

OCEAN MISSIONS ICELAND

FIRST ANALYSIS ON FLOATING MICRO-  
AND MESO-PLASTIC PARTICLES IN  
ICELANDIC COASTAL WATERS

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Belén García Ovide



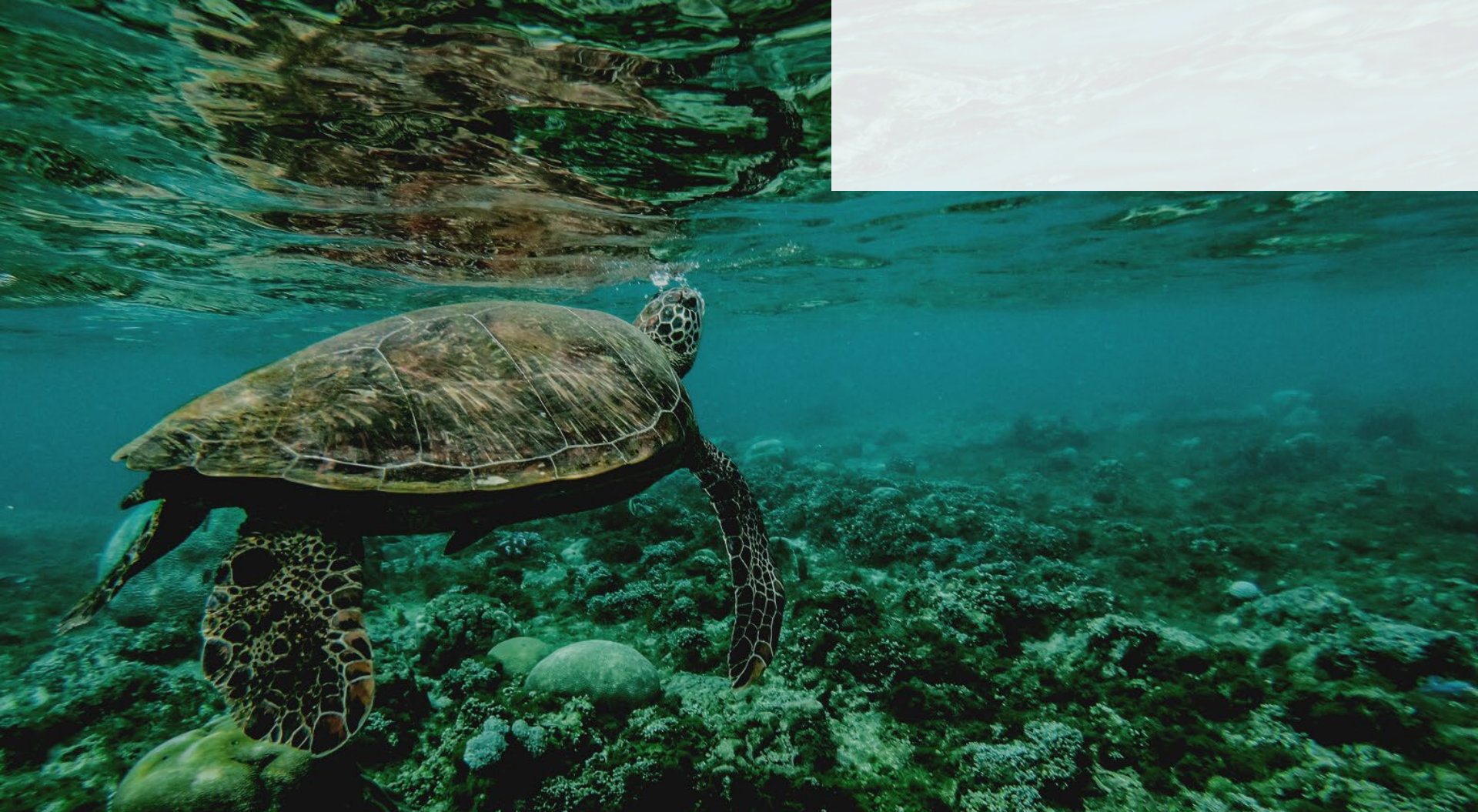
HÁSKÓLI ÍSLANDS







Lets change the world!  
Explore, love, protect







## Conservation, Education and Research at the edge of the Arctic

Ocean Missions is an non-profit organization based in Húsavík, Iceland. We began our efforts because of the deep need for more conservation and sustainable tourism in the unique and fragile Arctic regions.



# Arctic Circle





# HÚSAVÍK











Our Mission

INSPIRING PEOPLE TO TAKE  
DIRECT ACTIONS TO  
PROTECT OUR OCEANS



# A community of Ocean ambassadors

We offer citizen science sailing  
expeditions to study whales,  
seabirds, plastic pollution, and  
noise pollution.



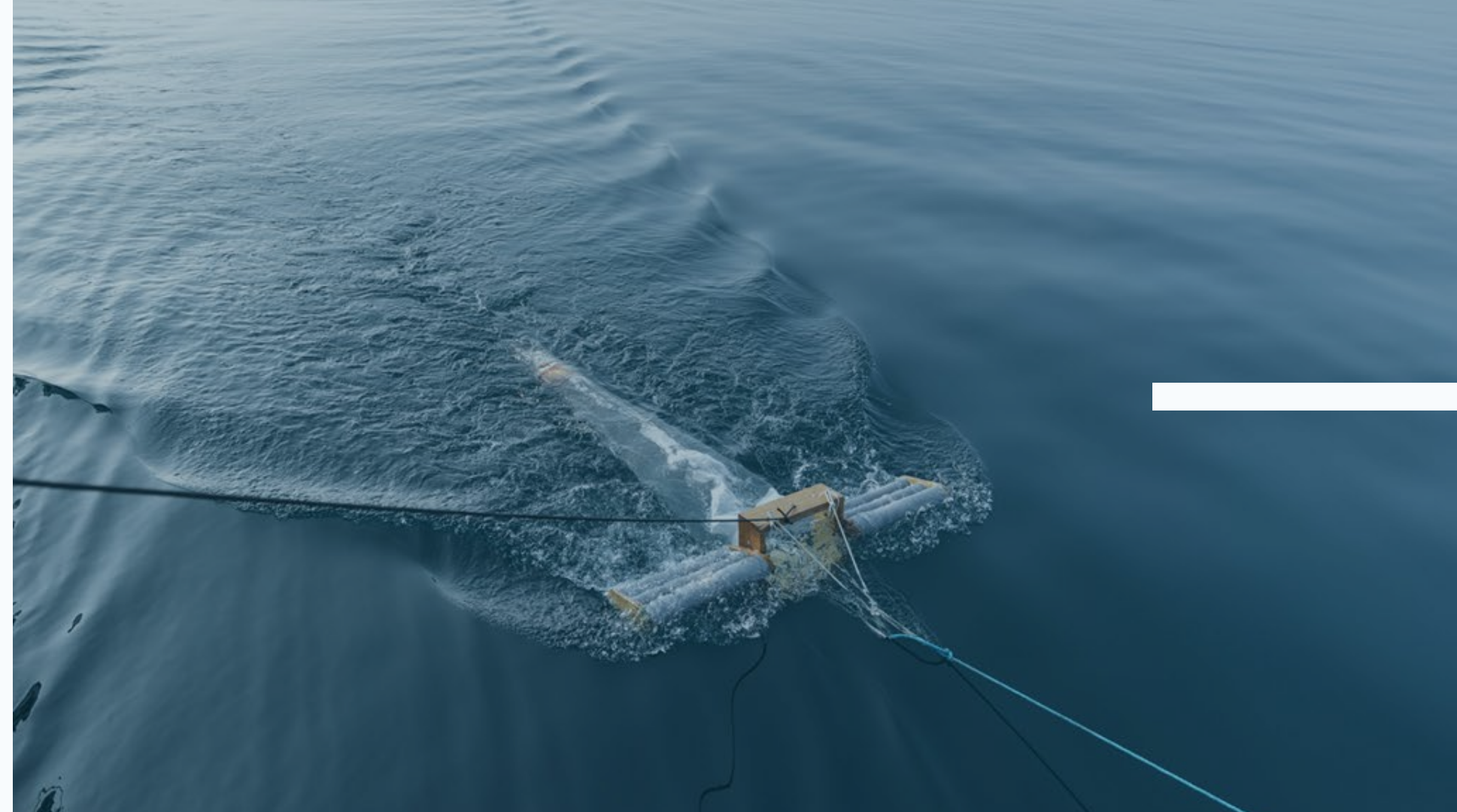
## Setting sails towards sustainability

Win-win relationship with North  
Sailing company



## MESO-/MICROPLASTIC RESEARCH

investigate the prevalence of **m e s o p l a s t i c** (5–10 mm) and **m i c r o p l a s t i c** (0.3–5 mm) (collectively referred to as MP) on sea surface



## MACROPLASTIC RESEARCH

Using the **OSP AR** **m e t h o d** consists of a **100 m e t e r s a m p l i n g t r a n s e c t**, measured as a straight line parallel to the back of the beaches





1%

LESS THAN 1% OF OCEAN IS  
PROTECTED IN ICELAND

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CREATION OF THE FIRST  
MISSION BLUE HOPE SPOT  
IN ICELAND

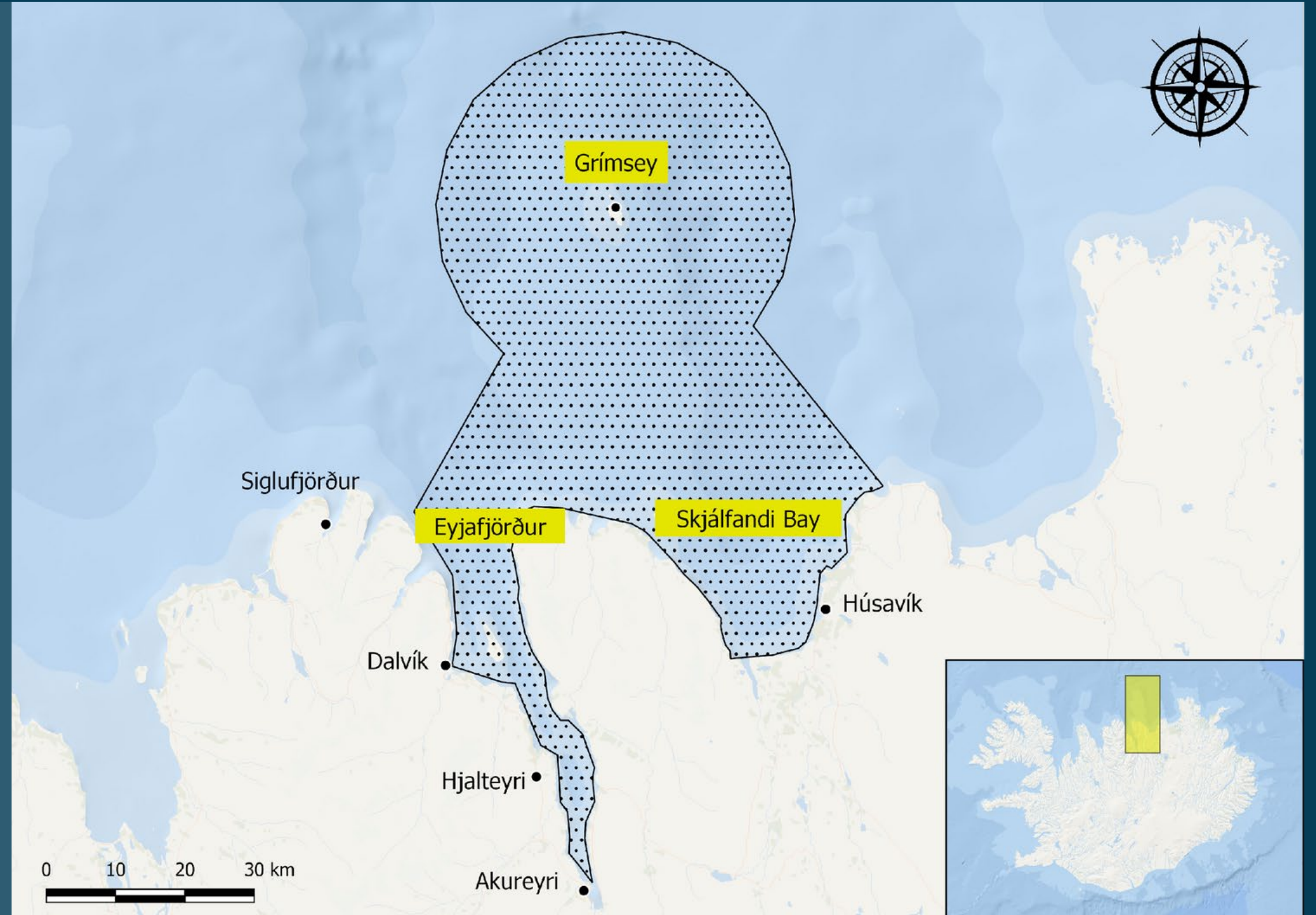
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# The Northeast Hope Spot

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# MESO-/MICROPLASTIC RESEARCH



## 1. TRAWLING

involved trawling 3 transects in a zig-zag pattern in each area using a low-tech aquatic debris instrument (LADI) or a high speed manta trawl



## 2. FILTERING

through metal sieves (0,3 and 1mm) and separation of suspected MP particles



## 3. VISUAL CONFIRMATION

using a stereoscope + testing (i.e. hot needle test)



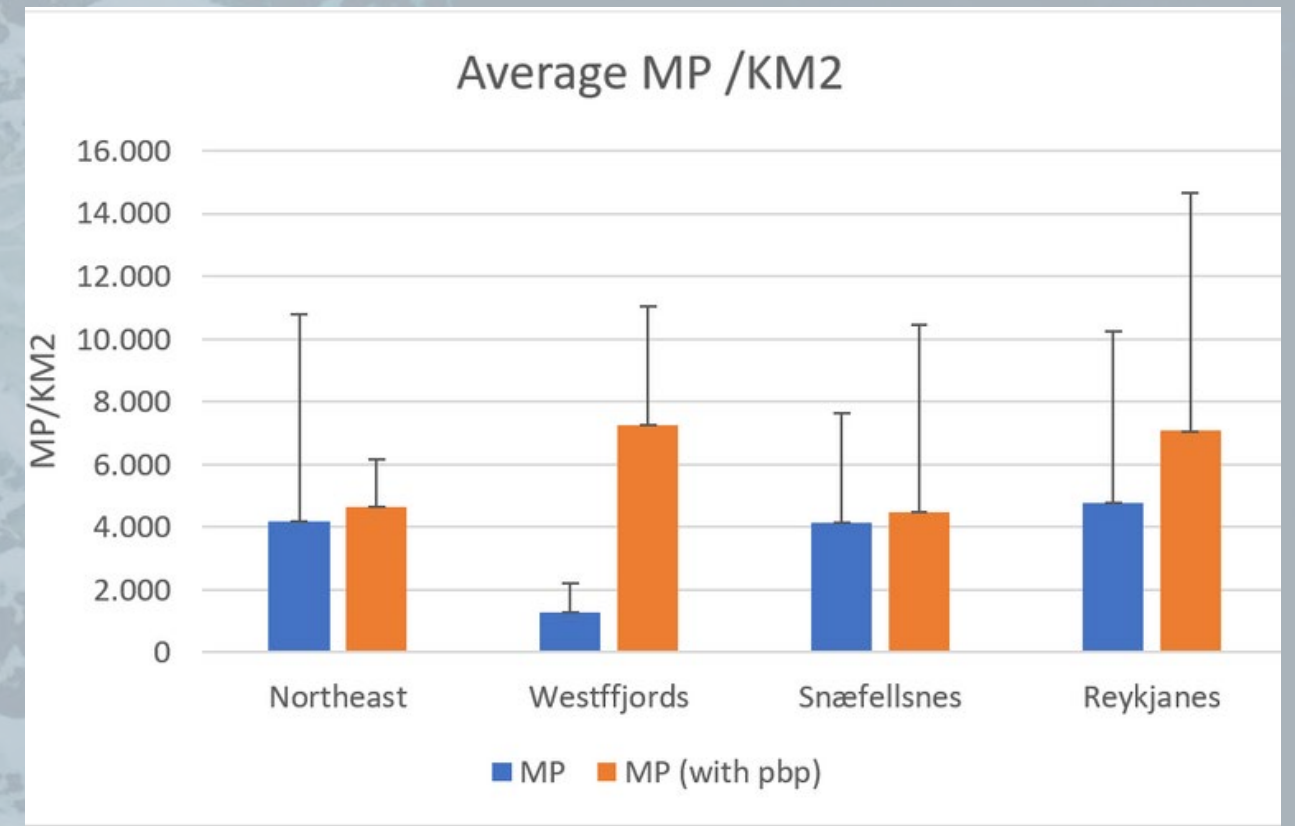
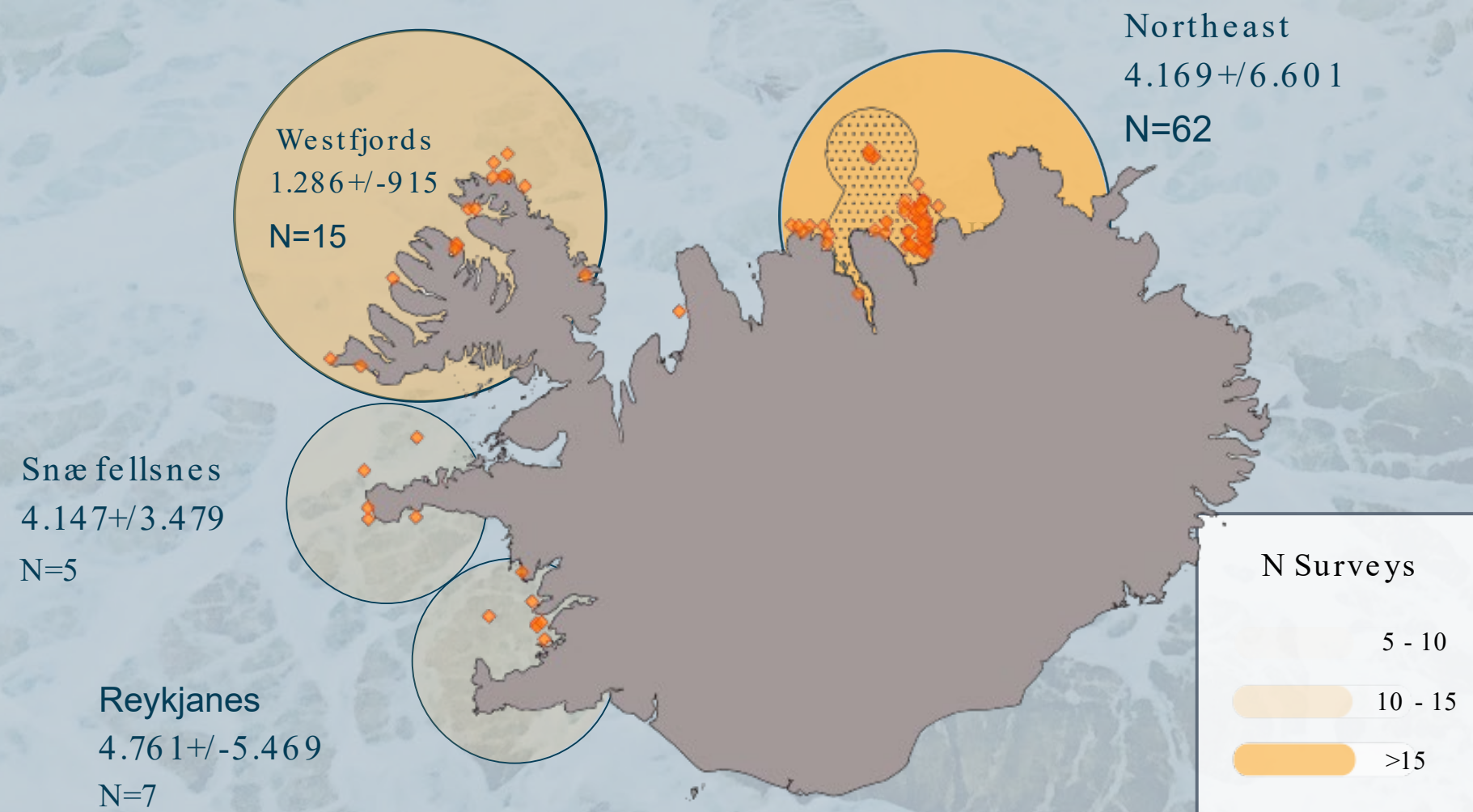
## 4. LOGGING+ VERIFICATION

count, size and particle type + F-TIR /Raman identification



# MESO-/MICROPLASTIC (MP/KM2)

72/90 trawls contained MP, though concentrations were highly variable  
835 MP particles were collected.

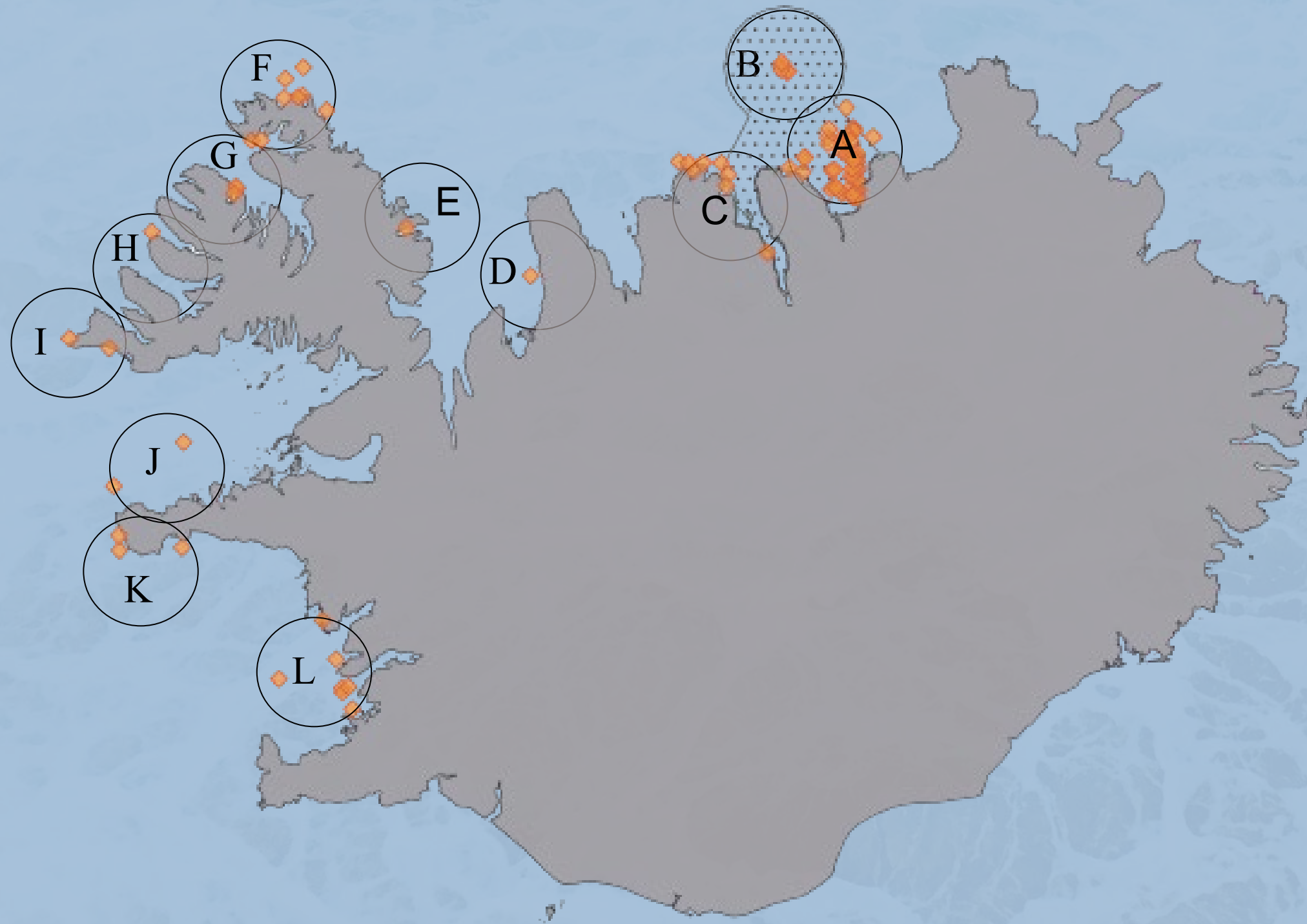


Surveyed regions



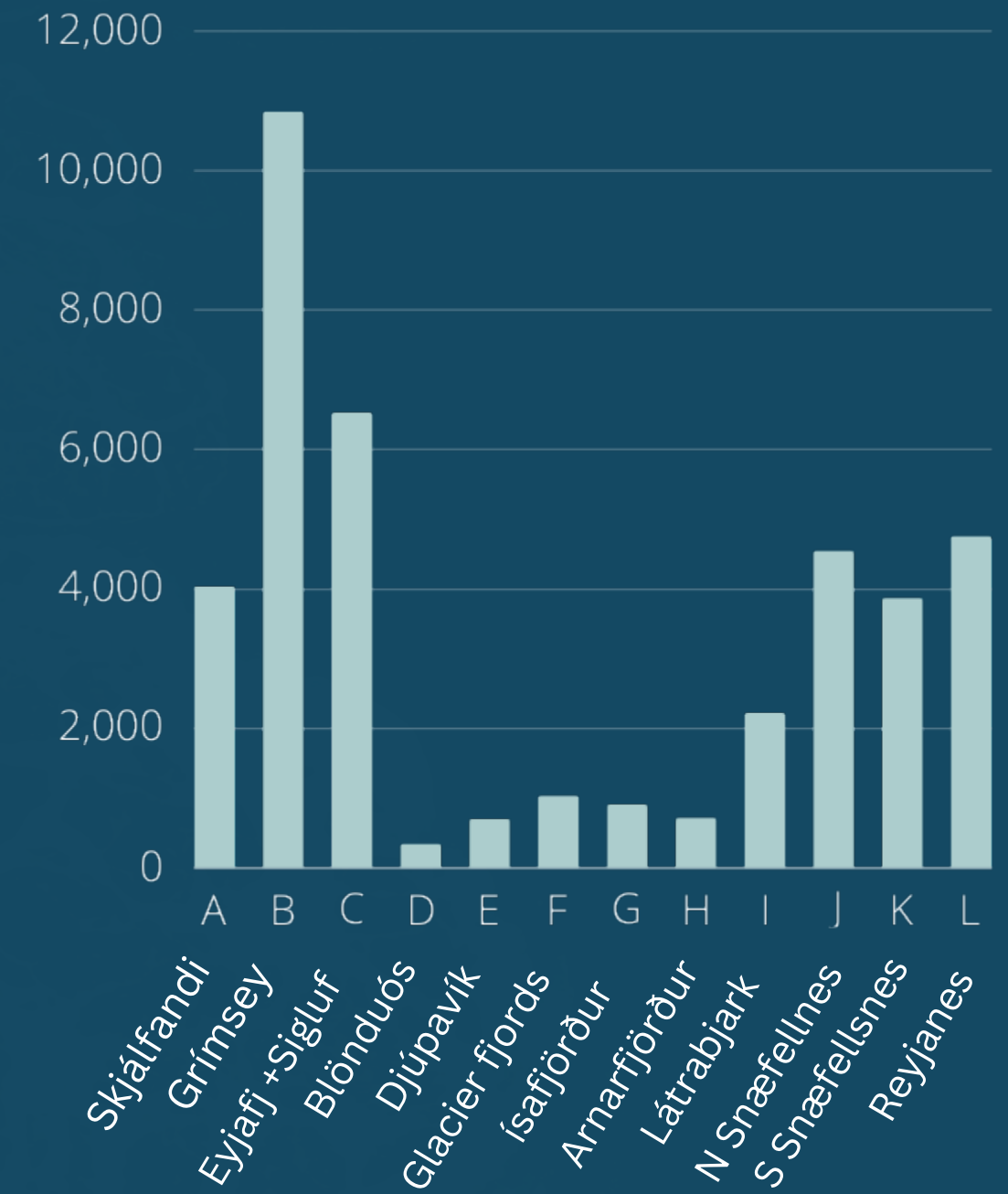
# RESULTS

YEARS 2019 - 2023



Average MP /KM2

Surveyed locations





# Types of meso- /microplastic



Fishing lines were the most predominant type of MP

Fishing lines per location:

in Grímsey: 59%

in Snæfellsnes: 55%

in Ísafjörður: 53%

in Latrabjark: 47%

in Skjálfandi Bay: 39% (case study)

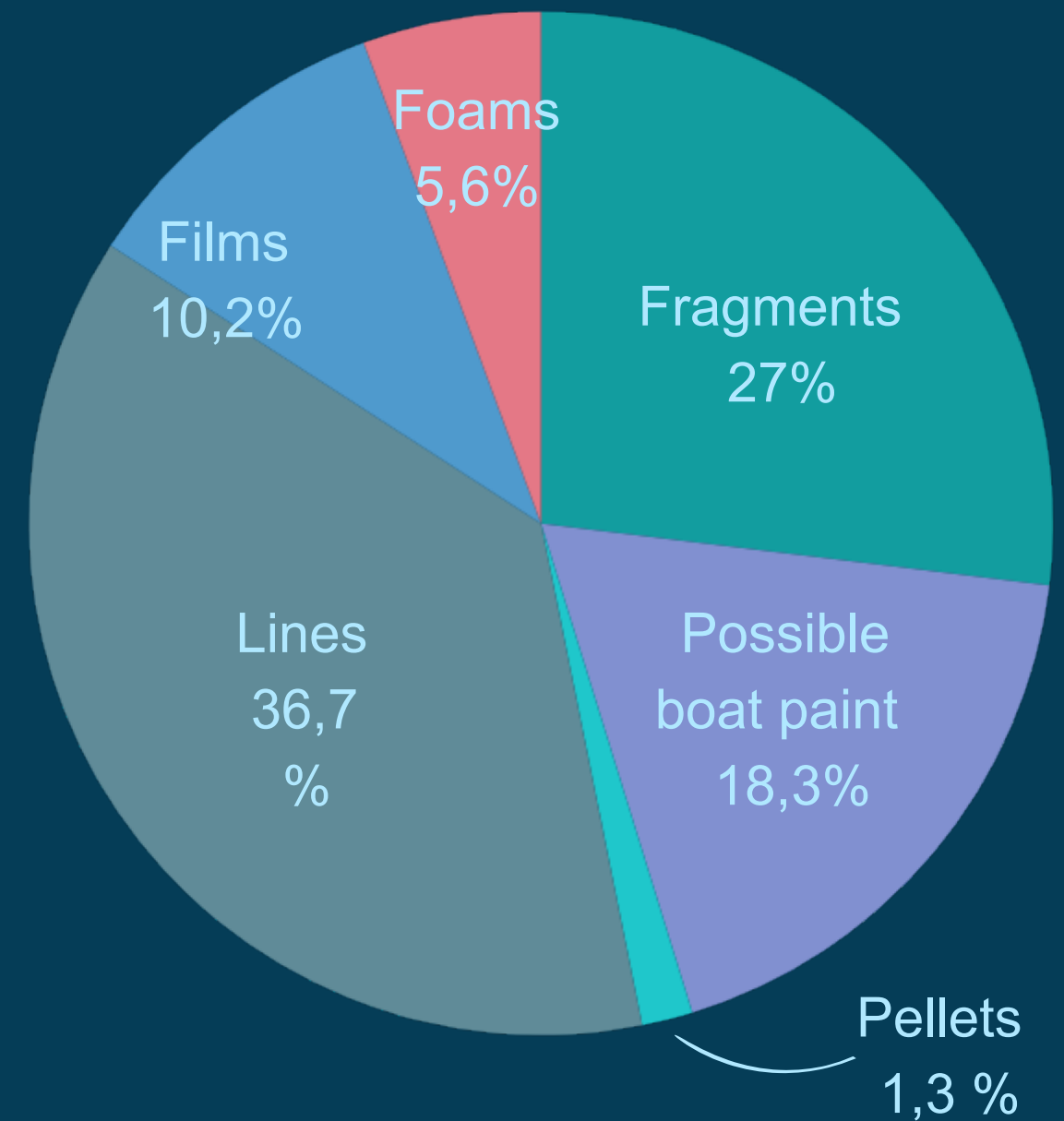


Fig 3. % of MP categories found with all samples combined



# Discussions and Conclusions

## ■ Reporting paint

Paint particles could be a source of potential samples contamination but it also reveals the problem of polluting paints in the oceans and increasing boat traffic

Unfriendly anti foulings and unregulated shipyard activities.

## ■ Threatened wildlife

The relatively high presence of MP in the samples shows that fragile areas and its biodiversity are directly exposed to plastic pollution and therefore we need immediate solutions

High estimates overlapping with important whale feeding grounds (eg. in Eyjafjörður) and sea bird colonies (eg, Grímsey)



# Discussions and Conclusions

## ■ Heterogeneity

Varying amount of MP/km<sup>2</sup> and wide standard deviations demonstrate the heterogeneous distribution of MP particles in the dynamic sub-arctic marine environment.

## ■ Predominance of fishing gear

Suggested intensive fishing activities are likely a large contributor to MP, especially in Skjálfandi Bay, Snæfellsnes and Ísafjörður.

## ■ Education and outreach

We proved that citizen science is a powerful tool to facilitate scientific data collection and to engage people in ocean conservation.





oceanmissions.org







 oceanmissionsiceland

belen.oceanmissions@gmail.com



Open Access Communication

## Assessment of Prevalence and Heterogeneity of Meso- and Microplastic Pollution in Icelandic Waters

by  Belén García Ovide <sup>1,\*</sup>   Erica Cirino <sup>2</sup>,  Charla Jean Basran <sup>3</sup>,  Torsten Geertz <sup>4</sup> and  Kristian Syberg <sup>5</sup>

Thank you!



Stjórnarráð Íslands  
Umhverfis- og  
auðlindaráðuneytið



The Safina Center 