Marine Litter within the European Marine Strategy Framework Directive

Indicators for descriptor 10, Good Environmental Status and Monitoring

F. Galgani, *IFREMER, France*

YEOSU, PICES, Oct 2014

Descriptor 10 : Properties and quantities of marine litter do not cause harm to the coastal and marine environment

- 2010-12 Environmental targets and associated indicators

- 2014 Implementation of monitoring programmes

- 2016 Reduction measures to achieve or maintain GES

Overriding objective: Measurable and significant decrease of the total amount of marine litter by 2020

MARINE LITTER

- 260 millions tons of plastic / Year

- 500 kg garbage/ year/ person in Europe

- 80% of the waste is land based (20% in southern North Sea)

- ~ 115 000 microplastics / km2 in the North west basin of the Mediterranean sea

Ifremer

PICES

INITIAL ASSESSMENT 2010-2012:

- Diversity of ML

- Sources are not well identified and diffuse

- Importance of hydrodynamics

- Importance of ML in the Mediterranean

- Harm is not well understood

- Monitoring to be implemented

MARINE STRATEGY FRAMEWORK STRATEGY

WHAT IS THE GOOD ENVIRONMENTAL STATUS
FOR MARINE LITTER?

1. Litter and its degradation products do not cause harm to marine life and damage to marine habitats.

2. Litter and its degradation products present in, and entering into EU water do not pose direct or indirect risks to human health.

3. Litter and its degradation products present in, and entering into EU waters do not lead to negative socio-economic impacts.

Ifremer

PICES

MSFD Technical (Sub)Group on Marine Litter D 10

Technical expert group within the MSFD CIS process supporting the implementation of MSFD Descriptor 10 by Member States:

1.Developing common monitoring tools and protocols.

2. Facilitating/harmonizing the implementation of monitoring programmes.

3. Evaluating harm, sources and costs of applied monitoring.

Result documents

-Marine Litter - Technical Recommendations for the Implementation of MSFD Requirements (EUR 25009EN) 2011

- Guidance on Monitoring of Marine Litter in European Seas (EUR 26113EN) 2013

- Reports on sources, riverine inputs and harm in progress (2015)

MARINE STRATEGY FRAMEWORK STRATEGY

INDICATORS LISTED IN THE COMMISSION DECISION: (2010/477/EU)

10.1.1 Amount, source and composition of litter washed ashore and/or deposited on coastlines

10.1.2 Amount and composition of litter at sea (surface/ sea floor)


Ifremer

PICES

FLOATING LITTER: IN EUROPEAN SEAS

LOCATION	DENSITY (/km2)	% PLASTIC	REFERENCES
Belgian coast	0.7	95	Van Cauwenberghe et al., 2013
North Sea	2 (1 - 6)	nd	Herr, 2009*
North Sea	25-38	70	Thiel et al., 2011
Kerch Strait/ Black Sea	66	nd	BSC, 2009
France / MED	40,5/ km²	100	Galgani et al., 2013**
North western MED	3,13 / km²		Gerigny et al., 2012
Italy, Ligurian coast	1.5-25	nd	Aliani and Molcart, 2011
Slovenia	1.98 /km2	90	Vlachogianni & Kalampokis, 2014
Adriatic/ greek waters	5.66 /km2		Vlachogianni & Kalampokis, 2014
Aegean/Levantin	2.1 km2	83	Unep, 2011

* Aerial survey
** Wave glider

# FLOATING LITTER / WAVE GLIDERS FOR MONITORING

- Programmed video-camera (gopro2) or   camera (Gopro 3)
- Mounted on ballast of a Wave Glider (in resistant 60cm tube)
- Front side and sea surface oriented , 45° angle,
- Line transect evaluation of 12.7 m width at ther suface

© EMS / Liquid Robotics
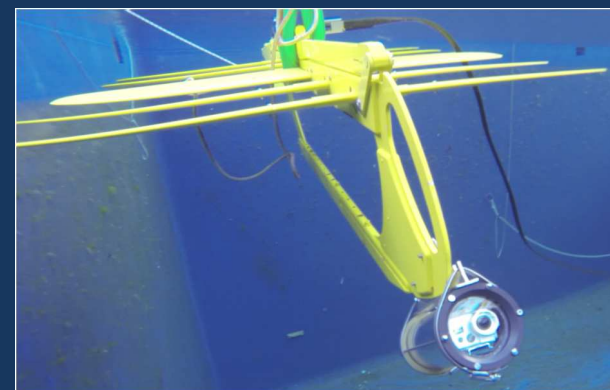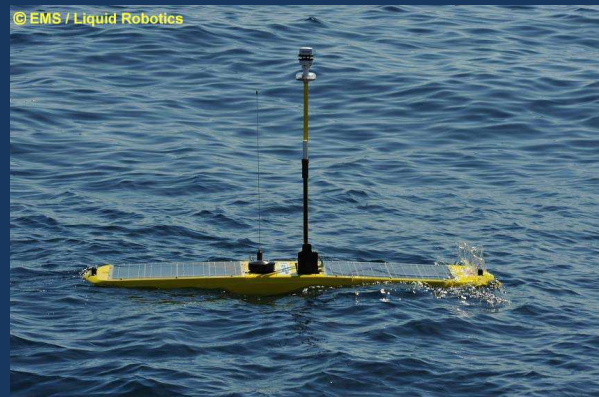
- Speed of 1.5 Knots: No movements, No cavitation

- Consistent data and stable images (Video and photo)

- Densities at 40.5 items/km2 (above classical approaches).

- Adequate for monitoring surface (0-4.5m) debris

- Enables the quantification/ observation of large passive organisms
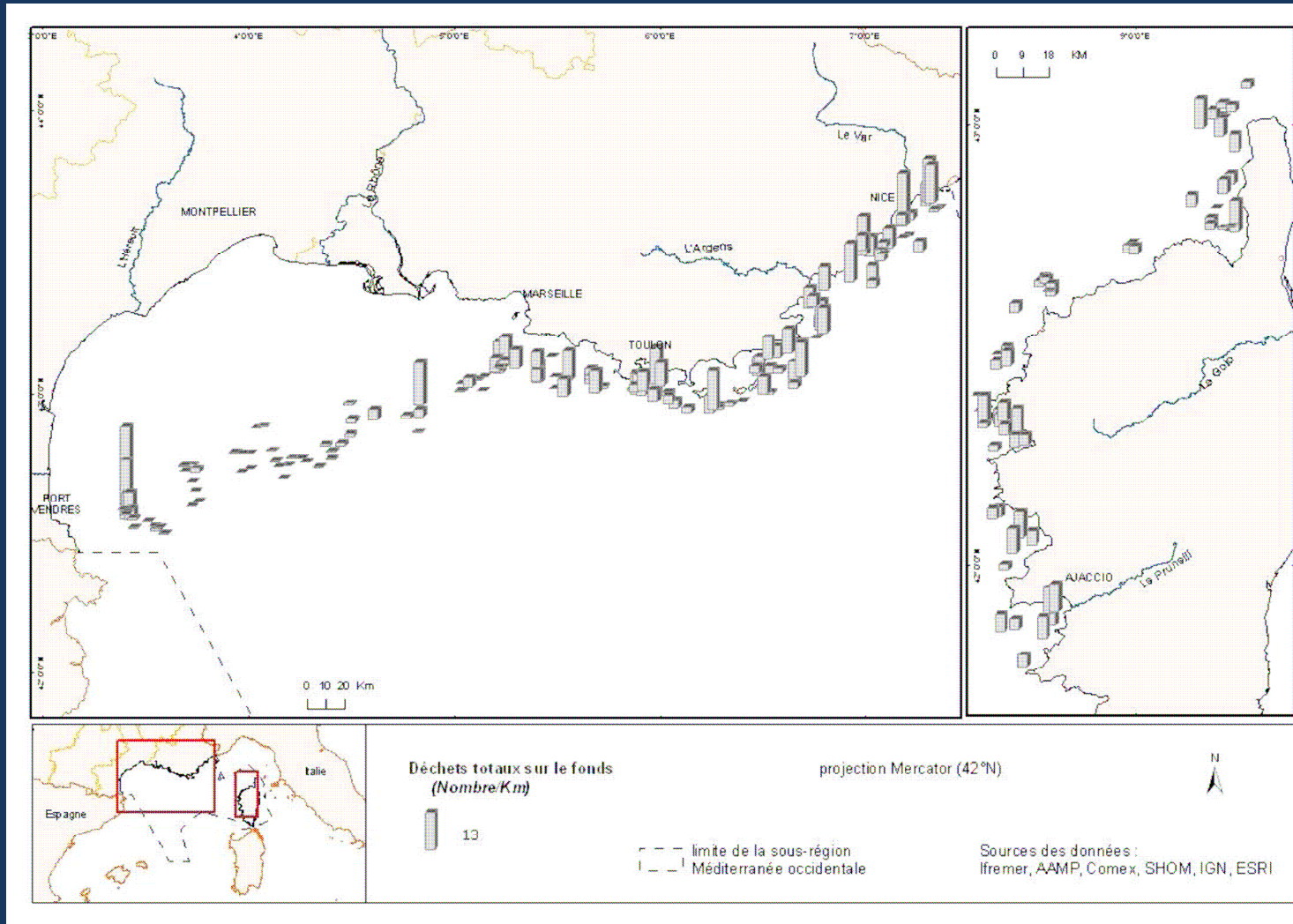
MSFD/ LITTER ON SEA FLOOR
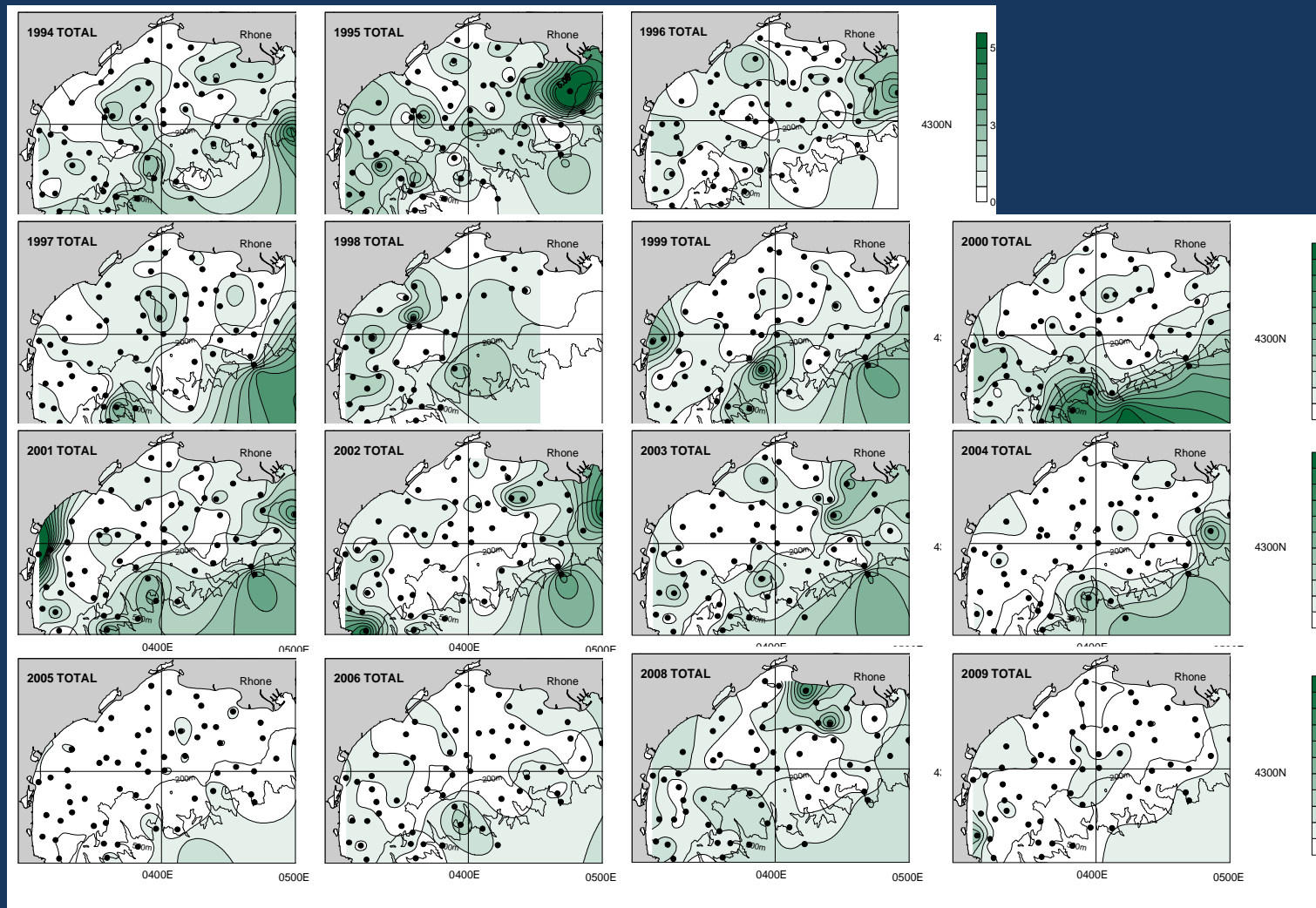
MEDITS program, Mediterranean sea, 1994 - 2009

Deep sea litter (800-100m, 260 dives)

French Mediterranean canyons

10.1.3 Amount, distribution and composition of microparticles

Ifremer

PICES

10.2.1 Amount and composition of litter ingested by marine animals

J VanFraneker,IMARES

Ifremer

PICES

Monitoring impacts of litter within MSFD

B)

*Constraints*: Large repartition, high ingestion rates, easy sampling /collection, Understand harm, good scientific background, etc.

- Entanglement is a complex approach
- Not enough information on bird species available in the Mediterranean Sea
- Poor Ingestion in mammals
- Not enough information on fish species, but sampling already organised and protocols for stomach content are available
- Turtle: *Caretta caretta* is the actual best candidate

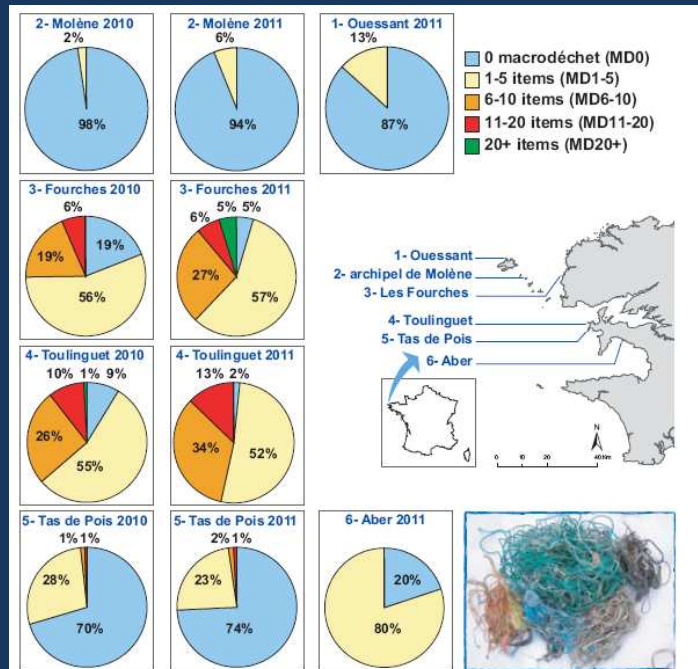Alternate approach: Nested litter (Shag), Strong potential

Risk Evaluation, Aerial surveys, NW Mediterranean Sea, (160 ft, 180000 km² in the MED)
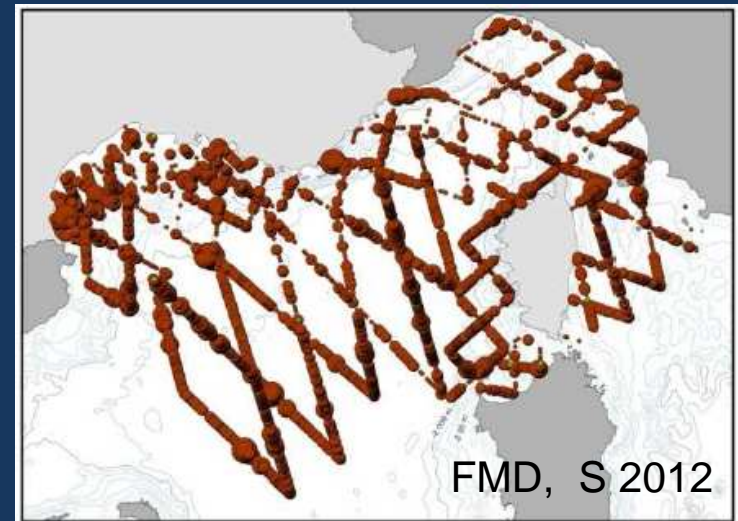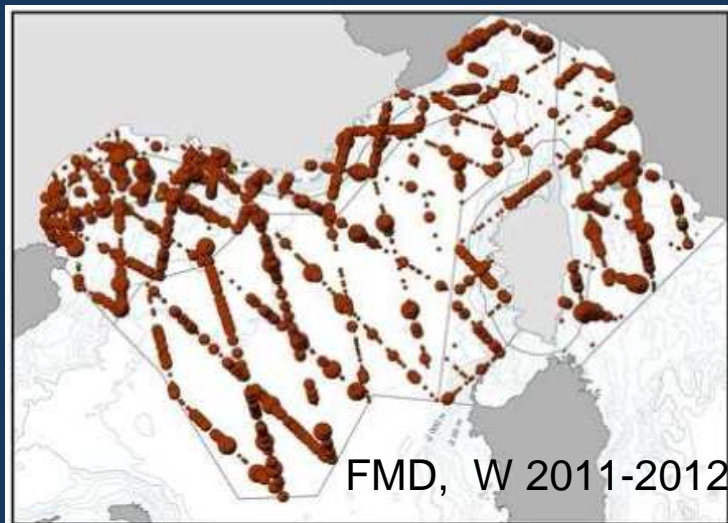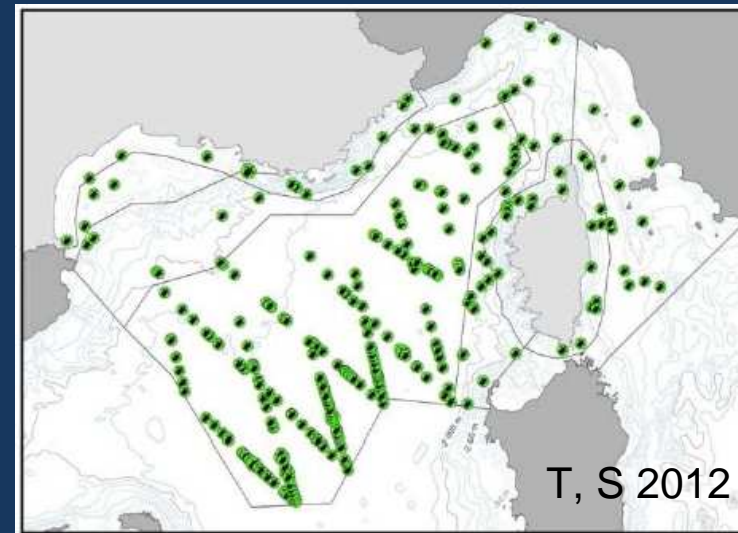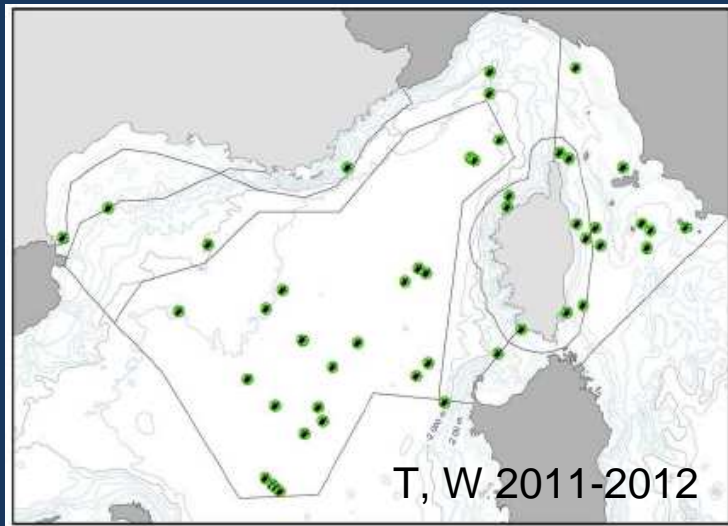
Marine litter in nests from the european shag *Phalacrocorax aristotelis* (Cadiou et al, 2011)

CONCLUSIONS

1) Develop a large scale EU Wide model   for currents transportation: Accumulation areas, sources/destinations, backtracking, Also D2 (Invasives species)

2) Develop a comprehensive model to evaluate degradation/fate (rates, external factors): information for trends & measures to specific types of litter/ component.

3) Develop a GIS platform (EU level) to locate/evaluate sources, activities, accumulation areas: A common tool to link sources/effects relationships and support adequate measures

4) Better understand Environmental consequences of litter/microlitter (wildlife/resources/food chain): Better definition of threshold, GES and targets.

5)   Develop automated monitoring systems/impact indicators and Rationalise monitoring (standards/baselines, etc.) for an harmonized monitoring dedicated to MSFD. Critical for 2014.