

# Presence of microplastics in the digestive tracts of stranded loggerhead turtles (*Caretta caretta*) in the Valencian Community coasts.

Novillo O.\* , Raga J.A., Tomás J.

\*Olga.novillo@uv.es

Cavanilles Institute of Biodiversity and Evolutionary Biology, University of Valencia. P.O. Box 22085, E-46071 Valencia, SPAIN.

## INTRODUCTION

Lately, both the scientific community and society have been highlighting the presence of microplastics in seas and oceans. However, attention paid to them has been scarce, especially in big vertebrates. Microplastics are plastic items that **measure less than 5 mm** in size. Their origin can be **primary** if they have been manufactured in purpose (i.e. industrial pellets) or **secondary** if they are the result of the degradation of bigger plastic items. Loggerhead turtles (*Caretta caretta*) are specially prone to present anthropogenic litter in their digestive system due to their opportunistic diet, and thus, microplastic presence in their gut is probable. Regarding this situation, **we aim to:**

1. To analyse the abundance of microplastics in the digestive tracts of 12 stranded or by-caught dead loggerhead turtles along the Valencian Community coast.
2. To analyse the relationship between the amount of microplastics and macroplastics found.
3. To analyse whether they are primary or secondary, their colour and their shape.

## MATERIAL AND METHODS

1. **Necropsies** of fresh carcasses (N = 12 , years 2017 and 2018).
2. **Size separation** of digestive contents with 200µm, 500 µm and 5 mm sieves (fig. 1).
3. **Digestion** of collected contents in KOH 10% during 3 weeks.
4. **Vacuum filtration** in a laminar flow cabinet (positive pressure), so as to prevent contamination of samples.
5. **Observation under stereomicroscope.**

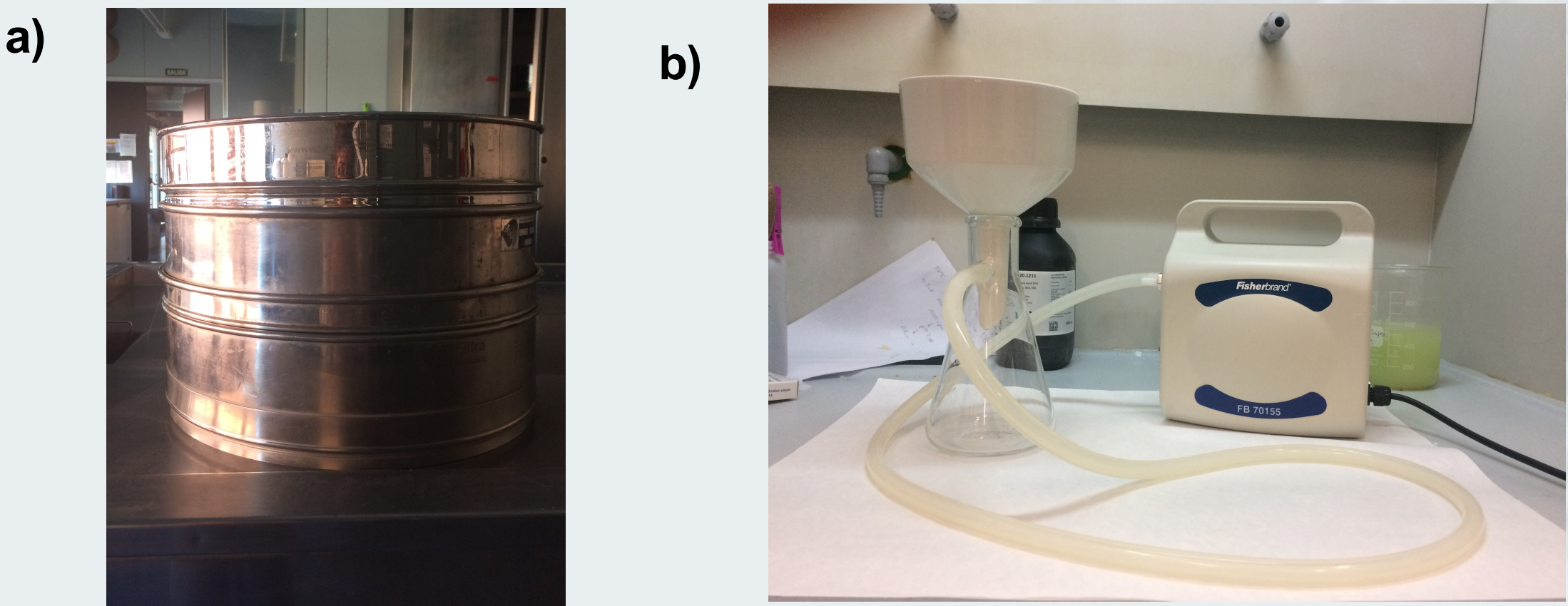


Fig 1. a) Size separation of digestive contents through sieves, b) vacuum filtration system (Büchner filtration)

## RESULTS

1. **A total of 10 turtles contained microplastics.**
2. **56% of the items found were fragments and 44% were fibres, all of secondary origin (fig 1. a).**
3. **Fibres** were black (58.1%), followed by degraded colours (37.2%), translucent and red (2.32% each).
4. **Fragments** were white (35%), followed by degraded colours (22.5%), translucent and blue (17.5% each) and green (5%).
5. **Mean±SD items/individual = 7.5± 8, median = 3**
6. **From the 12 turtles, 8 also contained macroplastics.**

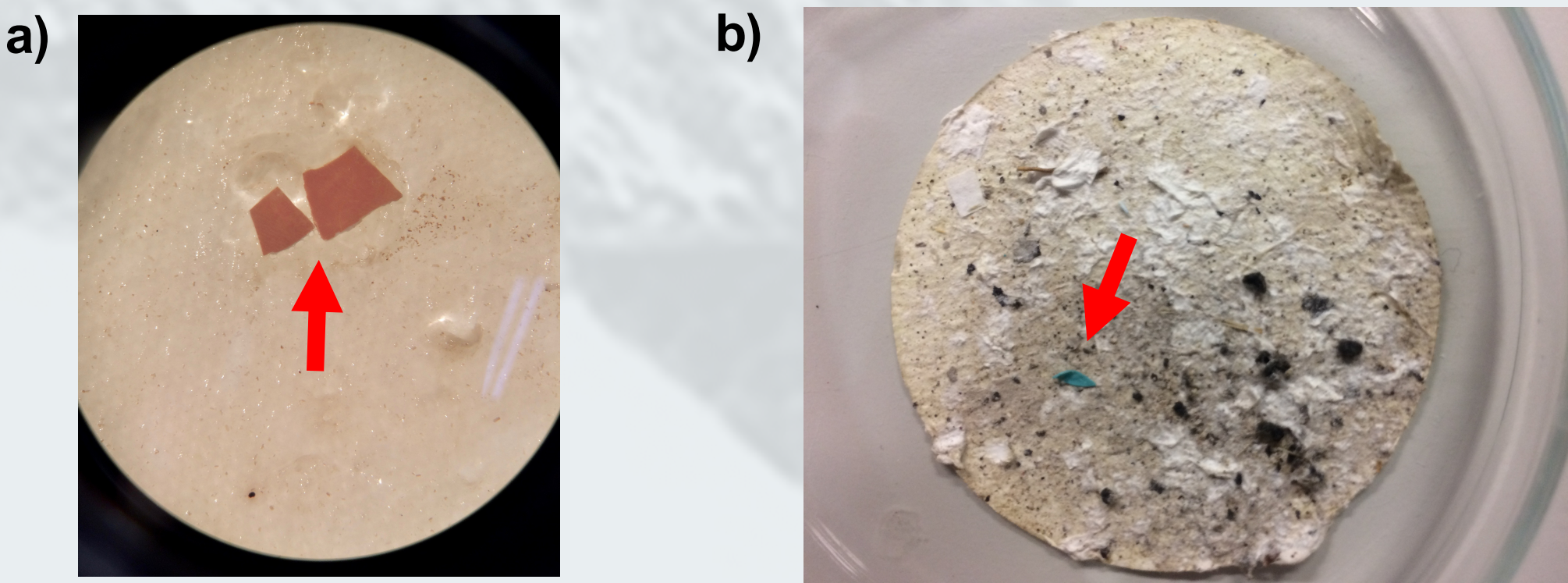


Fig 2. a) Micropastics under stereomicroscope (60x), b) Blue microplastic and debris under naked eye.

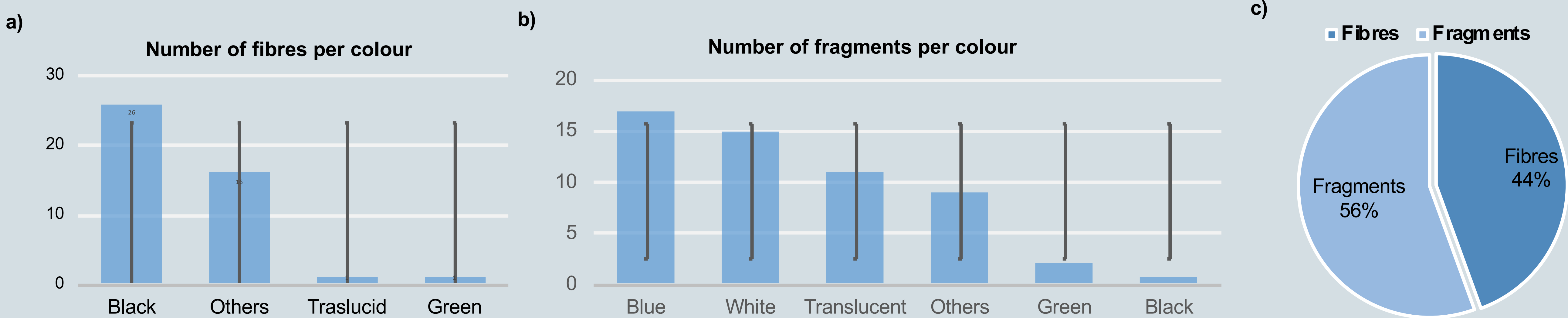


Fig. 3. a) Number of fibres per colour, b) number of fragments per colour and c) proportion of fragments and fibres found.

## DISCUSSION & CONCLUSIONS

1. According to our preliminary results, **microplastics presence in Mediterranean loggerhead turtles seems to be common**. As a consequence, loggerhead turtles could be a proper bioindicator of plastic presence in marine ecosystems.
2. **All microplastics found were of secondary origin**, that is, products from the degradation of macroplastics.
3. There was more variation in colour of fragments than in colour of fibres (fig 3. b and c).
4. Raman or infrared spectrometry should be performed under expert guidance in order to identify the polymers of microplastics so as to have a complete approach in management, restoration and conservation programs.
5. Effort should be focused on reducing the amount of waste reaching the sea through citizen education, public campaigns and proper industrial waste disposal.

## References

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Background picture: 27 mm, Enric Adrian Gener

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