Beach litter 2017
Survey in Mediterranean area
May 2017
Beach litter survey

The BEACH LITTER survey was conducted by Legambiente within “Spiagge e fondali puliti - Clean-up the Med 2017.” From April to May 2017, 29 Italian beaches and 25 other Mediterranean beaches were studied with the aim of recording the quantity and types of waste on shore. Recording the most common sort of waste, the possible origin, and other parameters, this survey reports a dangerous phenomenon for the environment, tourism, and the economy. It’s necessary to implement programs for waste reduction in seas and on coastal strips, as provided by European Directive Marine Strategy.

The waste we found on the beach is just a small part of the scattered ones that makes contact with the marine ecosystem; 70% of the total is estimated to be sinking. Transported by waves, winds or streams waste goes everywhere, reaching even the most unexplored places, even getting in touch with marine creatures. What we see is just the tip of an iceberg whose dimensions are still not well known.
«The precious marine environmental heritage must be protected and preserved in order to maintain the biodiversity, the health and productiveness of seas and ocean.»

**Marine Strategy,**

is the European directive 2008/56/ce that focuses on marine environment strategy.

The Marine Directive aims to achieve Good Environmental Status (GES) of the EU’s marine waters by 2020, based on 11 descriptors, one of which is related to sea and beach waste: “Descriptor 10.” Properties and quantities of marine litter do not cause harm to the coastal and marine environment.”

To achieve a good environmental status it’s essential to implement policies and interventions to reduce sea and coastal waste and, consequently, their impact on ecosystems.

Our precious marine environmental heritage must be protected and preserved in order to maintain the biodiversity, health, and productiveness of our waters.
SOURCES OF MARINE LITTER

1. Sewage-related debris
2. Litter dropped in towns and cities
3. Poorly managed bins and landfill sites near the coast
4. Lost fishing equipment
5. Shipping materials lost overboard
6. Poorly managed industries
7. Litter dropped at the beach
Impatti e conseguenze

FAUNA
Sea turtles, birds, and marine mammals may be trapped in fishing nets/tools or die by suffocation due to accidental ingestion of waste traded for food. According to some studies, 79.6% of sea turtles die as a result of waste ingestion. Additionally, micro-plastics ingested by aquatic organisms are also the main cause of the introduction of plastics in biota and of the imbalance in the marine food chain.

ECONOMY
The economic impact is calculated by mechanical damage to boats, fishing tools, and fish stock. It is also calculated in quality and quantity, by the cost for cleaning dump areas, and the reduction of touristic appeal.

TOURISM
The economic impact on tourism is remarkable, due to reduction of aesthetic value of the environment.

The biggest matter is waste doesn’t disappear. By decades it last in the environment and crumbles by UV rays, wind, waves and many other factors, producing more and more smaller debris, impossible to remove or simply to identify. The micro litter (fragments under 5 mm) has an easy way to contaminate the food chain.
Monitoring protocol: a unique one.

Legambiente’s volunteers studied the samples collected from Italian beaches and various other organizations conducted the same survey on the other Mediterranean beaches involved in “Clean up the Med”.

All studies were conducted following the official monitoring protocol developed by the Technical Subgroup on Marine Litter (TSG ML) Mediterraneo. A pan-Mediterranean citizen-science based monitoring activity which will provide reliable, accurate and comparable marine litter data.

The studies were conducted on a beach running perpendicular to the coastline, recording all items found on the surface (without digging).
The monitored beaches in the Med basin are 105, in eight different countries. One in Algeria; seven in Croatia, of which four in Istria; two in France; twenty-one in Greece, of which one in Athens and the rest in the islands as two in Corfu, seven in Crete and four in Rhodes; sixty-two in Italy; two in Spain, in the region of Valencia; five in Tunisia and five in Turkey.
The data was gathered in several editions of the campaign, in April and May, from 2014 and 2017. On 105 monitored beaches, over 320,000 square meters, the volunteers found over 58,000 waste, an average of 561 waste per 100 linear meters of beach.
Materials

Plastic has the highest rate (81% of the collected items). Following metal waste (4,7%), glass/ceramic (4,3%) and paper/cardboard (4%). Processed and worked wood items are the 3%. Cloth and textile (including shoes and sandals) are the 1,7% and rubber is 1,4%.
The 63% of the waste found on the beaches can be sorted in 10 specific categories.
First of all the cigarette butts (12%). Second place for caps and lids (9.9%) from drink bottles or cleanser container, which are very small objects easy to scatter. In this category plastic drinks caps have the highest percentage (64%).
Third place for plastic drink bottles (8.2%) and fourth place for mussel and oyster nets (7.6%, all found on Italian beaches).
The fifth place is for plastic fragments (7.4%); it’s a very alarming fact, because it means this items have been floating and crumbling since long time.
In sixth place there are cotton bud sticks (4.5%); this is a marker of bad water treatment considering these sticks are too often dropped in the WC.
Then disposable cups, cutlery/trays, straws, dishes; plastic bags, polystyrene pieces and other identified plastic/polystyrene items (not in list) close out this particular merit ranking.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12,0%</td>
<td>Cigarette butts and filters</td>
</tr>
<tr>
<td>9,9%</td>
<td>Caps/lids (all material type)</td>
</tr>
<tr>
<td>8,2%</td>
<td>Plastic drink bottles</td>
</tr>
<tr>
<td>7,6%</td>
<td>Mussel nets, Oyster nets</td>
</tr>
<tr>
<td>7,4%</td>
<td>Plastic pieces (2,5 cm &gt;= 50 cm)</td>
</tr>
<tr>
<td>4,5%</td>
<td>Cotton bud sticks</td>
</tr>
<tr>
<td>4,0%</td>
<td>Disposable cups, cutlery /trays, straws, dishes</td>
</tr>
<tr>
<td>3,5%</td>
<td>Plastic bags</td>
</tr>
<tr>
<td>3,1%</td>
<td>Polystyrene pieces (2,5 cm &gt;= 50 cm)</td>
</tr>
<tr>
<td>2,9%</td>
<td>Other plastic/polystyrene items</td>
</tr>
</tbody>
</table>
One of the most widespread waste in our oceans and seas are plastic bags. Around 100 billion plastic bags are produced per year and are placed in the market only in the European Union. In Mediterranean Sea an estimated 25 million plastic bags pollute every 1,000 kilometers of coast, more than 1 trillion for 46000 kilometers of the Mediterranean Sea per year. Prevention is the most important action.

For this reason **Legambiente ONLUS is promoting a ban on plastic carrier bags below 100 microns**, except bags for primary transport (i.e. fisheries) and biodegradable and compostable certified EN 13432 or ISO 14855 to all other Mediterranean countries.

Passing through the net of volunteers and other associations, Legambiente, Kyoto club and Environmental Alliance for the Mediterranean aim to address the Mediterranean governments collecting at first the support of the other Mediterranean association and other stakeholder to the plastic bags ban proposed.

A ban of plastic bags all around Mediterranean sea

**Valuation of the sources**

It is not easy to link the waste typologies to specific activities, because several sources are common. To better understand the problem and find out the best solutions it’s useful to define, at least for the most common waste types, the atrophic activities which are related the waste on the beaches.

The mismanagement of urban waste (including poor waste management, fly tipping, tourism and recreational activities) seems to produce the half part of the waste on the beaches. Productive activities as fishing and water farming are responsible for 11% and 6% is from bad water treatment.

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanitary &amp; sewage related</td>
<td>6%</td>
</tr>
<tr>
<td>Fishing &amp; aquaculture</td>
<td>11%</td>
</tr>
<tr>
<td>Undefined source</td>
<td>30%</td>
</tr>
<tr>
<td>Managed urban waste</td>
<td>54%</td>
</tr>
</tbody>
</table>

*Image of a hanger and a plastic bottle on the beach.*
Valuation of the sources: Mismanaged urban waste

The 62% of items from this source are packaging and plastic is the predominant material. There is also wood, paper, glass and textile packaging. Four on five they are food packaging.

Just three items (cigarettes packs, lighters and butts) proof enough the effects of a bad urban waste mismanagement. The habit to drop on the ground or bury under the sand the cigarette butts doesn’t stop and it’s common everywhere. Over 7000 butts found, equal to over 350 cigarettes packs.

Sanitary & sewage related litter

The inefficiency of water treatment systems, but sometimes also the lack of connection to the sewerage network, is only partially responsible for the presence of cotton bud sticks, but also blisters of medicines, contact lens containers, small insulin needles, napkins or applicators and other objects of this type that we find on the beaches (6% of the waste). The main responsibility lies in the bad habit of throwing standard urban waste in the toilet.
A too short life

A very interesting analysis concerns how long have been living the items found on the beaches before to become waste. The surprising data is 64% of the stranded waste are items thought and produced to be disposable or shortly used. The 27% are materials or packaging with a very short life and 37% are disposable items.

- Impossible to determine: 21%
- Multiple-dose/use: 3%
- Long lasting item: 12%
- Short life: 64%
- Single use: 37%
The interactive map of Legambiente surveys on marine, beach and lake litter in Italy.

https://www.legambiente.it/marinelitter/?lang=eng
Legambiente’s clubs and volunteers involved in Clean Up the Med campaign carried out the Beach Litter survey 2017, as usual in the last four years.

Thanks to the organizations involved in Clean Up the Med, Serena Carpentieri, Stefania Di Vito, Katiuscia Eroe, Michela Presta, Giorgio Zampetti. Special thanks to Giulia Nocifora for the crucial contribution.

Pictures in this report are shot by the volunteers of Beach Litter Survey 2017.