

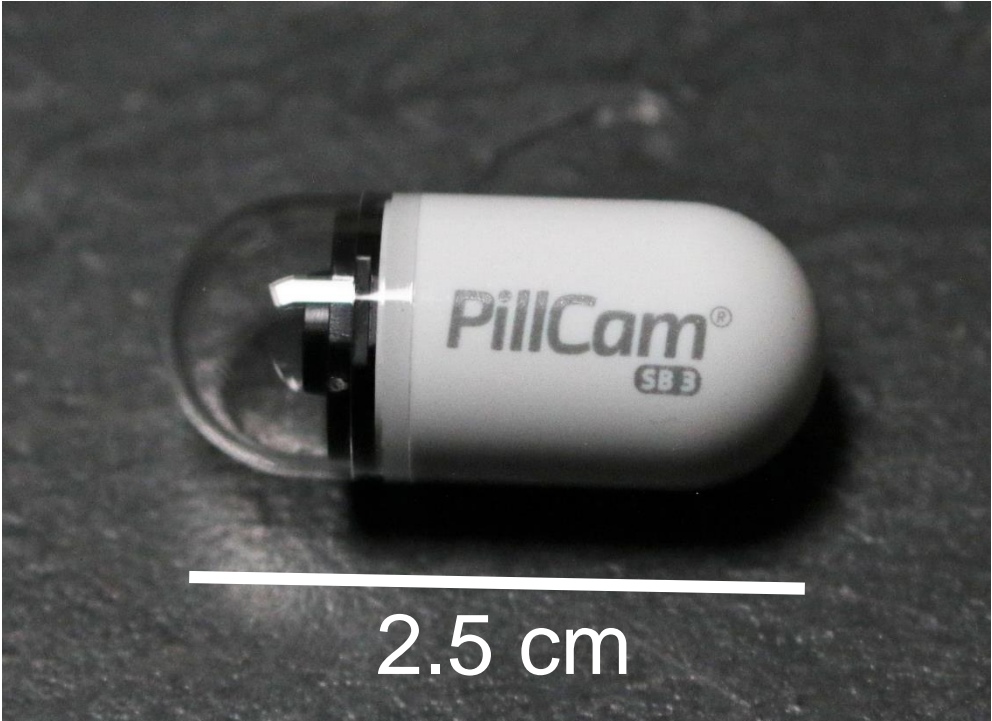
# The Plastic Conundrum

Prof Colin Moffat, CSA Marine,  
Scottish Government





# Plastic: A very useful material







Atlantic Ocean





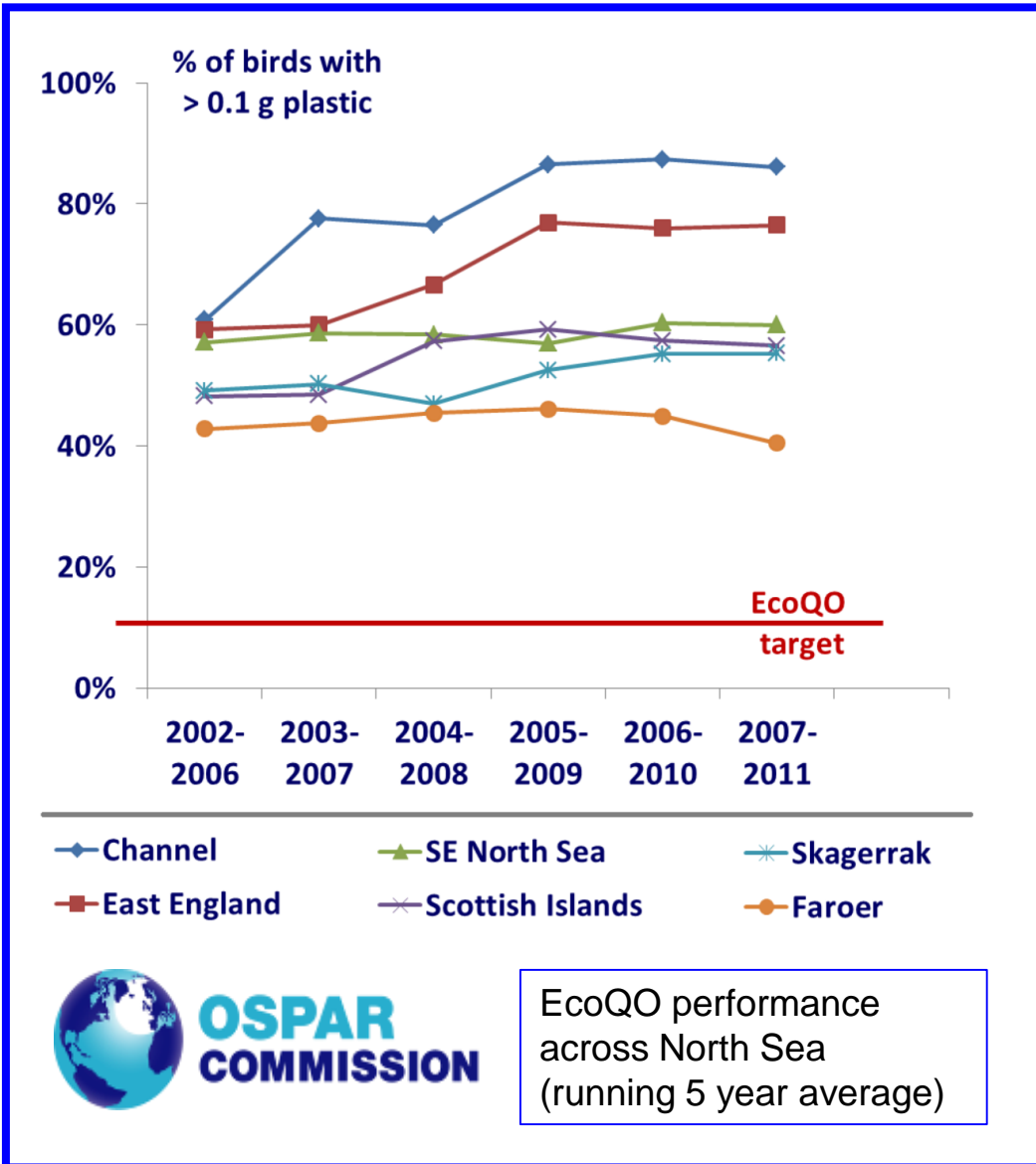




# OSPAR EcoQO: Fulmars



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Courtesy of Ewan Edwards, Marine Scotland

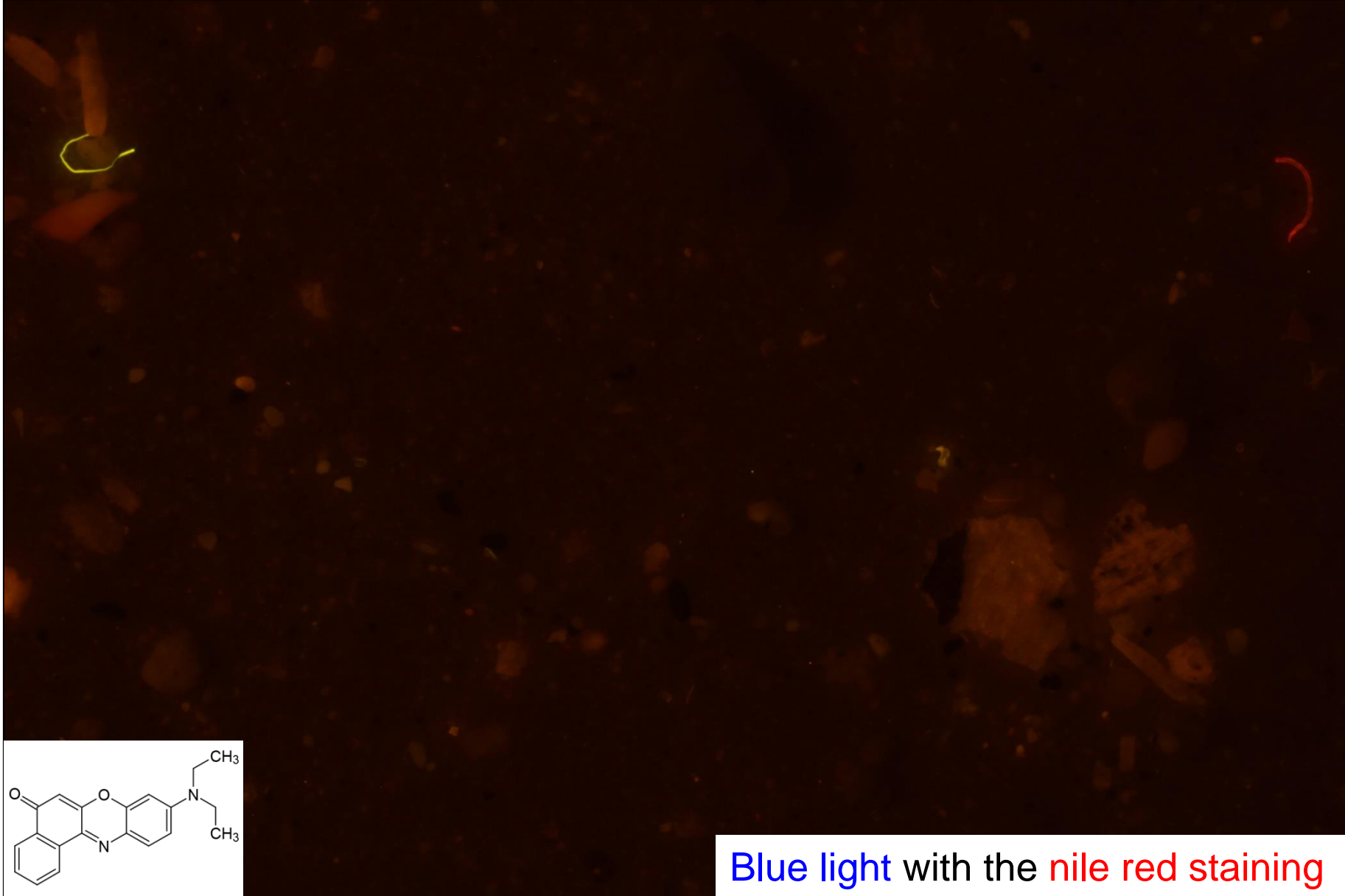
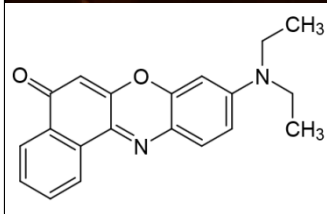


# Find the Fibres!



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Technique outlined in Maes *et al.* (2017)



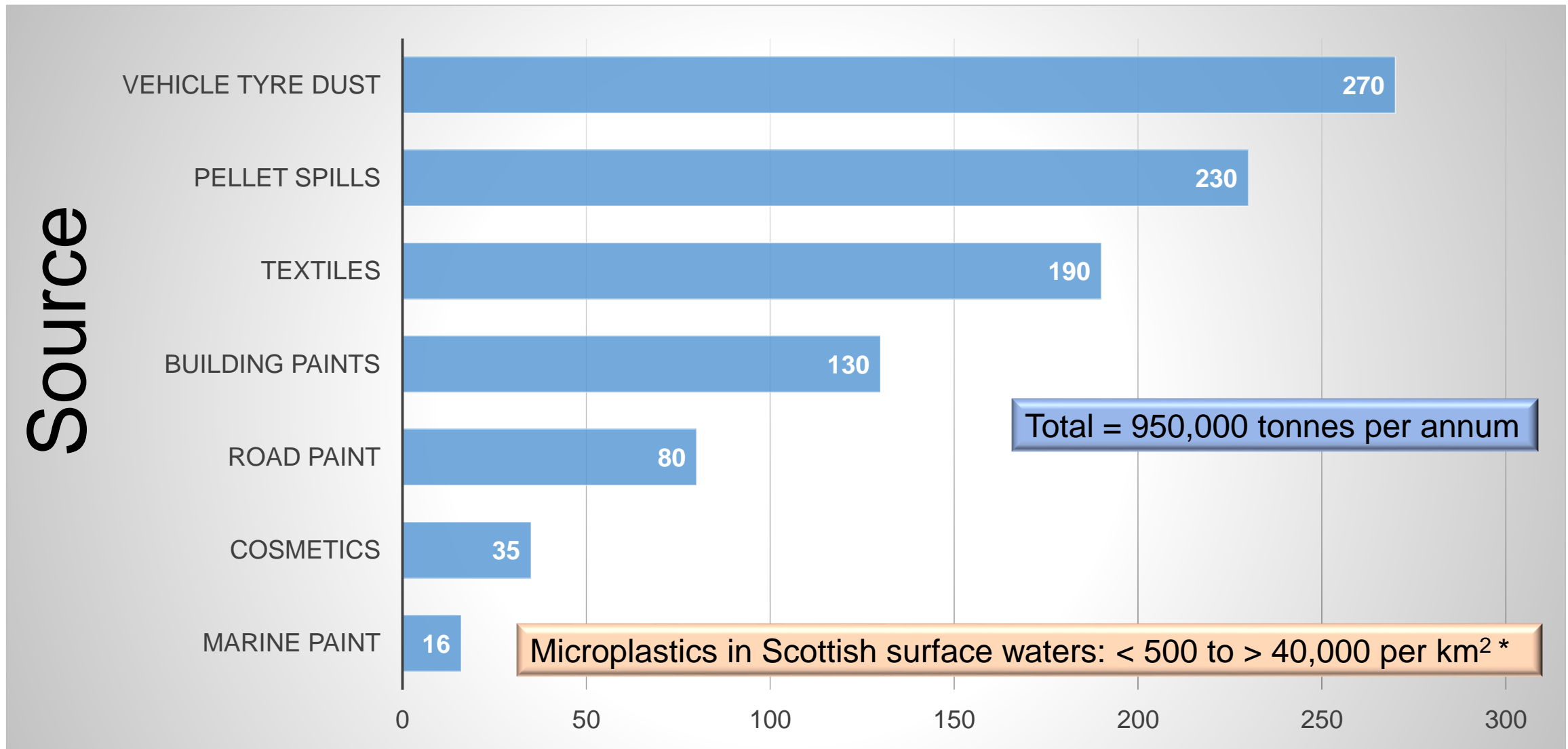
Blue light with the Nile red staining

Technique almost operational in Aberdeen 😊

# Sources of Primary Microplastics



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Eunomia Research and Consulting (2016)

Annual Input to the Ocean (10<sup>3</sup> Tonnes)

\*Data from MSS



# Conclusion: Plastic 'products' are present throughout our ocean



Pre-production pellet



Fibre on 1 mm<sup>2</sup> grid



Fulmar stomach contents



From 5 m<sup>3</sup> seawater



# How are we reacting?

## Countryfile: Tom Heap horrifies viewers with plastic in FOOD findings 'How disgusting'

COUNTRYFILE presenter Tom Heap dug deep into a new investigation about finding plastic in animal food during tonight's edition of the BBC documentary series, and many viewers were "disgusted" by the implications of the findings, despite both Tom and ecologists reiterating there was no conclusive evidence to suggest humans and animals will be impacted by ingesting nano plastics.

By **ROXANNE HUGHES**

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11 Aug 2019





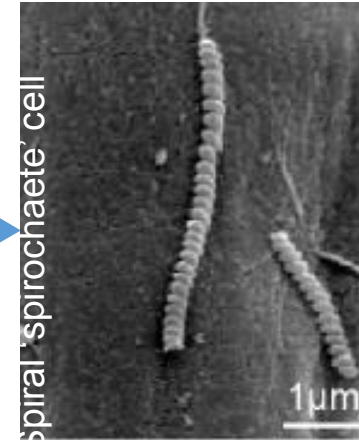
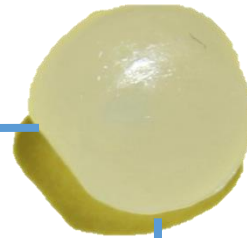
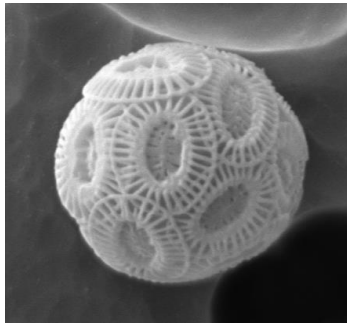
## **Abstract**

Microplastics in the world's oceans are a global concern due to the potential threat they pose to marine organisms.



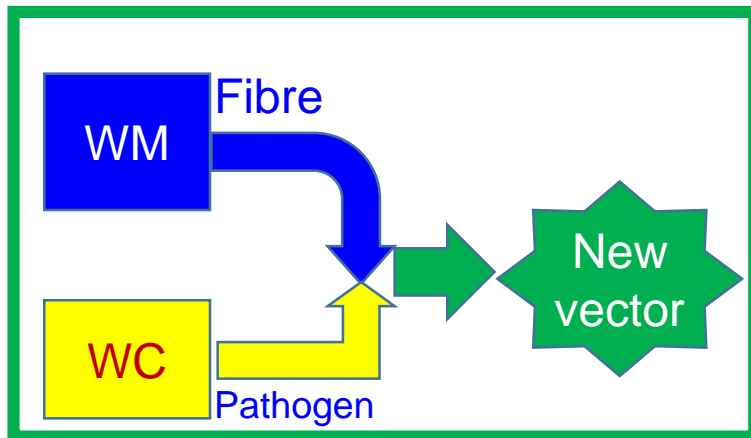
# Micro-plastics: Issues

Anthropogenic (mm-sized) polymers are a new pelagic habitat for microorganisms and invertebrates. The ecological ramifications of this phenomenon for marine organism dispersal, ocean productivity, and biotransfer of plastic-associated pollutants, remains to be elucidated. (Reisser *et al.*, PLOS ONE (2014) 9(6), 1 – 11)



(Reisser *et al.* (2014))

- Diatoms
- Bryozoans
- Barnacles (*Lepas* spp.)
- Dinoflagellate (*Ceratium*)
- Isopod (*Asellota*)





# Are we on the right track?



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A wide-angle photograph of a coastal landscape. In the foreground, there are green grassy hills and some wildflowers. A pebble beach curves along the left side of a bay. The water is a deep blue-green color. In the background, there are more green hills and a small structure on a hilltop. The sky is a pale blue with some light clouds.

The tide is turning!





- Plastics are beneficial
- How we handle them can result in problems
- Better understanding of issues
- Need to be more robust in understanding the impacts at a population level
- Need to reduce our reliance on plastic, reduce the sources of microplastics and recycle our macroplastics