

# Seabirds and Marine Plastic Debris in the Northeastern Atlantic



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circular  
ocean

## Marine Plastic Pollution

- ✈ An estimated 4.8 to 12.7 million metric tons of plastic enters the oceans annually
- ✈ Over 690 marine species have been affected by marine debris, the majority involving plastic (Gall & Thompson 2015)
- ✈ Seabirds are affected through **ingestion** or **entanglement** (including at the nest)





## Aims of our research

- To determine what we currently know about seabirds and marine plastic in the northeastern Atlantic Ocean, focusing on nest incorporation and ingestion
- Identify knowledge gaps and make recommendations for future monitoring to improve our understanding of how marine plastic affects seabirds



## Methods: Synthesis of the literature

- Extensive review of the peer-reviewed and grey literature up to 28th February 2017
- Key words searches: plastic, diet, plastic ingestion, nest, nest incorporation, nest material and marine debris
- For each study, we recorded the species, location, year of sampling, sampling method, and the frequency of occurrence (%) of plastic ingestion or nest incorporation
- Where provided, we also recorded all metrics referring to the number, mass, size, type, and colour of plastic identified
- For plastic ingestion, we determined how many studies achieved the standardised metric recommendations outlined by Provencher *et al.* (2017)





## Methods: Species and area of interest



69 seabird species –

Tubenoses

Gannets

Skuas

Terns

Loons

Mergansers

Cormorants

Phalaropes

Gulls

Auks

Seaducks



Non-continental European countries  
and autonomous territories within  
northeastern Europe

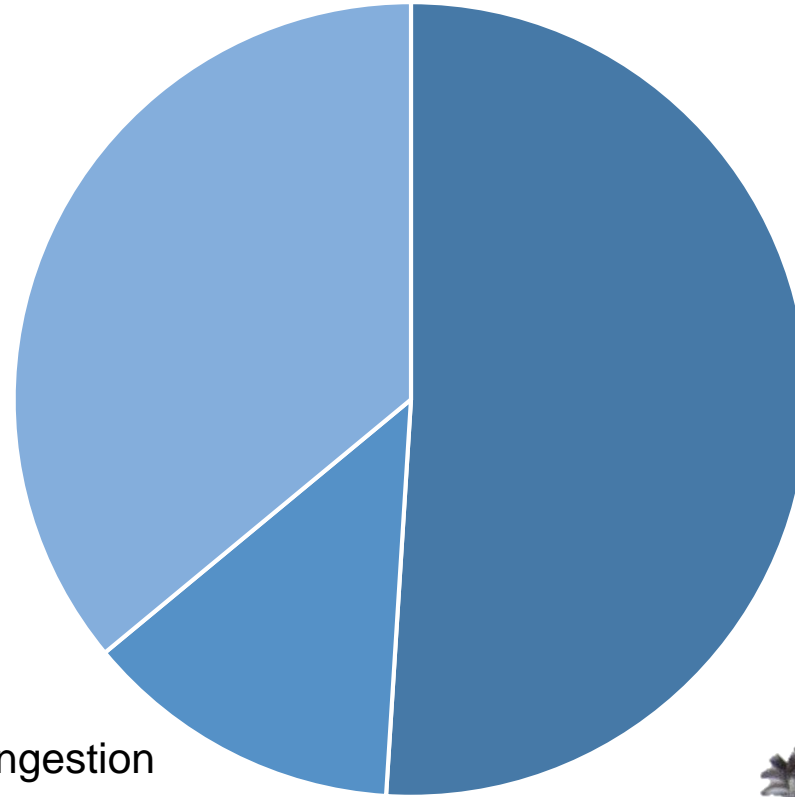


## What we found: Seabirds and plastic ingestion

Plastic ingestion was recorded in  
36% of species  
**(or 74% of those examined!)**



No evidence of plastic ingestion  
in 13% of species



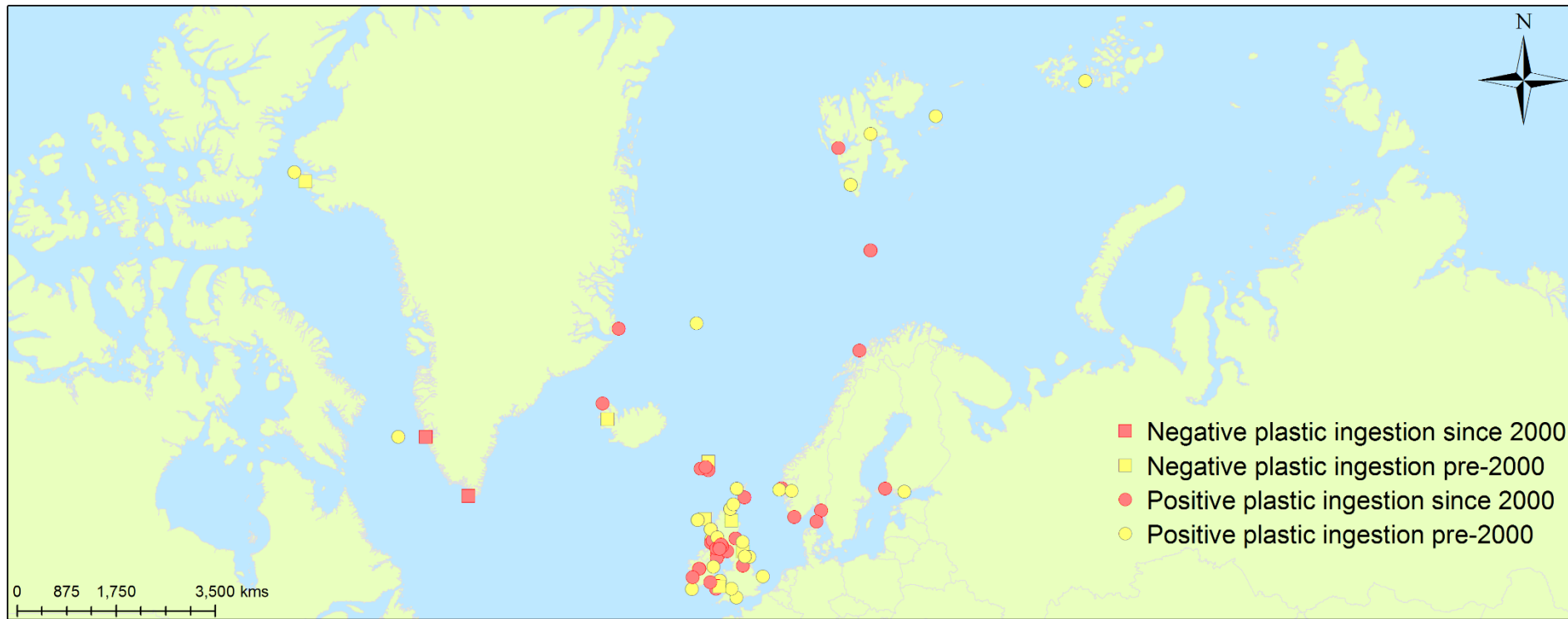
51% of species have  
**not been examined**  
for plastic ingestion





## Results: Seabirds and plastic ingestion

✈ There was spatial and temporal bias in coverage - 61% of data was collected prior to 2000



## Results: Seabirds and nest incorporation

- Only 3 studies reported quantitative data on nest incorporation!
  - Northern Gannet, Wales (1)
  - Black-legged Kittiwake, Denmark (2)
- **Not because it doesn't occur but because it is under-recorded**





## Filling in the gaps!

This summer we (including citizen scientists and seabird ecologists) have been collecting data from other seabird colonies across the UK and further afield, especially of Gannets





## Why?

To find out which seabird species are most affected by plastic, and where





Studies should report metrics as recommended by Provencher *et al.* (2017) especially mass



The collection of large sample sizes at regular intervals is necessary to detect changes

## Recommendations

Collaborate effort is required to collect data from multiple locations over time in a standardised way



A standardised, repeatable, protocol is required to obtain quantified data on nest incorporation of plastic



Stomach contents & beached Fulmar J.A. van Franeker, Wageningen Marine Research





# THE EFFECTS OF MARINE PLASTICS ON SEABIRDS IN IRELAND



Recent monitoring in the Celtic Sea revealed that 57% of **trawl samples** contained litter, with **84% comprising of plastic**



Ireland is an important region for seabirds, incorporating **29 significant bird and biodiversity areas in marine habitats**, supporting internationally important numbers of 25 species



Between 2012 and 2016, **93%** of 14 **beached fulmars** collected from Ireland were found to **contain ingested plastic**



The presence of **micro-plastic** is widespread in the north-eastern Atlantic with a mean of **2.46 particles m<sup>-3</sup>**



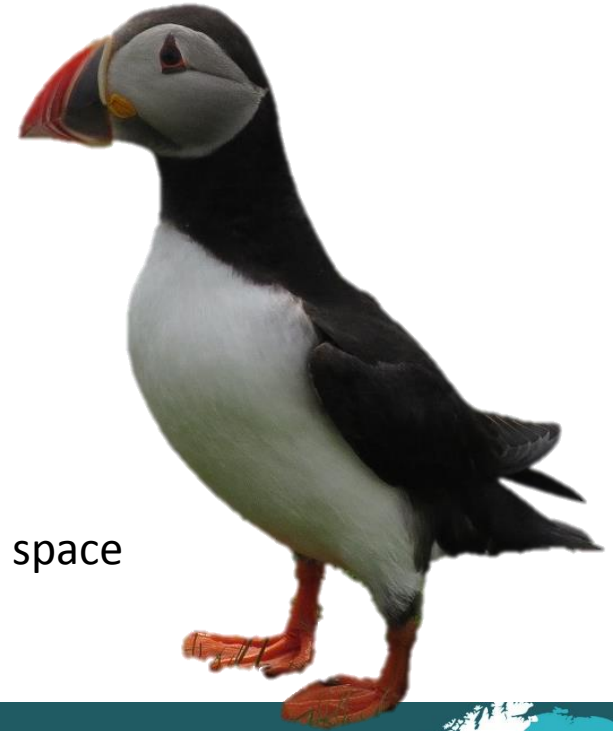
**69 seabird species** commonly occur as breeding species or migrants in Ireland, **plastic ingestion has been recorded in 13**, however 52 have not yet been examined for plastic ingestion



# Thank you for listening!

- Plastic ingestion was recorded in 36% of 69 seabird species
- 51% of species have not been investigated for plastic ingestion
- Only 2 species had published data on nest incorporation
- Low spatial and temporal coverage of data
- Co-ordinated effort in collecting data is required so trends can be monitored over time and space

If you have any questions please email: [nina.ohanlon@uhi.ac.uk](mailto:nina.ohanlon@uhi.ac.uk)



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