CleanAtlantic

Awareness raising

Litter Eater: Multilingual awareness raising game on marine litter pollution

Game elaborated as part of the CleanAtlantic project extension (WP8)







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Executive summary

Litter is ubiquitous in the marine environment. It originates from many different sources and geographic origins. Litter is considered as harmful for the marine environment as it can impact organisms at different levels of biological organisation and habitats in various ways.

The aim of work package (WP) 8 of the CleanAtlantic project is to raise awareness on marine litter pollution, its origins and causes, its impacts and on possible solutions to tackle it.

As part of CleanAtlantic WP8, Cedre developed two awareness-raising games on marine litter which were tested during various public events (*e.g.* European Researchers' night in 2018 and Brest maritime festival in 2022) organised during the CleanAtlantic project. The first one, the "CluedoButt" aimed at raising awareness on cigarette butt pollution.

This report presents the second game developed, named "Litter Eater". The aim of the game is to raise awareness on the diversity of litter types found in the marine environment, their origins and potential impacts on marine organisms. It consists in answering a riddle in order to find the name of a mystery animal known to eat plastic by mistaking it for food, the "litter eater". To find the riddle answer, a selection of litter types tipically found in the Atlantic Area, especially on beaches (according to CleanAtlantic results obtained in WP4.1) are laid out on a table and their name are to be guessed, which allowed to identify a selection of letters, forming at the end the answer to the riddle.

Initially developed in French, the game has been translated in English, Spanish and Portuguese with the support of CleanAtlantic partners. The present report details the English version of the game with the setup of the game, the game play, the key messages to convey and the solution.

The game cards are presented in Appendix in a printable format, in English, French, Portuguese and Spanish.



Introduction

Litter is ubiquitous in the marine environment and it originates from many different activities and geographic origins. Marine litter can originate from the sea through deliberate or accidental losses from vessels (including cargos), and be transported to and deposited on the coast from the sea by winds and water currents. It can be directly deposited on the coast by humans, e.g. tourists, fishermen or fly-tipping. Litter can also be deposited further inland on riverbanks, directly into rivers, on streets and in the countryside and consequently be transported by rivers and wind into the marine environment and onto beaches. In addition, sewage works may discharge litter items directly, or indirectly, via rivers and sewage outlets into the sea and these items can be washed ashore.

Marine litter can be potentially harmful as it can impact organisms at different levels of biological organisation and habitats in various ways namely; through entanglement (Staffieri, E. *et al.*, 2018; Poeta, G. *et al.*, 2017; Künh, S. *et al.*, 2015), or ingestion of litter items by individuals, resulting in death and/or severe suffering (Künh, S. *et al.*, 2015; Künh, S. and van Franeker, J.A., 2012); through chemical and microbial transfer (Werner, S. *et al.*, 2016); as a vector for transport of biota (Werner, S. *et al.*, 2016) and by altering or modifying assemblages of species (Casabianca, S. *et al.*, 2019; Werner, S. *et al.*, 2016).

In this context, in 2017, the Interreg project CleanAtlantic was launched aiming to protect biodiversity and ecosystem services in the Atlantic Area by improving capabilities to monitor, prevent and remove marine litter. The project also contributes to raise awareness and change attitudes among the stakeholders.

The Work Package (WP) 8 of project is dedicated to awareness raising and it aims to raise public awareness about pollution by marine litter and its impacts on the marine environment. In the context of this work package, in 2020, Cedre elaborated an awareness raising game on cigarette butts named "CluedoButt" based on knowledge acquired by the project (Cedre, 2021; Cedre, 2023). The game was developed with the aim to raise public awareness about the pollution caused by cigarette butts in the environment. The game presentation and cards can be downloaded from the CleanAtlantic website¹.

This present report describes a second awareness raising game designed by Cedre during the CleanAtlantic project. This game is named "Litter Eater". The aim of the game is to raise awareness on the diversity of litter types that are found in the marine environment, their origins and impacts on marine organisms. It consists in answering a riddle in order to find the name of a mystery animal known to eat plastic by mistaking it for food, the "litter eater". To find the answer to the riddle, a selection of litter types tipically found in the Atlantic Area, especially on beaches (according to CleanAtlantic results obtained in WP4.1, see Cedre, 2020), are laid out on a table and their name has to be guessed, which allowed to identify a selection of letters, forming at the end the answer to the riddle.

Initially developed in French, the game has been translated in English, Spanish and Portuguese with the support of CleanAtlantic partners. The report presents the English version of the game and details the setup of the game, the game play, the key messages to convey and the solution.

The game cards are presented in Appendix in English, French, Portuguese and Spanish.

¹ http://www.cleanatlantic.eu/wp-content/uploads/2021/06/WP8_CluedoButt_final_compressed.pdf



Materials and methods

1. OVERVIEW OF THE GAME

1.1. Presentation

The game starts with the presentation of the card with the riddle to answer. The aim of the game is to answer the riddle and discover who is the mystery "Litter Eater".

The riddle is: "I am a seabird. When there are litter pieces at the sea surface, I eat them because I mistake them for food. This is the reason why scientists use me as an indicator species to assess the presence and associated impacts of litter in the marine environment. I am the: ...".

To answer the riddle, several numbered litter types - whose names are to be found - are displayed on the table, each accompanied by a plastic card containing the number of letters that composes the name. In each litter type name, one of the letters is framed in red. When all put together these letters form the answer to the riddle.

The player has to guess the nature and name of all the litter type exhibited on the table to find out the riddle answer. The Litter Eater game allows the player to learn more about marine litter pollution and its impact on marine organisms.

1.2. Riddle answers

Riddle answers are different for the different language versions of the game as marine species living and impacted by litter vary from one country to another (as climate and species distribution area vary from one country to another).

The riddle answers for each version are detailed below:

- English version: "Northern Fulmar"
- French version: "Fulmar boréal" (= Northern Fulmar)
- Spanish version: "Cormorán" (= Cormorant)
- Portugues version: "Tartaruga comum" (= Loggerhead turtle)

2. MATERIAL LIST (English version)

2.1. Game cards

All the game cards translated into the four languages (English, French, Spanish and Portuguese) can be found in appendices 1, 2, 3 and 4 of this report. Once printed, it is recommended to plastified them in order to make them re-usable (by using non-permanent markers and erasing the responses after each game use).

The game cards for the English version are detailed and presented below:



- **The "riddle card"** (Figure 1) presenting the marine organisms to be found and on which to write the answer at the end of the game (answer for the English version is "Northern Fulmar").

	Ifter Fater		-	
	I am a seabird. When there are litter pieces them because I mistake them for food. T scientists use me as an indicator species to a associated impacts of litter on the marine env	at the sea surface This is the reaso assess the presen ironment. I am th	e, I eat n why ce and e :	
Ce	dre	Atlantic Area	Clean Atlantic	

Figure 1: The "riddle card"

- **The "Litter Eater card"** (Figure 2 – recto/verso) showing the mystery organisms to discover, to be presented at the end of the game when all the letters have been found and the riddle solved.



Figure 2: "The Litter Eater card"

- The **"answer card"** (Figure 3) which is available to help the game moderator to remember the litter type names and the order to organise them on the table





Figure 3: The "answer card"

- The "litter cards" (figure 4 recto/verso) are used to identify the litter types exhibited on the table (one card per litter type to identify, e.g, for the English version, there are 14 litter types to identify and 14 litter cards) (Figure 4). The litter cards are numbered in the order to use to install them on the table. Cards are recto-verso:
 - The cards recto is made to write down the name of the litter type to discover with the number of letters of the name to discover indicated along with one letter framed in red (the one that compose the answer of the riddle).
 - On cards recto, the litter type name is indicated and information about the litter type are provided.

NB: it is important to keep the cards with only the recto side visible as long as the answer is not found!

References of the data and information provided on litter cards are detailed in Appendix 5.



Figure 4: Example of litter card for fishing net (item number 1 of the English version)



2.2. Accessories (not provided)

To play the game, it is necessary to have:

- A table of at least 80x80cm (minimum size for game installation) to exhibit the cards and litter;
- A non-permanent marker to write on the litter cards and the riddle card;
- A cleaning wipe to erase the cards at the end of the game.

2.3. Litter (not provided)

Even if the game can be played only with pictures of the litter types to identify, it is recommended to use real marine litter (e.g. found on a beach) during the game. The different litter types can be stored in either jars or freezer bags with a number of it (the same number as the one indicated on the associated litter card).

3. SETUP OF THE GAME

To set up the game, it's recommended to use a covered area, sheltered from the wind (to prevent the cards from flying out). The table should be at least 80x80cm in size, so that the litter and the cards can be laid out easily.

How to set up the Litter Eater game?

The riddle card should be placed in the center of the table, or prominently at the top, and the litter around it with the numbers in ascending order (Figure 5).



Figure 5: Example of Litter Eater game setup



4. GAME PLAY

The details of the game play are presented in Table 1 below.

	DESCRIPTION	MATERIAL	
Step 1	Presentation of the marine litter issue:	No material needed	
	Present the marine litter issue and its impacts		
	(part 5.1. Message to be conveyed during the		
	presentation of the game)		
Step 2	Explaination the game to the player(s):	Litter items; litter cards; riddle	
	Explain the game to the player(s) by first	card.	
	presenting the riddle and then the aim of the		
	game, i.e. to guess the name of the mystery		
	marine organisms by finding the names of the		
	different litter types exhibited on the table		
	using the information cards to be filled in.		
Step 3	Identification of marine litter items:	Litter items; litter cards; marker;	
	The name of each litter type has to be found	cleaning wipe.	
	and to be written on the corresponding litter		
	card. For each item found, the game		
	moderator gives informations on the litter		
	origin and impacts, referring to information		
<u></u>	provided on litter cards.	The second s	
Step 4	Answering the riddle:	Litter cards; riddle card; marker;	
	when all the names of the litter types have	cleaning wipe; Litter Eater card.	
	the riddle by transposing the letters found		
	the house by transposing the letters found		
	right order and can be directly transposed on		
	the riddle card		
	Once the riddle is solved, the game moderator		
	can show the "litter Fater card" to present		
	the mystery marine organisms. This is the		
	moment where the game moderator should		
	provide the last message of the "Litter Fater"		
	game (part 5.3. Message to be conveved after		
	solving the riddle): How can we prevent		
	ecosystems from being impacted by marine		
	litter?		

Table 1	: The Litte	r Eater game	e play
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5. MESSAGES TO BE CONVEYED

5.1. Messages to be conveyed during the presentation of the game

- Many different types of litter can be found at sea. It is generally estimated that 80% of the marine litter comes from land-based activities. The remaining 20% comes from marine activities (fishing, boating, shipping, etc.) (Frias *and al*, 2016).



- Litter which is released on land is likely to end up in the sea. It is therefore important to prevent this litter from ending up in the environment.

- Impacts of litter on marine organisms are multiple: risk of strangulation, injury, but also ingestion as organisms can mistake litter for food. The result of this accidental ingestion: marine organisms can die of asphyxiation, suffocated by pieces of plastic that remain stuck in their throats, or of haemorrhage when a piece of hard plastic pierces their intestines. They may also die of starvation, deceived by the false impression of satiety given by their plastic-filled stomachs (Wang *and al*, 2021).

- Plastic in the oceans can generate long term impacts due to their degradation into smaller and smaller particles (micro and nanoplastics).

For English, French and Spanish versions concerning seabirds:

- It is estimated that up to 78 of identified seabird species have been found to have plastic in their digestive tract since the 1960s (Wilcox *and al*, 2015 ; Basto *and al*, 2019), and more than 99% of over 300 seabird species are expected to have ingested plastic debris by 2050 (Wilcox *and al*, 2015). Seabirds are the most threatened group of birds in the world, with nearly half of species experiencing population declines and 28% globally threatened (Roman *and al*, 2019).

5.2. Litter specific messages

Specific informations on litter types considered in the game are shown on the back of "litter cards" (Figure 4). They should be passed on when the player discovers the name of the litter type.

5.3. Message to be conveyed after solving the riddle

What can be done to prevent marine organisms and ecosystems in general from being impacted by marine litter? The information to be conveyed can be summed up in three points:

- 1. Avoid producing litter ("the best litter is the one you don't produce"): try to avoid single-use plastic objects as much as possible and replace plastic with reusable materials (cardboard, glass).
- 2. If you have not been able to avoid producing litter, dispose it in the bin and not in the environment: try to actively participate in the proper management of litter so that it can be treated appropriately to prevent any environmental impact.
- 3. If you find litter in the environment, pick it up!
- 4. For more information, visit the CleanAtlantic website!



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Appendices

Appendix 1: Litter Eater - English versionAppendix 2: Litter Eater cards – French versionAppendix 3: Litter Eater cards – Spanish versionAppendix 4: Litter Eater cards – Portuguese versionAppendix 5: Sources of the informations on the litter cardsThe format recommended for printing is indicated on the top of each page.



APPENDIX 1: LITTER EATER ENGLISH VERSION

LITTER CARDS: A4 FORMAT



FISHING NET

Every year, around 640 000 tonnes of nets are left at sea, which represents almost 10% of the plastic pollution found in marine environments. These are estimations but it is known that nets are the cause of marine animals injuries or death, a phenomenon known as "ghost fishing".

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Source : Food and Agriculture Organization (2009)



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BUOY

Generally associated with fishing and shipping activities (recreational or commercial), buoys float on the surface and are moored to the bottom. Many of them can be lost at sea and impact marine life.

Source : NOAA, Marine Debris Program





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(EXPANDED) POLYSTY<mark>R</mark>ENE

Foamed polystyrene, either expanded (EPS) or extruded (XPS), are materials regularly found as litter in the marine environment. It has many qualities (high insulating power, impermeability, lightweight and easy to handle, etc.) and it is used in many fields (packaging, fishing, construction, etc.). Expanded PS waste is however poorly managed, resulting in discharges into the marine environment.

Source : Turner (2020); OceanWise project reports: Cedre 2022a and 2022b







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LIGHTER

Billions of disposable lighters are produced and sold worldwide. Many of them are thrown away after a short life span. They can be found on beaches and there presence is monitored in international beach litter monitoring programs (e.g. for OSPAR or MSFD).

Source : CleanAtlantic WP4.1 report (Cedre, 2020); MSFD Technical Group on Marine Litter report (Fleet and al, 2021)





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COTTON BUD STICK

Plastic cotton bud sticks have been reported on beaches worldwide including in remote areas. They are regularly found on the Atlantic coastline (3rd most common type over the period 2016-2019).

Clean Atlantic

Source : CleanAtlantic WP4.1 and WP5.4 reports (Cedre, 2020 and Cedre, 2023a)

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PLASTIC FRAGMENT

Plastic fragments (o - 50cm) represent about 25% of marine litter in European beaches. The origin of plastic fragments that enter the environment cannot be directly linked to a specific source, though assumptions based on material types can be made. Such fragments can derive from original items of different size, and their number can increase drastically through mechanical fragmentation. They are the 1st most common type over the period 2016-2019 in the Atlantic Area.

Source : CleanAtlantic WP4.1 (Cedre, 2020) and MSFD Technical Group on Marine Litter, 2017





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CIGARETTE BUTT

Cigarette butts (CBs) which are the combination of the filter and the remnants of a smoked cigarette, contain several potentially hazardous chemical substances.

The data analyses based on the OSPAR database showed that cigarette butts are the 5th most commonly collected item on Atlantic Area beaches from 2016 to 2019. Over the period, more than 25 000 CBs were collected during the monitoring program.

Source : CleanAtlantic WP4.1 (Cedre, 2020) , WP5.4 (Cedre, 2023b)





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LOLLY STICK

Lollipop sticks are the 6th most common type of litter found over the period 2016-2019 in the Atlantic Area.

Source : CleanAtlantic WP4.1 (Cedre, 2020)







BIOMEDIA

Biomedia (also known as filter media or biocarriers) are small circular plastic filters used in many municipal or industrial wastewater treatment plants or in aquaculture facilities. Their role is to serve as a support for micro-organisms that degrade organic matter more efficiently during the biological water treatment phase. Accidental or operational losses can lead to release in the marine environment.

Source : Surfrider (2018)







Μ

Bottle caps are among the most common categories of litter found in the Atlantic Area (4th most common type of litter found over the period 2016-2019).

CAP

Source : CleanAtlantic WP4.1 (Cedre, 2020)







ROPE

The main problem with ropes is abrasion from friction. Abrasion of the ropes can result in the release of synthetic fibers into the ocean. Ropes are the 9th most common litter category found on the Atlantic coastline over the period 2016-2019, particularly in the UK.

Source : CleanAtlantic WP4.1 (Cedre, 2020)









I am a seabird. When there are litter pieces at the sea surface, I eat them because I mistake them for food. This is the reason why scientists use me as an indicator species to assess the presence and associated impacts of litter on the marine environment. I am the :



LITTER EATER CARD RECTO/VERSO: A3 FORMAT



Litter Eater

The northern fulmar is a bird that feeds only on the high seas. It is characteristic of the cold waters of the Northern Hemisphere. Currently, the stomachs of 58% of fulmars stranded on North Sea beaches contain more than 0.1g of plastic, exceeding OSPAR's long-term target of 10%. This reflects the abundance of floating litter in their environment. There has been no significant change in the amount of plastic in fulmar stomachs over the past ten years.

Source : OSPAR Commission (2017)





Litter Eater

- 1 : FISHING NET
- 2 : BUOY
- 3 : (EXPANDED) POLYSTYRENE
- 4 : BOTTLE
- 5 : LIGHTER
- 6 : WET WIPE
- 7 : STRAW
- 8 : COTTON BUD STICK
- 9 : (PLASTIC) FRAGMENT
- 10 : CIGARETTE BUTT
- 11 : LOLLY STICK
- 12 : BIOMEDIA
- 13 : CAP
- 14 : ROPE





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APPENDIX 2: LITTER EATER FRENCH VERSION

LITTER CARDS: A4 FORMAT



FILET (DE PÊCHE)

Chaque année, environ 640 000 tonnes de filets sont abandonnées en mer, ce qui représente près de 10 % de la pollution plastique trouvée dans les environnements marins. Ces chiffres sont des estimations, mais il est connu que les filets peuvent continuer à pêcher après leur utilisation, un phénomène appelé "pêche fantôme".

Source : Food and Agriculture Organization (2009)



















BIOMEDIA

Les biomédias (ou médias filtrants) sont de petits filtres circulaires en plastique utilisés dans de nombreuses stations d'épuration municipales ou industrielles. Ils servent de support aux micro-organismes qui dégradent la la matière organique durant la phase de traitement biologique de l'eau. Des incidents peuvent conduire à des cas de pollution dans l'environnement marin.

Source : Surfrider (2018)






BATON (DESUCETTE)

Les bâtons de sucette sont le 6^{ème} type de déchets le plus fréquemment trouvé sur la période 2016-2019 dans l'Espace Atlantique.

Source : CleanAtlantic WP4.1 report (Cedre, 2020)







CARTOUCHE (DECHASSE)

Les cartouches de chasse peuvent être perdues ou laissées sur place par les chasseurs et finir dans l'environnement marin. Elles sont ainsi retrouvées sur le littoral français et leur présence est suivi dans le cadre de programme de surveillance des déchets sur les plages (e.g. OSPAR ou DCSMM).

Source : CleanAtlantic WP4.1 report (Cedre, 2020); Kanstrup et al (2018); MSFD Technical Group on Marine Litter report (Fleet and al, 2021)





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BALLON (DEBAUDRUCHE)

Les déchets composés de plastique souple comme le sont les ballons de baudruche seraient particulièrement dangereux pour les écosystèmes et notamment pour les oiseaux marins, qui les confondraient facilement avec leurs proies (calmars, etc.). L'ingestion de ballons serait pour les oiseaux 32 fois plus susceptible de provoquer la mort que des débris de plastique rigide. Leur présence est suivi dans le cadre de programme de surveillance des déchets sur les plages (e.g. OSPAR ou DCSMM).

Source : Roman et al (2019) ; OSPAR (Lacroix and al, 2022)





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POLYSTYRENE (EXPANSE)

Le polystyrène expansé (EPS) ou extrudé (XPS) est un matériau que l'on retrouve régulièrement dans l'environnement marin. Il possède de nombreuses qualités (pouvoir isolant élevé, imperméabilité, légèreté et facilité de manipulation, etc.) et il est utilisé dans de nombreux domaines (emballage, pêche, construction, etc.). Les déchets de PS expansé sont cependant mal gérés, ce qui entraîne des rejets dans le milieu marin. Les fragments de PS sont le 1^{er} déchet le plus retrouvé sur la période 2016-2019 dans la zone Atlantique.

Source : Turner (2020); OceanWise project reports: Cedre 2022a and 2022b







MEGOT (DE CIGARETTE)

Les mégots de cigarettes, qui sont la combinaison du filtre et des restes d'une cigarette fumée, contiennent plusieurs substances chimiques potentiellement dangereuses. Les analyses de données basées sur la base de données OSPAR ont montré que les mégots de cigarettes sont le 5^{ème} élément le plus fréquemment collecté sur les plages de l'Espace Atlantique de 2016 à 2019. Au cours de cette période, plus de 25 000 mégots ont été collectés dans le cadre du programme de surveillance.

Source : CleanAtlantic WP5.4 (Cedre, 2023b)





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SERRE-PACK

Un serre-pack est un ensemble de généralement quatre ou six anneaux en plastique reliés entre eux pour maintenir des canettes ou des bouteilles de boisson ensemble. Leur présence est suivi dans le cadre de programme de surveillance des déchets sur les plages (e.g. OSPAR ou DCSMM).

Source : OSPAR (Lacroix and al, 2022)







COUPELLE (OSTREICOLE)

Les coupelles ostréicoles servent à collecter les larves émises par les huîtres matures en période de reproduction. Ce captage naturel est la première phase du cycle de production de l'ostréiculture traditionnelle. Cependant ces collecteurs peuvent être perdus en mer, lors d'événements météorologiques intenses par exemple, générant des déchets pouvant impacter le milieu marin. Les déchets issus de l'aquaculture sont la 2^{ème} catégorie de déchet la plus retrouvée sur la période 2016-2019 en France.

Source : CleanAtlantic WP4.1 (Cedre, 2020)







LITTER EATER CARD RECTO/VERSO: A3 FORMAT



Litter Eater

Le fulmar boréal est un oiseau qui ne se nourrit qu'en haute mer. Il est caractéristique des eaux froides de l'hémisphère Nord. Actuellement, l'estomac de 58% des fulmars échoués sur les plages de la mer du Nord contient plus de 0,1 g de plastique, dépassant l'objectif à long terme de 10% d'OSPAR. Ceci reflète l'abondance des déchets flottants dans leur environnement. Aucune modification notoire de la quantité de plastiques dans l'estomac du fulmar n'a été relevée au cours des dix dernières années.

Source : OSPAR Commission (2017)









APPENDIX 3: LITTER EATER SPANISH VERSION

LITTER CARDS: A4 FORMAT







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B

BOLSA

Las bolsas de plástico de un solo uso poseen una corta vida útil, acaban formando parte del flujo de residuos rápidamente y a menudo se eliminan de forma inadecuada al final de su vida útil. Su bajo peso y su resistencia facilitan su proliferación en el medio ambiente y especialmente en el medio marino. El plástico de un solo uso representó el 38% de la cantidad total de residuos en el litoral español en el periodo 2016-2019.

Fuente: CleanAtlantic WP4.1 (Cedre, 2020); OSPAR Commission (2021)





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RED (DE PESCA)

Cada año se pierden en el mar unas 640.000 toneladas de redes, lo que representa casi el 10% de la contaminación por plásticos en el medio marino. Estas cifras son estimaciones, pero se sabe que las redes pueden causar la muerte de la fauna marina por medio del fenómeno conocido como "pesca fantasma".

Fuente : Food and Agriculture Organization (2009)





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MASCARILLA

Con la crisis del covid-19, el consumo de mascarillas de un solo uso se disparó en todo el mundo, y cada vez se encuentran más mascarillas en el medio. Aparecen también en las playas y su presencia está siendo monitorizada en los programas internacionales de seguimiento de basuras en playas (por ejemplo, OSPAR o la DMEM).

> Clean Atlantic

Fuente: CleanAtlantic WP4.1 (Cedre, 2020); João Canning-Clode and al (2020)

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Atlantic Area



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Los residuos de plástico flexible, como los globos, son especialmente peligrosos para los ecosistemas y, en particular, para las aves marinas, que los confunden fácilmente con sus presas (calamares, etc.). La ingestión de globos tiene 32 veces más probabilidades de causar la muerte a las aves que los residuos de plástico rígido. Su presencia se vigila en el marco de programas de seguimiento de basuras en playas (por ejemplo, OSPAR o DMEM).

Fuente : Roman et al (2019) ; OSPAR (Lacroix and al, 2022)





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COLILLA

Las colillas de cigarrillos, formadas por el filtro y los restos de un cigarrillo fumado, contienen una serie de sustancias químicas potencialmente peligrosas. El análisis de los datos contenidos en la la base de datos de OSPAR, han demostrado que las colillas de cigarrillos son el 5º elemento recogido con más frecuencia en las playas del Espacio Atlántico de 2016 a 2019. Durante este período, se recogieron más de 25.000 colillas de cigarrillos como parte del programa de seguimiento.

Fuente : CleanAtlantic WP4.1 (Cedre, 2020) , WP5.4 (Cedre, 2023b)







ENVOLTORIO CARAMELO

Muchos residuos de envases alimentarios se encuentran en el medio marino y pueden afectar a las especies marinas, en particular a las aves, por asfixia. Los envoltorios carámelos son la sexta categoría de residuos más común encontrada en el litoral del Espacio Atlántico durante el periodo 2016-2019.

> Clean Atlantic

Atlantic Area

Fuente : CleanAtlantic WP4.1 (Cedre, 2020)





POLIESTIRENO (EXPANDIDO)

El poliestireno expandido (EPS) es un material que se encuentra regularmente en el medio marino. Tiene muchas cualidades (alto poder aislante, impermeabilidad, ligereza y facilidad de manipulación, etc.) y se utiliza en muchas actividades (envasado, pesca, construcción, etc.). Sin embargo, los residuos de espuma de PS se gestionan mal, provocando que estos residuos acaben en el medio marino. Los fragmentos de PS son el 1er residuo más frecuentemente encontrado durante el periodo 2016-2019 en la zona atlántica.

Fuente : Turner (2020); OceanWise project reports: Cedre 2022a and 2022b





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LITTER EATER CARD RECTO/VERSO: A3 FORMAT



Litter Eater

El cormorán, como muchas otras especies de aves marinas, utiliza con frecuencia basuras marinas (cuerdas sintéticas, redes de pesca, etc.) como material de nidificación. Esta especie es objeto de seguimiento por parte de la MSFD para la monitorización de basuras marinas.

Fuente : DCSMM (2023); Cadiou and Fortin (2015)







APPENDIX 4: LITTER EATER PORTUGUESE VERSION

LITTER CARDS: A4 FORMAT



TAMPA (DE PLÁSTICO)

As tampas de garrafas são uma das categorias de resíduos mais frequentemente encontradas no litoral (3.º para Portugal no período 2016-2019 e 4º para a zona atlântica).

Fonte : CleanAtlantic WP4.1 (Cedre, 2020)













REDE (DE PESCA)

Todos os anos, cerca de 640 ooo toneladas de redes são abandonadas no mar, o que representa quase 10% da poluição por plásticos registada nos meios marinhos. Estes números são estimativas, mas sabe-se que as redes podem continuar a pescar depois de terem sido utilizadas, um fenómeno conhecido como "pesca fantasma".

Fonte : Food and Agriculture Organization (2009)







TOALHITA

Todos os anos são deitados fora vários milhares de milhões de toalhetes húmidos em todo o mundo. São regularmente encontrados no ambiente. Foi o quinto tipo mais comum de lixo de utilização única encontrado nas praias europeias em 2016.

Fonte : MSFD Technical Group on Marine Litter report (2017)







BEATA (DE CIGARRO)

As beatas de cigarro, que são a combinação do filtro e dos restos de um cigarro fumado, contêm uma série de produtos químicos potencialmente perigosos. A análise de dados baseada na base de dados OSPAR mostrou que as pontas de cigarro são o quinto item mais frequentemente recolhido nas praias do Espaço Atlântico de 2016 a 2019. Durante este período, foram recolhidas mais de 25.000 pontas de cigarro no âmbito do programa de monitorização.

Fuente : CleanAtlantic WP5.4 (Cedre, 2023)







ARMADILHA (PARACARANGUEJO)

Armadilhas podem continuar a apanhar animais marinhos da mesma forma que as redes, no que é conhecido como "pesca fantasma". Os resíduos de pesca representam quase 14% dos resíduos encontrados na costa portuguesa no período de 2016-2019.

Fonte : CleanAtlantic WP4.1 (Cedre, 2020)







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ESPONJA DE ESPUMA

Todos os anos são utilizados em todo o mundo biliões de esponjas sintéticas, na sua maioria produtos petroquímicos. Devido à sua composição, decompõem-se em micropartículas que podem ser ingeridas pelos animais marinhos. Podem ser encontrados nas praias e a sua presença é monitorizada em programas internacionais de monitorização do lixo nas praias (por exemplo, no âmbito da OSPAR ou da MSFD).

Fonte : CleanAtlantic WP4.1 report (Cedre, 2020); MSFD Technical Group on Marine Litter report (Fleet and al, 2021)





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GARRAFA (DE PLÁSTICO)

Várias centenas de biliões de garrafas de plástico são vendidas todos os anos em todo o mundo. São o 8º tipo mais comum durante o período 2016-2019 no Espaço Atlântico.

Fonte : CleanAtlantic WP4.1 report (Cedre, 2020)







SACO (DE PLÁSTICO)

Os sacos de plástico de utilização única são um produto de curta duração que acaba rapidamente nos fluxos de resíduos e é frequentemente eliminado de forma inadequada no final da sua vida útil. O seu baixo peso e resistência levaram à sua proliferação no ambiente, especialmente no meio marinho. O plástico de utilização única representou 50% da quantidade total de resíduos na costa portuguesa no período de 2016-2019.

Fonte : OSPAR Commission (2021)





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COPO (DE PLÁSTICO)

Os plásticos de utilização única, como os copos de plástico, representam 50% dos resíduos encontrados na costa portuguesa no período de 2016-2019. Estes resíduos têm um tempo de vida muito curto, mas um período de degradação muito mais longo. Para além disso, são utilizados todos os dias por pessoas em todo o mundo.

Fonte : CleanAtlantic WP4.1 report (Cedre, 2020)





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O principal problema das cordas é a abrasão provocada pela fricção. A abrasão das cordas pode resultar na libertação de fibras sintéticas no oceano. As cordas são a nona categoria de lixo mais comum encontrada na costa atlântica durante o período 2016-2019.

Fonte : CleanAtlantic WP4.1 report (Cedre, 2020)





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CARTUCHO (DE MUNIÇÕES)

Os cartuchos de caça podem perder-se ou ser deixados para trás pelos caçadores e acabar no meio marinho. Assim, são encontrados na costa e a sua presença é monitorizada no âmbito dos programas de monitorização do lixo nas praias (por exemplo, OSPAR ou MSFD).

Fonte : CleanAtlantic WP4.1 report (Cedre, 2020); Kanstrup et al (2018); MSFD Technical Group on Marine Litter report (Fleet and al, 2021)









FRAGMENTO (DE PLÁSTICO)

Os fragmentos de plástico (o - 50 cm) representam cerca de 25% do lixo marinho nas praias europeias. A origem dos fragmentos de plástico que entram no ambiente não pode ser diretamente associada a uma fonte específica, embora se possam fazer suposições com base nos tipos de material. Estes fragmentos podem derivar de objectos originais de diferentes dimensões e o seu número pode aumentar drasticamente através da fragmentação mecânica. São o primeiro tipo mais comum durante o período 2016-2019 no Espaço Atlântico.

Fonte : CleanAtlantic WP4.1 (Cedre, 2020) and MSFD Technical Group on Marine Litter (Addamo et al. 2017)





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LITTER EATER CARD RECTO/VERSO: A3 FORMAT



Litter Eater

As tartarugas-comum são consideradas um indicador relevante para avaliar o sucesso de medidas ambientais específicas dirigidas ao lixo marinho, devido à sua ampla distribuição, à sua propensão para ingerir lixo e aos esforços de monitorização desenvolvidos ao longo de décadas para as salvar e proteger. A tartaruga-comum é conhecida por ser um alimentador oportunista, ingerindo regularmente resíduos, provavelmente de forma involuntária, sendo provável que os resíduos sejam confundidos com presas naturais ou misturados na tigela de comida em áreas onde os resíduos se acumulam.

Source : OSPAR Commission (Galgani et al, 2023)





Litter Eater

- 1: TAMPA (DE PLASTICO)
- 2 : PALHINHA
- 3 : REDE (DE PESCA)
- 4 : TOALHITA
- 5 : BEATA (DE CIGARRO)
- 6 : ARMADILHA (PARA CARANGUEJO)
- 7 : ESPONJA DE ESPUMA
- 8 : GARRAFA (DE PLASTICO)
- 9 : SACO (DE PLASTICO)
- 10 : COPO (DE PLASTICO)
- 11 : CABO
- 12 : EMBALAGEM (PARA ALIMENTOS)
- 13 : CARTUCHOS (DE MUNICOES)
- 14 : FRAGMENTO (DE PLASTICO)





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APPENDIX 5: SOURCE OF INFORMATIONS ON THE LITTER CARDS

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