

SEA TURTLES: SENTINELS OF MARINE LITTER

Aina Jaume-Comas^{1*}, Andrés Cózar² & Carmen Morales-Caselles²

^{1*}Department of Biology, "Master en Conservación y Gestión del Medio Natural", aina.jaumeco@alum.uca.es
² Department of Biology, INMAR, University of Cadiz (UCA) carmen.morales@uca.es , andres.cozar@uca.es

INTRODUCTION

Marine litter stands out as one of the foremost contaminants, found in every corner of the ocean. This pervasive presence poses a significant threat to biodiversity with its causing serious repercussions on marine organisms.

The ingestion of these plastics has impacts both at an individual and population level, disrupting food webs due to their abundance, durability, persistence, and potential toxic effects in the marine environment [1]. The case of turtles, when they are feeding, they rely on visual strategies to select their food, which can result in the accidental ingestion of plastics [2,3].

The present study focuses on quantifying the marine litter present in the digestive tracts of two common species of stranded sea turtles found in the southern Iberian Peninsula: *Caretta caretta* (loggerhead turtle) and *Dermochelis coriacea* (leatherback turtle).



Dermochelis coriacea (leatherback turtle)

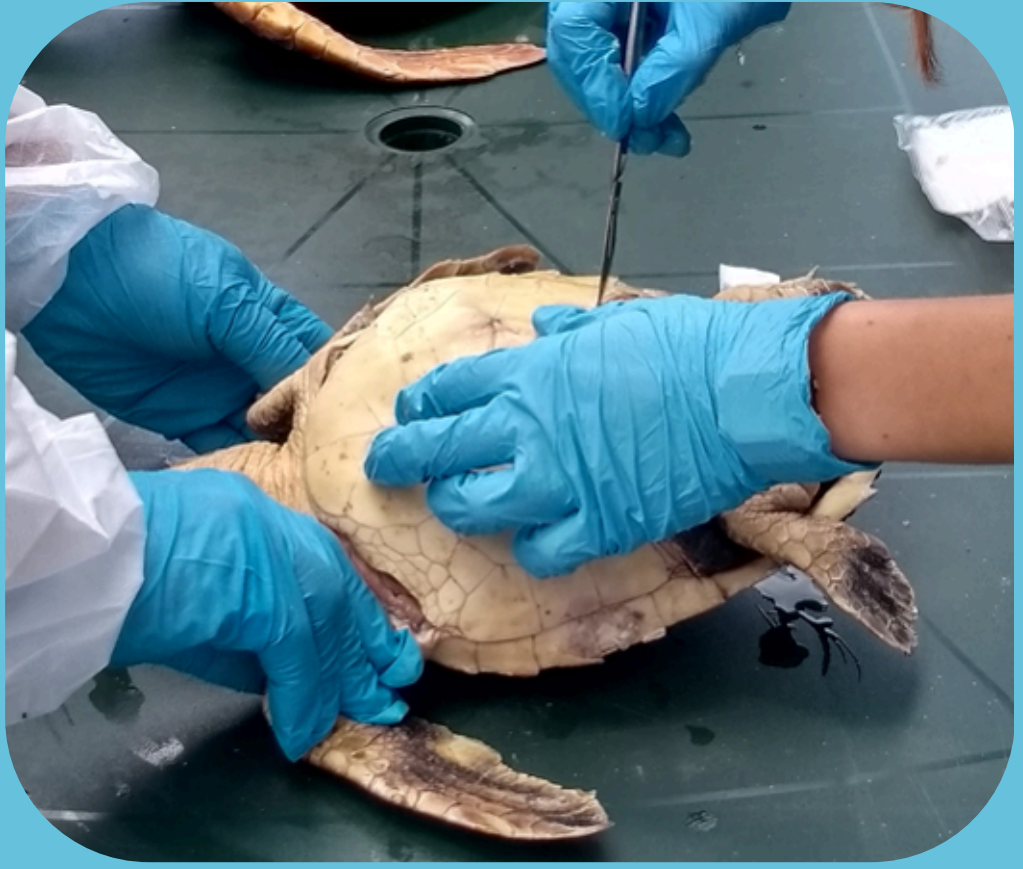


Caretta caretta (loggerhead turtle)

METHODOLOGY

1. NECROPSIES AND DIGESTIVE TRACT SEPARATION

The extraction process began with necropsies performed by specialists who separate the entire digestive tract and preserve it in the freezer for subsequent laboratory analysis.



2. SEPARATION OF VISUAL PLASTICS

The entire content of the digestive tract was extracted, and visually identifiable plastics were simultaneously collected. The remaining contents were placed in water and frozen for subsequent analysis.



3. DIGESTION

The digestion process began adding a 10% KOH solution (adding at least 3 times the weight of the sample). The sample was left at 50°C for approximately 48-72 hours in constant movement.



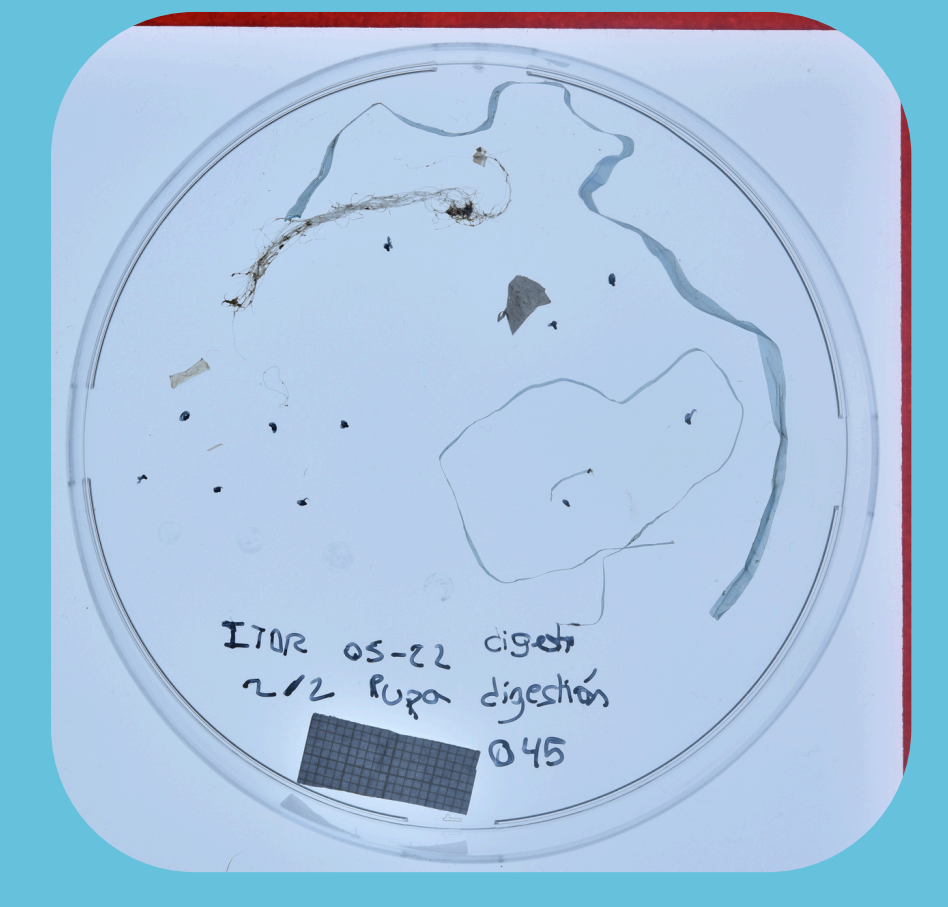
4. SEPARATION OF MICROPLASTICS USING A STEREO MICROSCOPE

Once the digestion process was complete, microplastics were visually separated using a stereo microscope. To do this, all KOH was previously removed, and the sample was cleaned using a mesh size of 200µm. All observed plastics were placed in a Petri dish.

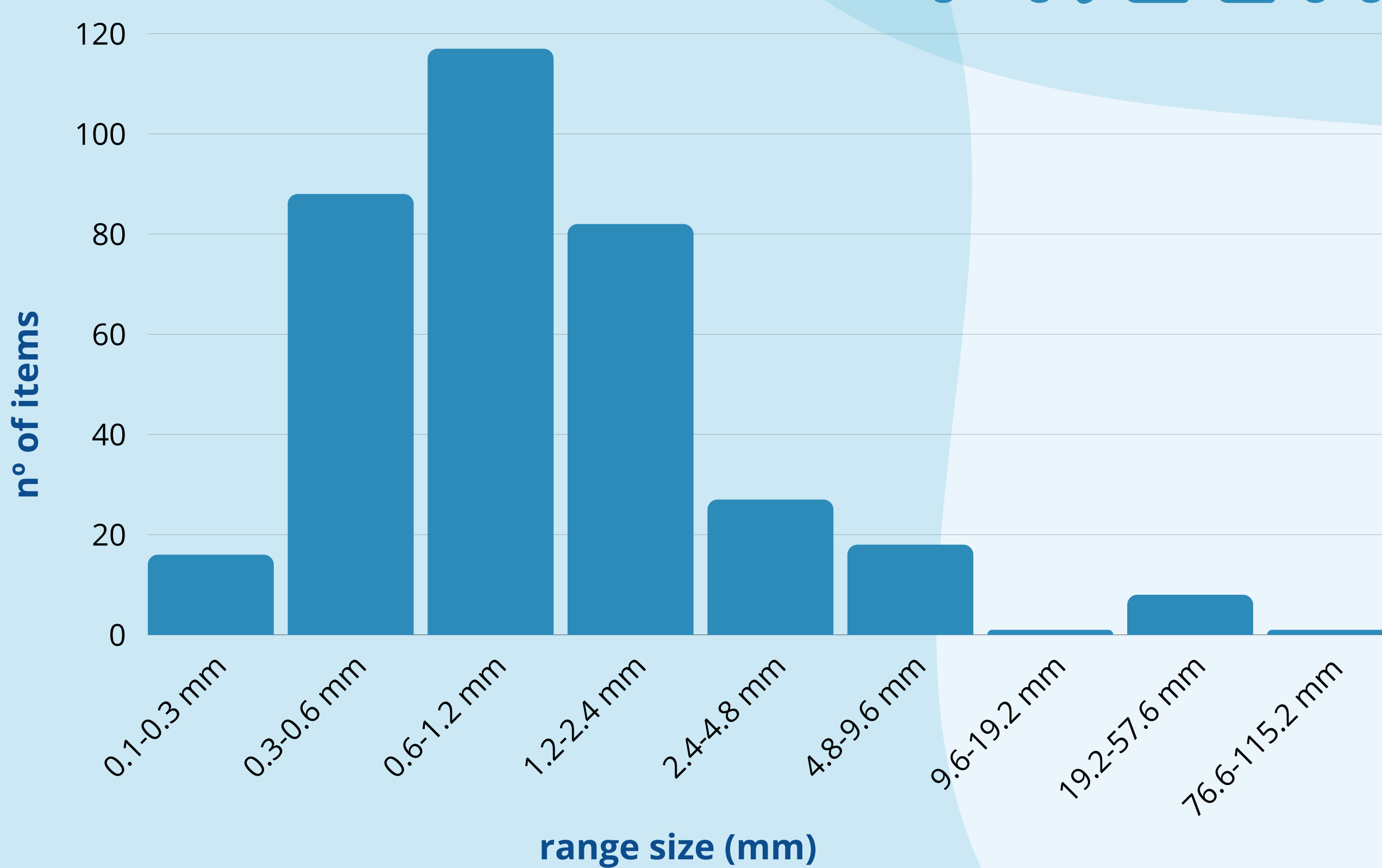


5. IMAGE PROCESSING AND FTIR ANALYSIS

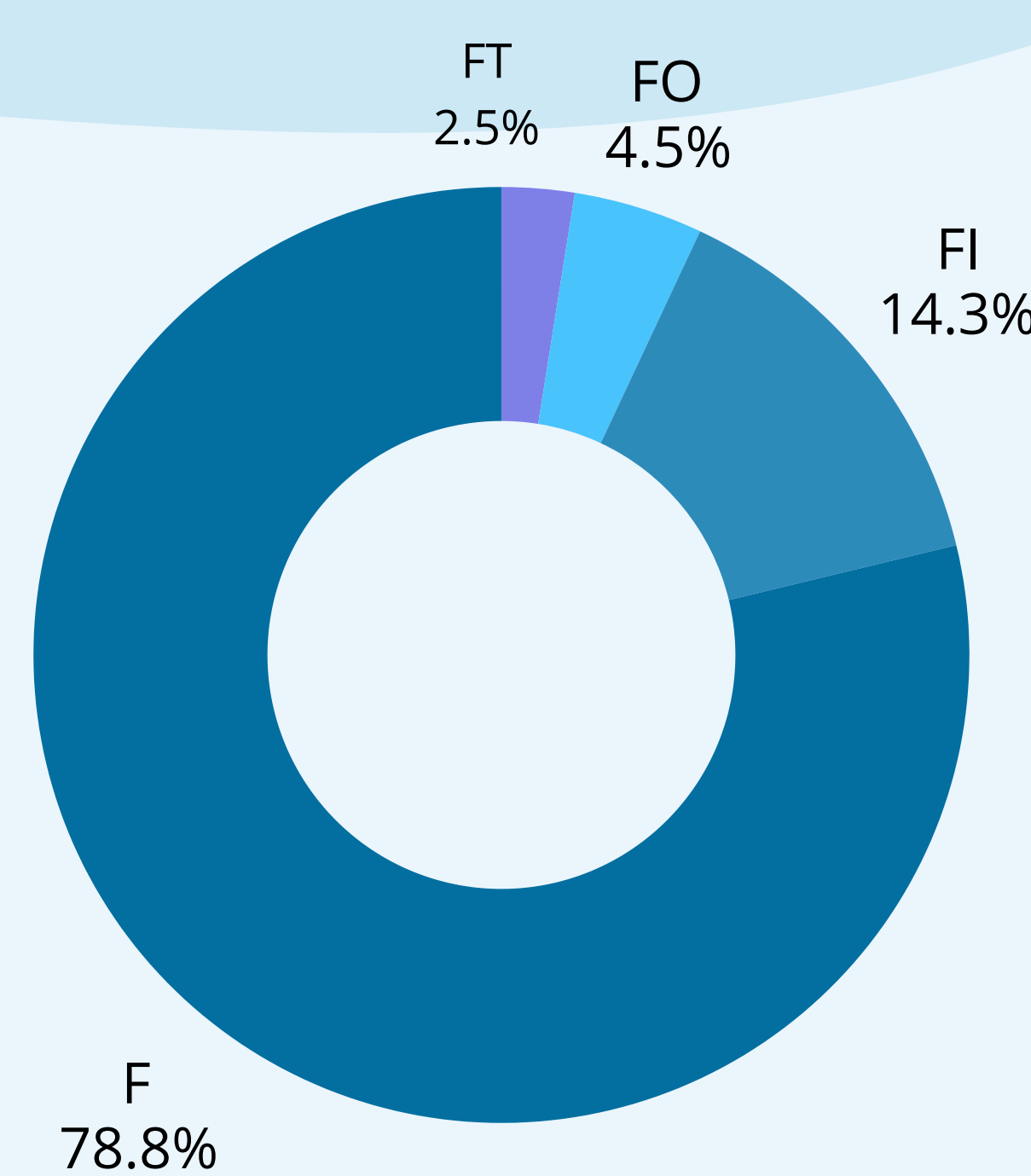
Finally, parameters such as area, feret diameter, and RGB color were measured using ImageJ Fiji software. Additionally, each particle was analyzed using FTIR, which provides information about the polymer type.



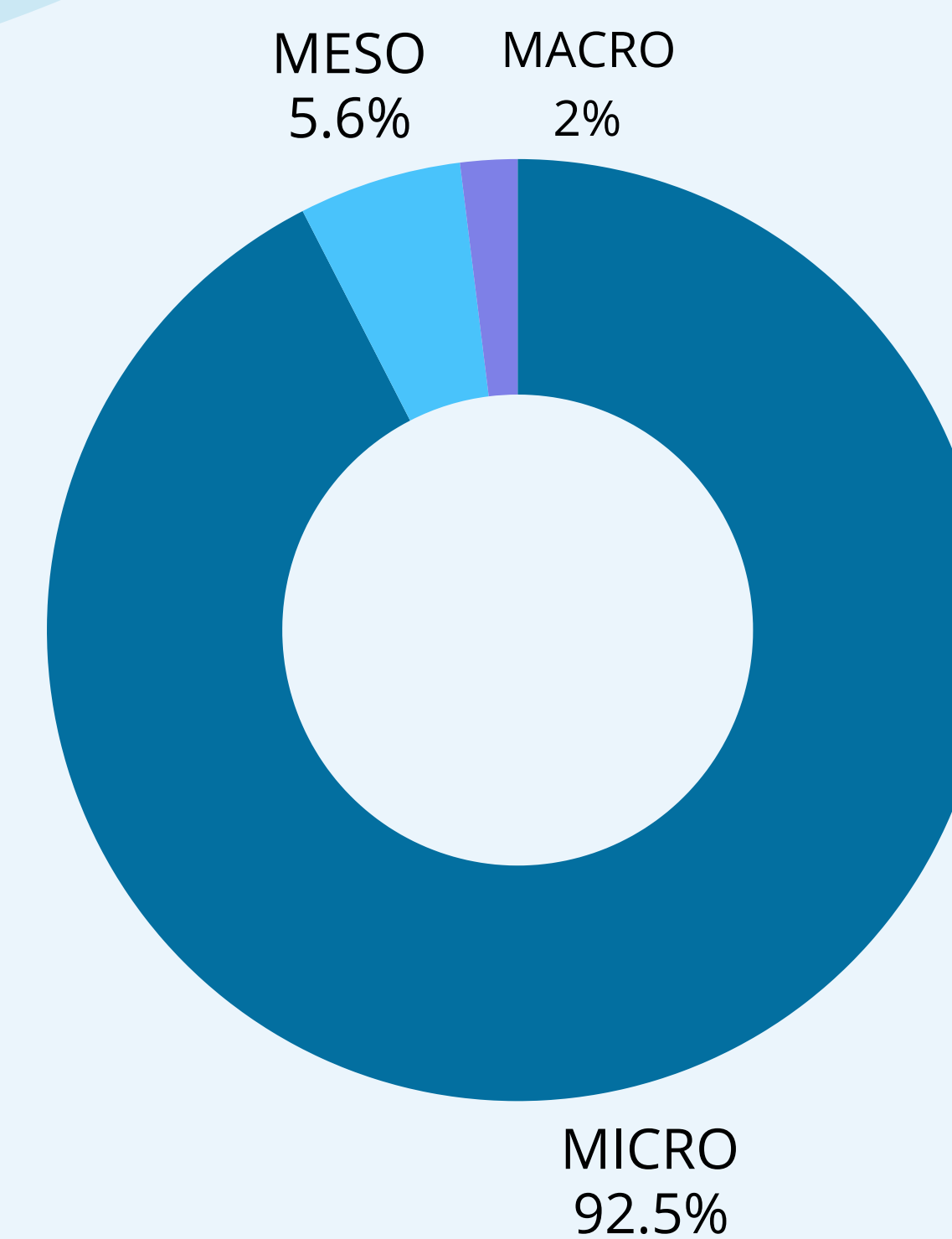
PRELIMINARY RESULTS



Size spectrum of items found in analysed sea turtles



Percentages of predominant type of item identified in total.
 F (Fragment), FI (Film), FO (Foam), FT (Fishing Thread)



Percentage of predominant item sizes categorized as Macro (> 25mm), Meso (>= 5mm), and Micro (< 5mm)

An average of **158 mg** items found in each turtle.

REMARKS

- All the studied turtles (100%) presented a variable number of items.
- The size range of the items varied from 0.1 to 116 mm, with a particularly high frequency of small fragments ranging from 0.3 to 5 mm.
- The relationship between items found in the organisms as a potential indirect or direct cause of death remains uncertain.
- Given the high presence of plastic derbis in sea turtles, especially small-sized plastic fragments, it is suggested to establish a standardized methodology for identifying plastic derbis in these organisms with a lower limit of at least 0.2 mm in size.

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