

# «Monitoring marine litter in the Mediterranean sea»

By Legambiente ONLUS



LEGAMBIENTE ONLUS





## Legambiente ONLUS

is the most widespread environmental organization in Italy.

Created in 1980 for the safeguard of the environment, for the promotion of sustainable lifestyle and to raise awareness about environmental issues.

Following the spirit of the tenet “Think globally, act locally”, the activity of Legambiente is based on the work of 1.500 local groups and co-ordinated through 20 regional committees and a national headquarter in Rome.

It's a non-profit organization that carries out its activities thanks to the voluntary commitment of thousands of citizens who want to raise awareness of environmental emergencies in the country.

## Goletta Verde

it is the widest campaign of analysis and information about sea pollution ever promoted and conducted by an environmental organization. Every Summer, since 1986, it monitored the quality of Italian seas.

27 outings, presence in 15 regions, over 200 events, over 200 water samples and more than 2000 press articles.



## Accademia del Leviatano ONLUS

is an Italian non-profit research organization. Its purpose is to promote, encourage, realize studies and research aimed at understanding and conservation of marine mammals, with particular reference to the Mediterranean environment and with special interest for endangered species.

# Monitoring marine litter

## Legambiente and the *Marine Strategy*



Legambiente **start in the summer of 2013** the monitoring of floating marine debris along the Tyrrhenian Sea, in conjunction with the annual navigation of «Goletta Verde». At the same time **Accademia del Leviatano onlus** did the same monitoring on the transborder transects from **Livorno to Bastia** (Corse) and from **Fiumicino to the island of Ponza** using regular Ferries as platform of observation.

With the **2014** edition the observation was extended to the **Adriatic Sea** and the **Ionian Sea** while Accademia del Leviatano did the monitoring in the **Civitavecchia-Barcelona** transect.

In **2015** we will continue the collection of data to enrich the knowledge of this issue in the Mediterranean sea.

With this activity Legambiente want to contribute to the **Marine Strategy Directive** (2008/56), dedicated to the marine environment, which requires Member States to monitor the state of seas and take the measures needed to reach or maintain its 'good environmental status' by 2020.

**"Properties and quantities of marine litter do not cause harm to the coastal and marine environment"**



# The survey protocol



The protocol used by Goletta Verde has been developed and rearranged by ISPRA-NAT (Nature Defense Dept.), University of Pisa and Accademia del Leviatano ONLUS and it's based on an existing methodology\*.

Some features:

- ✓ Only **waste larger than 25 cm** are considered
- ✓ The observation is made with the **naked eye**, binoculars is used only to confirm the sighting of litter larger than 25 cm.
- ✓ The **width of the sampled area** (strip) is recorded
- ✓ **Gps** coordinates (start and end and position of each waste) are collected

The observer collect data on a database table, specifying the **litter type** - plastic, glass, wood, metal, rubber, paper and cloth - (**according with the OSPAR manual**), the source and buoyancy.

\* *Day & Shaw 1987, Matsumura & Nasu. 1997, Thiel et al 2003, Shiomoto & Kameda 2005, Aliani et al. 2003; Hinojosa & Thiel 2009, Arthur et al. 2011*





# Results: where

## 2013: Tyrrhenian Sea



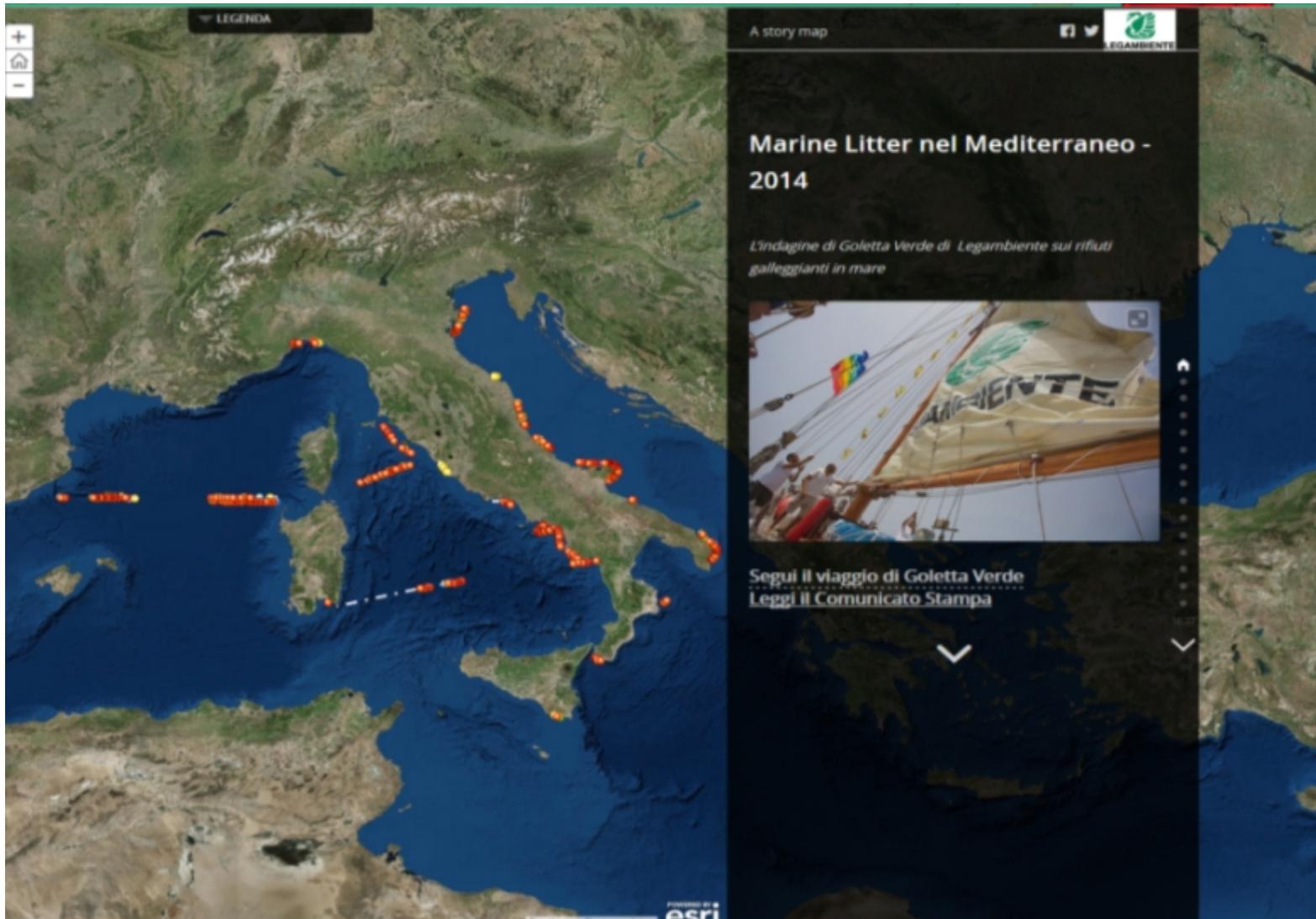
The data monitored by the Accademia del Leviatano refers to the **Livorno - Bastia** and **Fiumicino – Ponza Island** tracks. As base of observations they used opportunity platforms (Corsica and Sardinia Ferries and Medmar) and the monitoring took place in the framework of the protocol concerning the international network for the monitoring cetaceans from ferries.



The data were processed according to common scientific protocol, taking into account the diversity of observation platforms.

# Results: where

## 2014: Mediterranean Sea



To consult the on-line map: <http://www.legambiente.it/marinelitter/>

# Results...until now



**2013** 136 hours of observation - 3.075 km

Boat	Area	Density km <sup>2</sup>	Plastic	Plastic bags	Plastic Fragments	Plastic bottle	Fish Boxes	Other
Goletta Verde	South-Central Tyrrhenian	13,3 (± 2,6)	93,8%	27%	15%	23%	10%	6,2%
Goletta Verde	North-Central Tyrrhenian	5,1 (± 1,7)	98,5%	32%	14%	46%	9%	1,5%
Traghetto	Livorno -Bastia	2,14 (± 0,2)	90,4%	28%	20%	48%	7%	9,6%
Traghetto	Fiumicino - Ponza	2,4 (± 0,6)	96,8%	17%	11%	28%	33%	3,2%

**2014** 87 hours of observation - 1700 km

Solo Goletta Verde	Density/ km <sup>2</sup>	Plastic	Prevailing plastic waste
Tyrrhenian sea	26 ±13,6	91%	34% Plastic bottles 29% plastic bags
Adriatic sea	27 ± 2	90%	41% Plastic bags 20% fishing waste (polystyrene and nets)
Ionian sea	7 ± 1,7	85%	27% fish boxes 18% plastic bags

**Over 90% is PLASTIC**

**il 20% from FISHING**

# Not only marine litter: Legambiente's monitoring BEACH LITTER



- 24 beaches monitored in Italy in 2014, over 130.000 kmq
- 15 215 waste, 27 items / kmq
- 65 % is PLASTIC ■ 10% from FISHING
- Thanks to Clean up the Med 5 beaches monitored along Mediterranean coast.



# The (others) effect of the marine waste on beaches



- **On the economy**

Try to consider, for example, mechanical damage for boat and fishing equipment, problems for fishes stock (quality and quantity), social cost for the cleaning and of course consequences on touristic appeal

- **On tourism**

Clearly dangerous for **tourism: beaches and villages** loose attraction and the public use of beaches full of garbage get lost.



# Legambiente standard research

Samples on **24 beaches** was done by Legambiente volunteers among all our coast, during the first part of May 2014.

The research was realized also in **5 Mediterranean beaches**, thanks to the participation of some environmental organizations to the international campaign *Clean up the Med*.

Every single sample was strictly executed following the monitoring protocol powered by **Italian Minister of the Environment and ISPRA**.

We choose free access beaches.

The length of every standard sample are 100 mt. The width change: from the water edge to the end of the beach (vegetation, dune system, houses, etc.)



# Marine litter e beach litter

We consider standard like **composition**, **quantity** and **size** (<25cm or >25cm).

Where possible, we try to suppose the “birth” of the trash (sea, beaches, rivers, fishing).

To estimate the trash type, Legambiente used **OSPAR number and categories**, used for the *beach litter monitoring all over the european coast*.

We organize the samples with a systematically orthogonal walking on the coast line. The gap between every walking are 2mt. (yellow line on picture)

We take note on a schedule of every stuff come across us.



## *Marine litter e beach litter*

According to a lot of research  
approximately **70% of the  
marine litter goes to the  
bottom** and **the 15% stay  
above water.**

So beach litter are just the top of  
the mountain!

DO NOT FORGET IT



# beaches

**Sample on 24  
italian beaches**

**130.040 mq  
(almost 20 soccer  
fields).**



Beaches are in: Genova, Viareggio (Lu), Orbetello (Gr), Scarlino (Gr), Fiumicino (Rm), Anzio (Rm), Pozzuoli (Na), Pollica (Sa), Giardini Naxos (Me), Palermo, Agrigento, Gela (Cl), Ragusa, Pachino (Sr), Noto (Sr), Catania, Policoro (Mt), Pisticci (Mt), Casalabate (Le), Tricase (Le), Brindisi, Polignano a Mare (Ba), San Benedetto del Tronto (Ap).

# What we found ?

## RESULT

*beach litter research*  
by Legambiente Onlus

May 2014



## 6.1 Waste categories

WASTE	Quantity	%
1. Plastic	9948	65,4%
2. Cigarette buttom	1035	6,8%
3. Metal	896	5,9%
4. Hospital and clinical waste	812	5,3%
5. Paper	654	4,3%
6. Building material	601	4,0%
7. Glass	498	3,3%
8. Rubber	272	1,8%
9. Textile	257	1,7%
10. Wood stuff	202	1,3%
Other	40	0,2%
<b>TOT WASTE</b>	<b>15215*</b>	

\* more of  $\frac{3}{4}$  of the waste size are smaller than 25 cm

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**Thank you**