	Fresh	Amputation	Trawl	Bycatch/fisheries	Entanglement in	Passive	Monofilament line	Fair condition	LTF	Fat
				Corsetta	Partial	Settling	Drift net	Found at sea	Debris	Undetermined	Rope or pile of ropes	Good condition	RTF	Normal
				Chelone Mydas	Advanced	Abrasion	Fishing rod	Dead at the discovery	Anthropogenic	Plastic bag		LTF	RTF	Intestines
				Other	Mummified	Non identified								Faeces

- Possibility to **hide data** entered
- Possibility to be **used at larger scale** (I.E. UNEP MAP RAP / MEDPOL Database)
- Possibility to impose a **Moratorium** on the dataset



# INDICIT progress



## *Synergies with other programs*

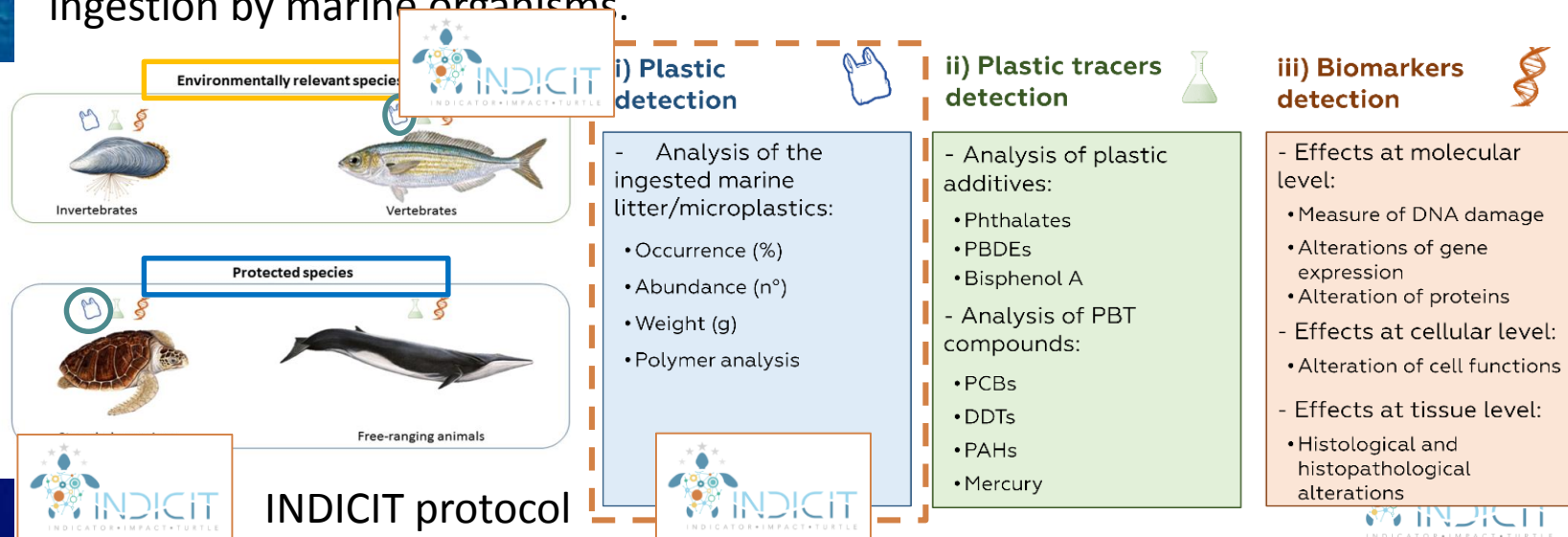
The simultaneous investigation in bioindicator species of:

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

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

**C)** 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.



INDICIT protocol





Thank you

