

# Fighting Marine Litter in the Arctic: How to Engage Tourists

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In cooperation with:





# So, how to engage tourists?

## My experience:

- it's quite easy 😊
- tourists show genuine interest in the impacts of plastic pollution
- many people spontaneously start to clean beaches and are keen on learning more about sources and solutions
- through my presentations I provide them with background knowledge, sparking lively discussions afterwards





# From the idea to a multifunctional toolkit

2021

## 1st Arctic Plastics Symposium

*The idea:*

Enhancing awareness of plastic pollution among Arctic travelers



Collaboration with:

Melissa Nacke, *AECO*

Eelco Leemans,  
*Leeways Marine*

2023

## AECO Marine Litter Toolkit for Arctic Expedition Guides

Engagement Ideas

Marine Litter ID Cards

Presentation on Marine Litter in the Arctic



# The «AECO Marine Litter Toolkit for Arctic Expedition Guides»

Who's who?



**Melissa Nacke**  
Creator of the Marine  
Litter Toolkit



**Eelco Leemans**  
Creator of the Marine  
Litter ID Cards



**Julia Hager**  
Creator of the Marine  
Litter Presentation



# The «AECO Marine Litter Toolkit for Arctic Expedition Guides»

What's in the box?

**Looking for activities to engage guests?**

As Expedition guides, you have a prime opportunity to facilitate firsthand experiences on the marine litter issue. Use the below list for inspiration on how to encourage guests to build a stronger connection to the problem and continue to make a difference after their trip.




**Which vessel can collect the most marine litter?**  
For operators with more than one vessel in their fleet, start a competition on which vessel can collect the most kilos of litter either during a cleanup event or throughout the whole voyage.




**Create art pieces from collected litter**  
After a beach cleanup, organize an event onboard the vessel where guests can create their own art piece using the litter. Remember to provide glue, scissors, etc.



Engagement Ideas



**MARINE LITTER IDENTIFICATION**



Marine Litter ID Cards

by Eelco Leemans



**MARINE LITTER**



Presentation on Marine Litter in the Arctic  
& Presenter's Manual

by Julia Hager



# 1 - Engagement Ideas

## Looking for activities to engage guests?

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**Organize a "decorate a hat from what you found" competition**  
Guests can wear their marine litter hat to dinner or an evening event and announce a winner. Remember to provide a hat base, glue, scissors, string, pipe cleaners, etc.



**Find as many different types of items as possible**  
Encourage guests to use AECO's Marine Litter ID Cards to find as many different items as they can.



**Find the «weirdest» or oldest litter item**  
Encourage guests to become marine litter detectives to figure out the story behind individual marine litter items. Analyze litter for clues on where it might have come from, how old it is or how it might have ended up in the ocean.



**Host a storytelling event**  
Have you found any marine litter items that spark an emotion or a memory? Or have you found an item that might have an interesting history? Prepare stories in connection to the items found and encourage guests to share their own stories.



# 2 - Marine Litter Identification Cards



## MARINE LITTER IDENTIFICATION



### INTRODUCTION 1

Marine Litter ID cards are used on AECO vessels to facilitate the identification of litter found on the shores of Svalbard and other Arctic areas.

Plastic litter is known to have serious impact on wildlife. Research shows that many animals, from seabirds to whales, accidentally ingest small and large plastic pieces and plastic bags. Entanglement is another type of negative or even deadly impact on wildlife.

These cards give an overview of the most common types of litter found on Arctic Coasts. For each card, the first text box describes the item while the second text box provides an explanation of the possible sources. Beach clean-ups are a good way to reduce the impact of litter in the Arctic, provided that the collected litter is then processed in a safe and responsible way. In Longyearbyen, the Governor provides a special container for this purpose.

- Description of the item
- Possible source

### ROPES 2



Photo credit: Wouter Jan Strietman

Various types, colours and sizes of rope are used on any vessel. Almost all ropes found nowadays are synthetic, for instance polypropylene or nylon.

Many ropes found on beaches are from fishing trawlers, crab fishing boats or other fishing vessels. They could be lost either accidentally or discarded when broken. Sometimes bundles of rope are found on a beach, with all kinds of litter attached.

### FISHING NETS 3



Photo credit: Katja Riedel

Whole fishing nets are seldom found, usually parts of trawl fishnets (also see separate card FISHING NET CUT-OFFS). The nets are made from braided line, often green but also various colours. These nets may cause entanglement of marine organisms such as seals, but also reindeer get stuck with their antlers. Another type of net is gillnets, made of transparent nylon, usually with a string of small floats on the upper end.

They are mostly discarded from trawling vessels in the Barents Sea.

### FISH BOXES 6



Photo credit: Eelco Leemans

Fish boxes are made of sturdy plastic and come in various colours and shapes.

They are used to store fresh fish on ice, mainly in the hold, but can also be used on deck. When on deck they may get washed overboard. Also damaged fish boxes may be discarded just like any other broken gear.

### STRAPPING BANDS 7



Photo credit: EYOS Expeditions

On beaches these are found in different shapes, either in hoops, short pieces or big bundles.

On freezing trawlers, processed fish is packed in boxes below deck. Strapping band is used to bundle various product in boxes. The bundles are accidentally formed due to equipment malfunctioning in the processing hold and then somehow end up on a beach.

### FOOD-RELATED ITEMS 10



Photo credit: Julia Hager

Many different types of plastic bottles can be found on Arctic beaches, in particular sauce or drinking bottles.

Sometimes these bottles provide clues to the origin: types, languages, brands etc. Although this type of litter could be discarded by anyone, fisheries seem to contribute at least partly to this issue.

### CLEANING PRODUCTS 11



Photo credit: Julia Hager

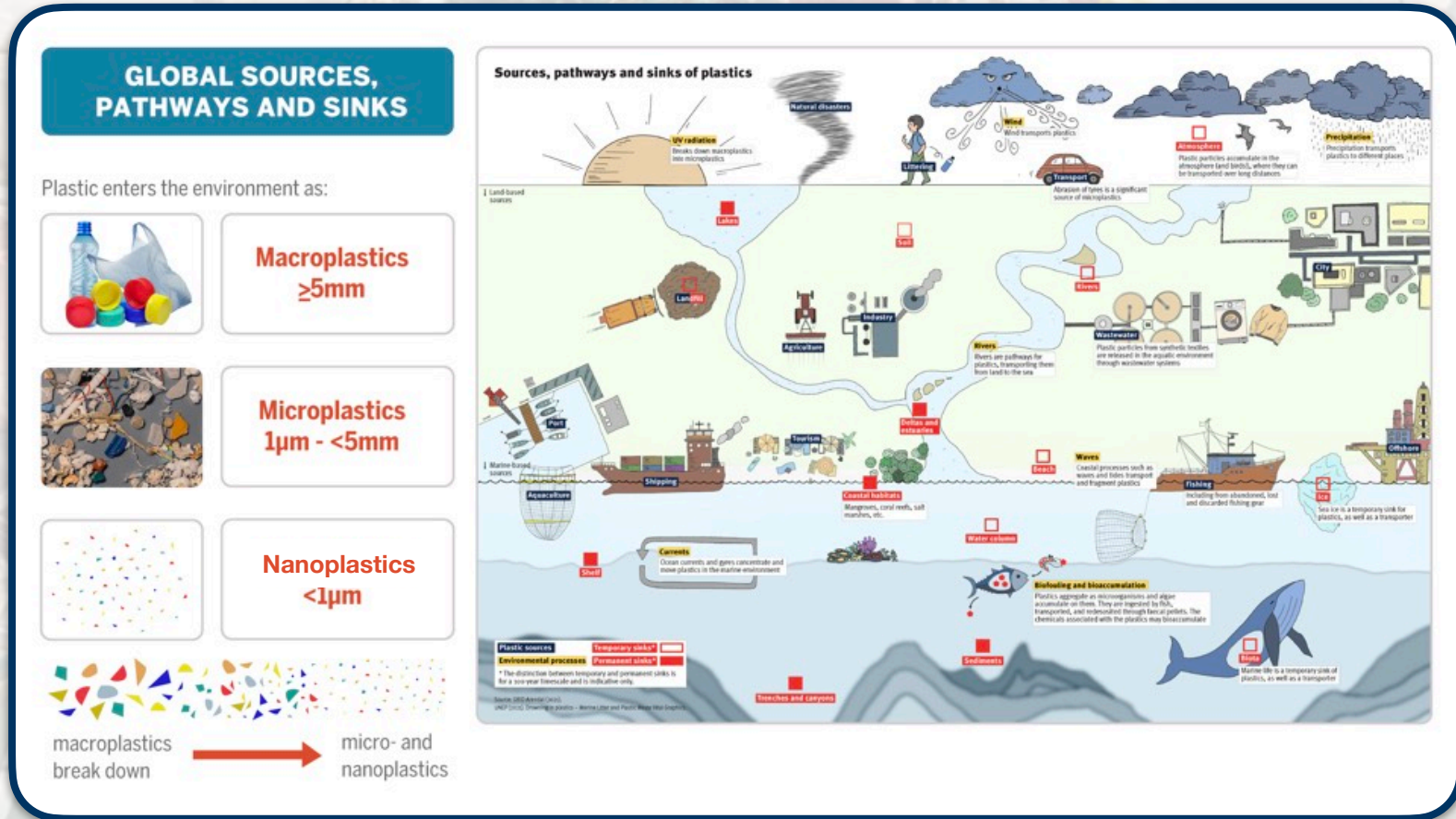
Cleaning products are used both in accommodation areas on ships and in working areas. Depending on the area and specific need, different products are used, both industrial and household type.

Cleaning product containers provide clues to the origin: types, languages, brands etc. Although this type of litter can be discarded by anyone, fisheries seem to contribute at least partly to this issue, in particular when the container is of the industrial cleaning type. In Svalbard when such items are used they are usually put away in proper trash containers.



# 3 - Presentation on Marine Litter in the Arctic

## Overview of global plastic pollution



**INTERACTION OF MARINE LITTER WITH WILDLIFE**

- 4,061 species worldwide are known to be affected by litter through:

- Colonisation
- Entanglement
- Ingestion
- Other



# 3 - Presentation on Marine Litter in the Arctic

## Focussing on plastic pollution in the Arctic

### THE ARCTIC OCEAN: A DEAD END FOR MARINE LITTER

Litter input from distant sources via:

- Oceans
- Rivers
- Atmospheric transport
- Animals

Litter transport within the Arctic Ocean by:

- Currents
- Sea ice

### MICROPLASTIC IN SEA ICE AND SNOW

up to 12,000 microplastic particles/liter sea ice<sup>9</sup>

up to 14,400 microplastic particles/liter snow<sup>10</sup>

Temporary storage

means of transport

released

17 polymer types\*: e.g. polyethylene, polyamide, polypropylene, polyester, cellulose acetate (cigarette filters!)

### INTERACTIONS OF MARINE LITTER WITH ARCTIC WILDLIFE

Ingestion	Colonization	Entanglement	Smothering
<p>Stomach content of Harp seal pup<sup>15</sup>: two plastic film pieces</p>	<p>Barnacles colonizing plastic piece</p>	<p>Bird entangled in plastic ring</p>	<p>Plastic sheet covering moss and lichens</p>
<p>Stomach content of one Northern Fulmar<sup>16</sup>: industrial pellets, fragments, sheets, threads, foam</p>		<p>Two reindeer antlers entangled in fishing net</p>	<p>At least 131 Arctic species are affected<sup>6</sup></p>

### INTERACTIONS OF MARINE LITTER WITH ARCTIC WILDLIFE

### PLASTIC POLLUTION, CLIMATE CHANGE AND BIODIVERSITY LOSS

Carbon sequestration

Melting

Death caused directly by plastic pollution every year globally:

- >100,000 whales, dolphins, seals, sea turtles
- >1,000,000 sea birds

Plastic pollution as additional stressor:

may affect capability of polar organisms to cope with climate change, acidification, fisheries, tourism, contamination



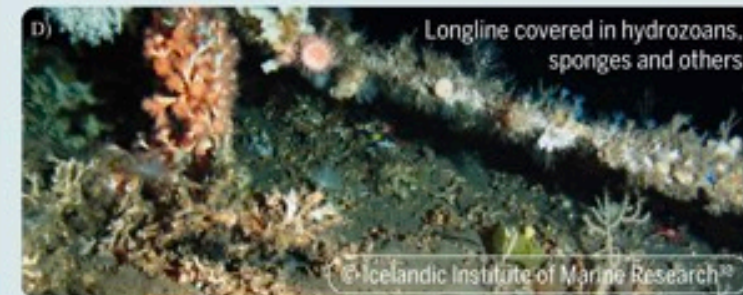
# 3 - Presentation on Marine Litter in the Arctic

## Focussing on plastic pollution in the Arctic

### MARINE LITTER IN ICELAND

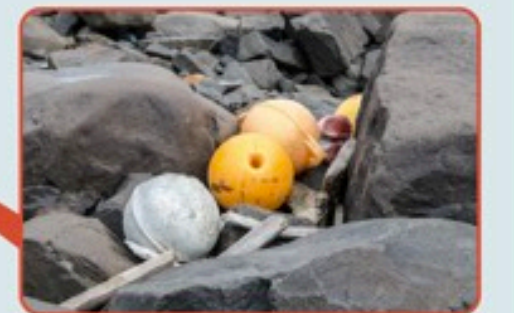
- Litter densities on the sea floor around Iceland average 872 items per km<sup>2</sup>, highest concentration 5,096 per km<sup>2</sup><sup>32</sup>
  - 94% fisheries-related: longlines and trawl nets which were commonly entangled with corals and rocks
- Waste fishing gear is cleaned, sorted and sent for recycling<sup>29</sup>
- Waste water treatment plant in Reykjavik emitted 6 million microliter particles per hour into the ocean<sup>28</sup>
- Microplastic present in drinking water in Akureyri<sup>33</sup>
- Microplastic found on Icelandic glacier<sup>34</sup>
- Fin whales feeding off western Iceland ingest approximately tens of thousands microplastic particles daily with their prey Northern krill<sup>35</sup>

### ICELAND



### MARINE LITTER IN SVALBARD

- most debris found on beaches is fisheries-related<sup>8</sup>
- household waste items mostly of sea-based origin: fisheries, tourism
- Fram Strait:
  - high quantities of microplastic in the water column and in sea floor sediment due to transport with sea ice
  - high quantities of larger litter on the sea floor
- microplastic input from Ny Ålesund decreased by 99% after implementation of waste water treatment
- but, no waste water treatment in Longyearbyen: input of 18 billion microfibers per year<sup>30</sup>
- sea birds transfer microplastic taken up with zooplankton into the tundra<sup>27</sup>
- ship traffic is increasing due to sea ice decline -> potentially more pollution



### SVALBARD



# 3 - Presentation on Marine Litter in the Arctic

## Ways to combat plastic pollution

### EVERYONE'S CONTRIBUTIONS

- Don't litter -> pick it up
- Never ever release balloons
- Never ever drop your cigarette butt
- Reduce single-use plastic, plastic packaging and waste in general
- Minimize plastic products when planning business and family events
- Buy less: keep things longer, choose reused items
- Choose reusables: bags, bottles, containers, mugs,...
- Refuse things you don't want and don't need: free goodies, brochures,...
- Reuse shipping material, gift wrappers,...
- Repair broken items and clothes
- Choose repairable items
- Donate or sell no longer wanted items

### MITIGATION EFFORTS - GLOBALLY AND IN THE ARCTIC

**GLOBAL PLASTIC POLLUTION AGREEMENT**

UNEP A 92

GLOBAL PLASTIC POLLUTION AGREEMENT  
Negotiations in progress, expected to be finalized by the end of 2024  
The resolution is to address the full lifecycle of plastic, including its production, design and disposal

**GPML**

Global Partnership on Marine Litter

GLOBAL PARTNERSHIP ON MARINE LITTER  
• multi-stakeholder partnership that brings together all actors working to prevent marine litter and plastic pollution  
• By providing a global platform to share knowledge and experience, partners work together to create and advance solutions

### MITIGATION EFFORTS - GLOBALLY AND IN THE ARCTIC

**REGIONAL ACTION PLAN ON MARINE LITTER IN THE ARCTIC**

PAME

Regional action plan on marine litter  
• Reducing inputs from:  
• fisheries & aquaculture  
• ships and offshore structures  
• Improving onshore waste & wastewater management  
• Sustainable material management in the Arctic  
• Cleaning Arctic coasts  
• Strengthening monitoring & research  
• Outreach  
• International cooperation

AECO – Clean Seas Initiative:  
• Involving cruise passengers in beach cleanups  
• Reducing the use of single-use plastic on Arctic expedition cruise vessels  
• Information and Education



# Advantages of the Marine Litter Toolkit

- different tools — multiple ways to engage tourists
- flexibility:
  - ➔ tailor-made material for expedition guides
  - ➔ stand-alone components for single or complex use
- motivating international travelers as multipliers
- ready to use & easy to update





# First experiences with the ID cards

by Eelco Leemans, Svalbard, July - August 2023





# What's next?

- the «AECO Marine Litter Toolkit for Arctic Expedition Guides» will be disseminated among members of AECO
- launch is intended for the upcoming Arctic season in 2024
- introductory webinar for expedition staff



Many thanks to our sponsors!



SVALBARD ENVIRONMENTAL  
PROTECTION FUND



**MARFO**  
Norwegian Centre  
against Marine Litter