

Sediment grain size determines microplastic exposure landscapes for sandy beach macroinfauna

Peter Vermeiren, Diego Lercari, Cynthia C. Muñoz, Kou Ikejima, Eleonora Celentano, Gabriela Jorge-Romero, Omar Defeo

Context

Despite the global occurrence of microplastic contamination on sandy beaches, evidence regarding the spatial distribution of microplastics within individual beach sites, and consequently their interaction with beach infauna, remains contradictory.

Aims

- Guide sampling designs for microplastic monitoring on beaches
- Quantify macroinfauna exposure to microplastics

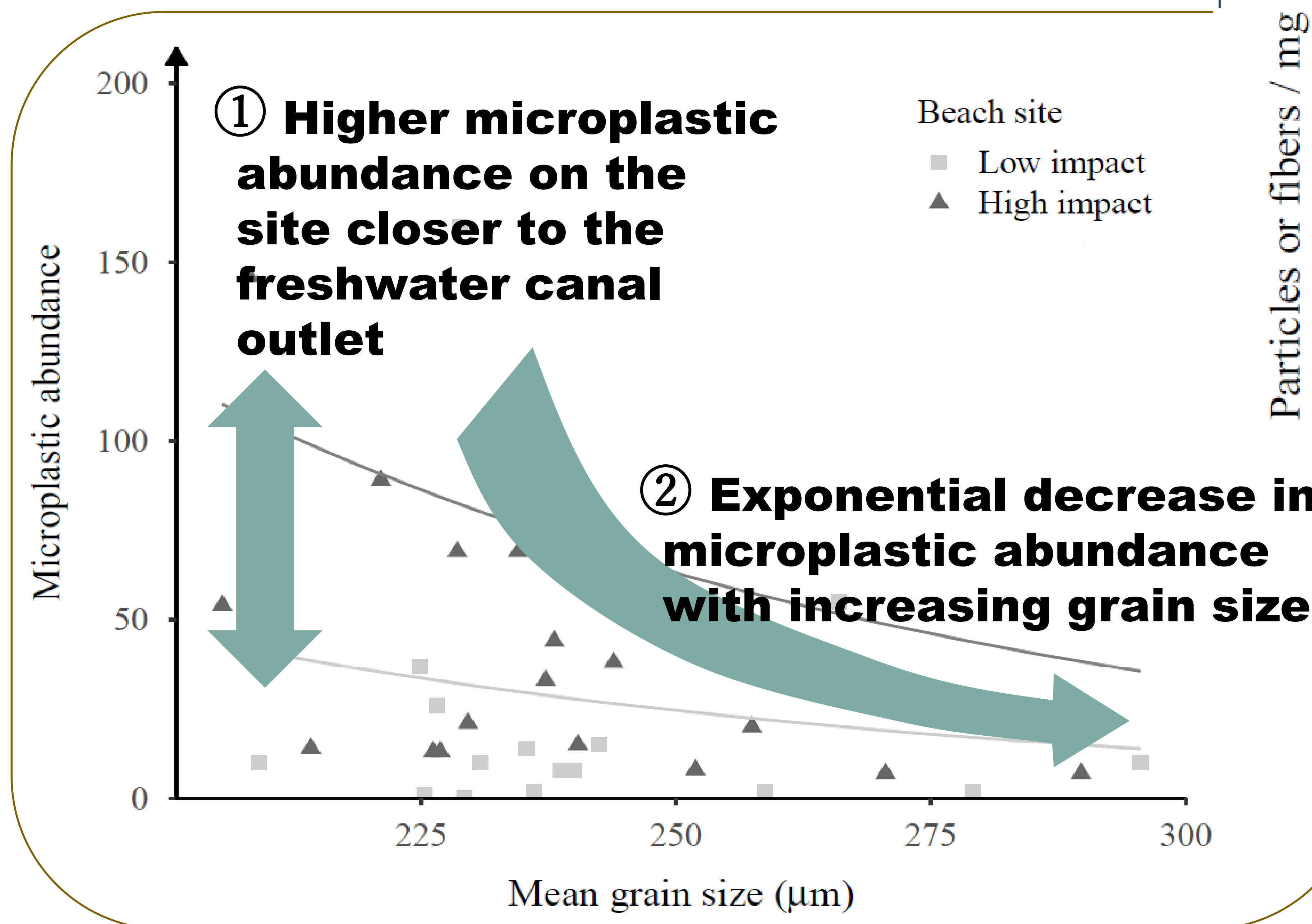
Methods

Microplastics [66µm – 5mm] were sampled across 4 beach zones, at 2 sites with varying human impact (distance to freshwater canal outflow) on a microtidal dissipative beach

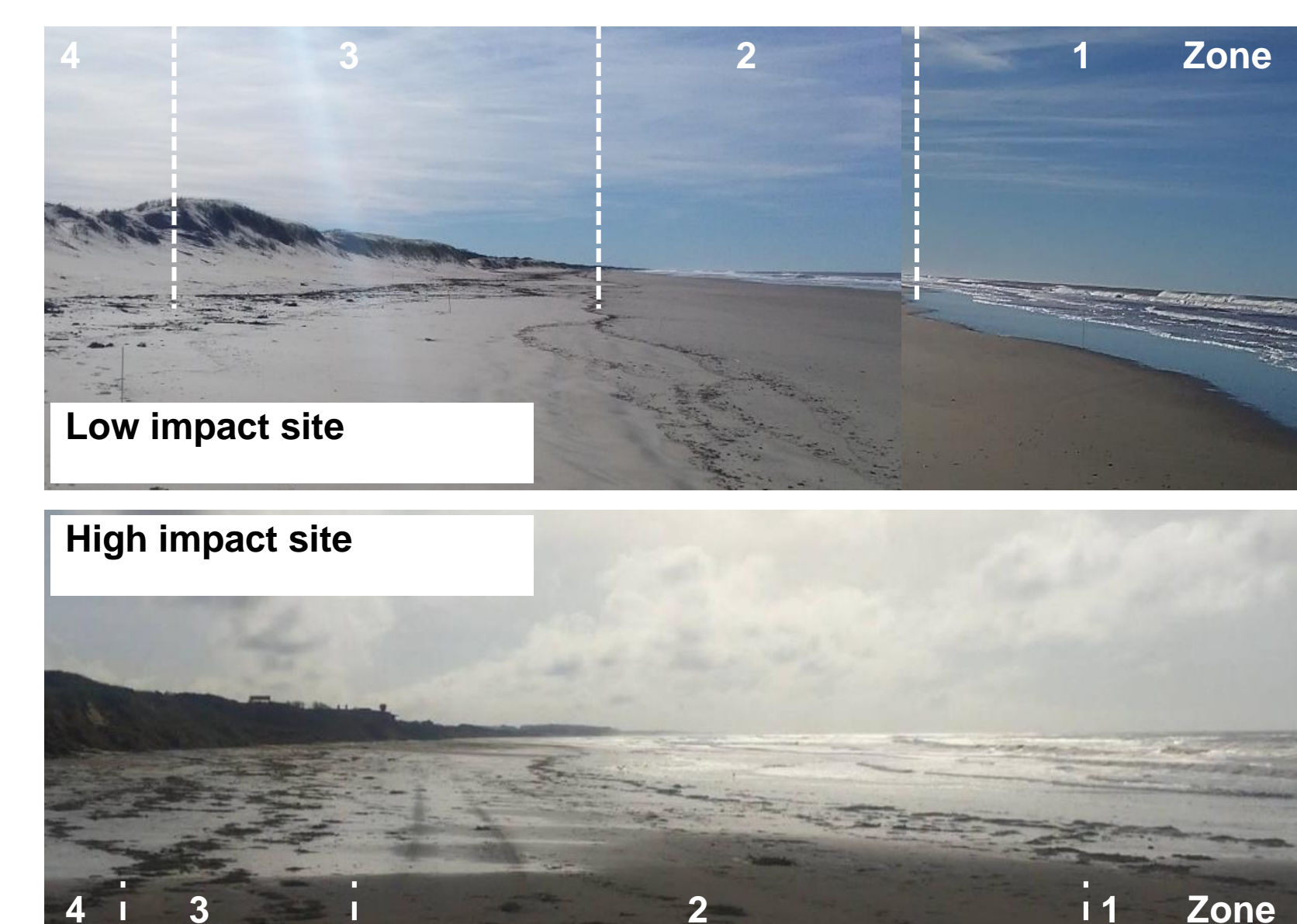
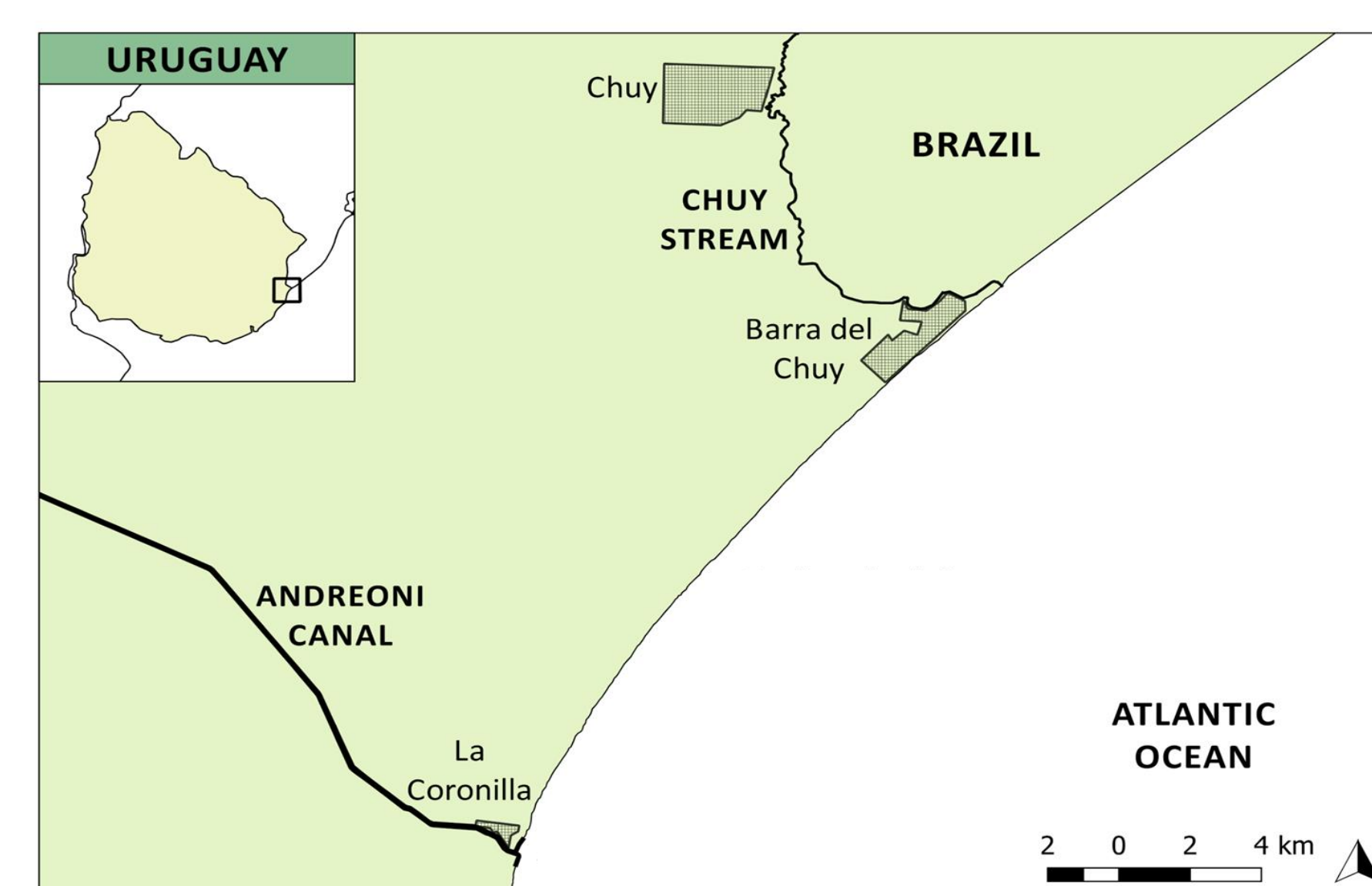
Reference

Vermeiren et al. (2021)
Environmental Pollution 286:117308
<https://doi.org/10.1016/j.envpol.2021.117308>

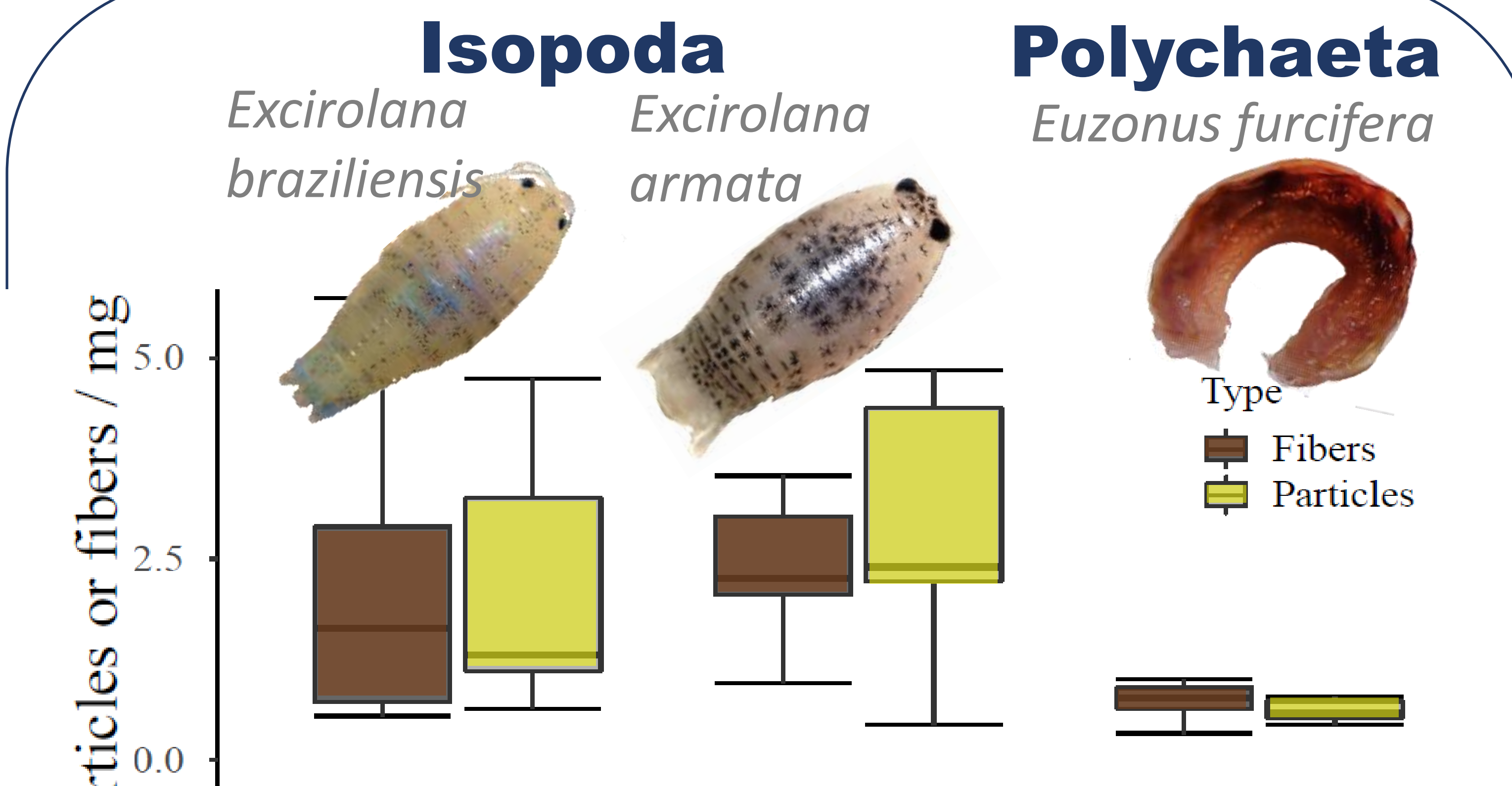
Beach sediment



④ Lack of significant across shore zonation in microplastic abundance



Macroinfauna



③ Species-specific body burdens: Significantly lower in *E. furcifera*, despite occurrence on finer sediments with higher microplastic loads

Recommendations

- for sampling microplastics within beach sites
- Report beach morphodynamic characteristics (i.e., type of beach)
 - Use clearly defined, ecologically-informed zonation schemes
 - Account for sediment grain size as a covariate to normalize among reported contamination levels

p.vermeiren@science.ru.nl



JSPS

