

## ABSTRACT

Interaction between marine litter and cetaceans has been documented in 47 species. Specifically, filter feeding animals such as whales are susceptible to plastic contamination due to the magnitude of prey intake, which increases the risk of interaction respecting to large accumulations of microplastics (MPs). The longevity of these mammals allows them to be considered sentinel species of ocean pollution, whose exposure to plastic particles will depend mainly on the feeding behavior of the species and the level of pollution in their feeding areas. In this study, we present for the first time, evidence of MPs presence in feces of fin whale resident population of the Gulf of California collected in two feeding areas of the species: La Paz Bay (n=2; 0.103 ± 0.045 items/g) and Northern Gulf (n=1; 0.066 items/g). These results were compared in terms of abundance and composition with particles found in the analysis of surface water samples of the same areas, whose concentrations was lower for the Northern Gulf than for La Paz Bay (0.014 ± 0.006 and 0.021 ± 0.002 items.m<sup>-2</sup>, respectively). All the samples analyzed presented plastic particles, mainly fibers as the dominant item. FTIR-spectrometry analysis identified polyester as the majority polymer. The similarity in the composition of MPs between fecal samples of fin whale and surface water samples can be taken as an indication of the fin whale level exposure in different seasons and feeding areas concerning to MPs pollution that affects the region.

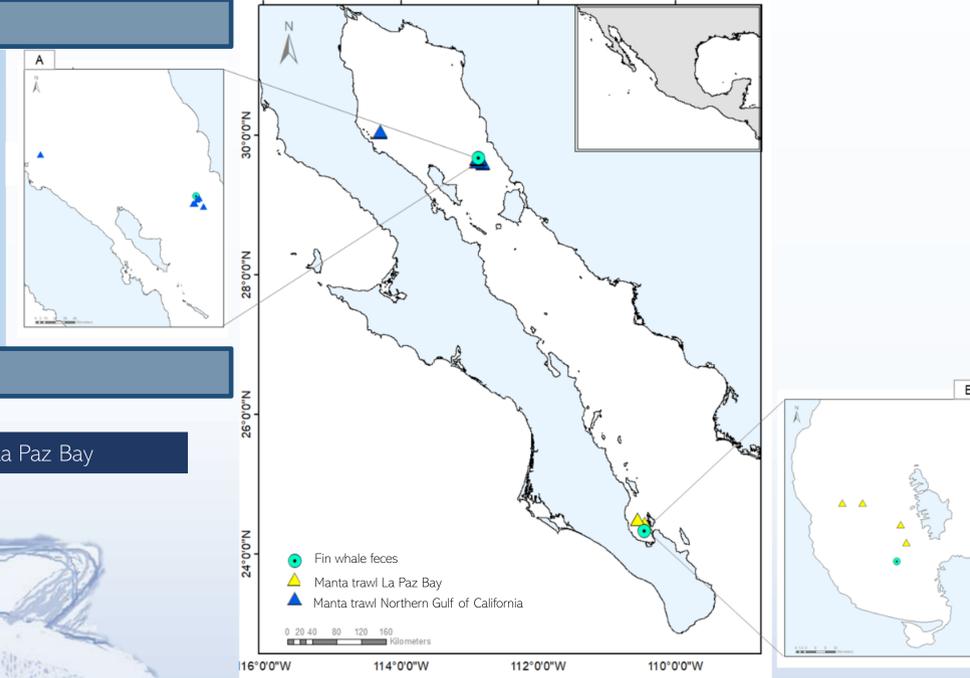


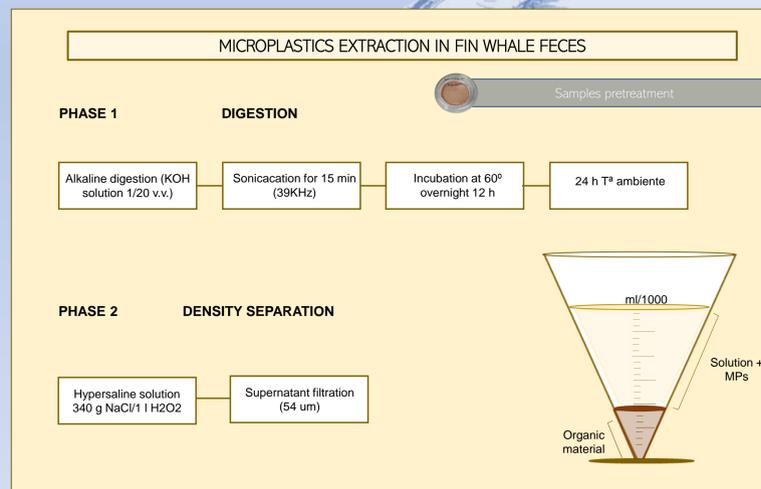
Figure 1. Study area Baja California Sur, México (30°0'0"N 110°0'0"W)

## OBJETIVES

Quantify and characterize MPs in surface waters and fin whale feces in two regions of the Gulf of California: North Gulf and La Paz Bay

- Abundance, distribution and composition of MPs in waters surface areas of the Gulf of California.
- Identify possible sources of MPs in the study area through the characterization of the particles present.
- Development of a methodology for the extraction of MPs in feces samples whale.
- Comparison of MPs in the surface samples and whale feces samples.

## MATERIAL AND METHODS



Region	MPs characterization		
	Colour	Shape	Polymer
NGC	Transparent (60%)	Microfibers (50%)	PES (1 fiber)
	Black (30%)	Fragments (50%)	
	Opaque (10%)		
	White (28%)	Fragments (64%)	Paint (52%)
	Blue (13%)	*Fiber bundles* (29%)	PES (30%)
	Black (11%)	Microfibers (4%)	PA (5%)
Mixed (29%)			
LPB	Blue (33%)	Microfibers (92%)	PES (*1 fiber*)
	Transparent (20%)		
	Black (20%)	Fragments (8%)	
	Gray (13%)		
	Red (13%)	Microfibers (64%)	PES (64%)
	Blue (27%)		EP (6%)
Blue (22%)	PE (6%)		
Transparent (15%)	Fragments (36%)		
Red (10%)			

## RESULTS



## CONCLUSIONS

- The estimation of abundance of MPs for the Gulf of California presented values of 0.0 to 0.024 items.m<sup>-2</sup> in samples of zooplankton / MPs
- Microfibers, "fiber bundles" and fragments were dominant in the region. The predominant polymers were PES and boat paint, followed by PA and PE
- The main sources of PM contamination appear to be terrestrial (sewage discharges) and maritime (fishing, recreational and tourism activities)
- This work is the first evidence on the presence of PMs in feces of resident population of fin whale in the Gulf of California (11.6 ± 2.88 items / sample)

An effective and non-invasive methodology was developed for the extraction and quantification of MPs in fin whale faeces, as a complementary tool to studies about the interaction of whales with the levels of accumulation of MPs in their habitat.

## REFERENCES

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