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Freshwater pathways and litter

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In recent years, there has been an increasing number of studies about freshwater micro-litter and how it ends up in the ocean. Nevertheless, macro-litter studies are not common in freshwater landscapes and yet less frequent among rivers. Almost always, research is focused on estuaries rather than rivers.

The Asociación Paisaje Limpio has been developed, for some years, several studies as an affordable methodology to measure macro-litter in rivers throughout its.

This way, our methodology is a combination between research and action. We don't just tackle the macro-litter data field, but also identify specific litter problems along the river. We act through campaigns, agreement for companies and public administrations, etc.

A need have been observed to combined different types of methodology to monitoring different types of rivers in order to be able to draw a conclusion:

- **Visual counting:** counting floating macro-litter on **surface** using RIMMEL app.
- By the **riverbank**, through a **Citizen Science** tool create by Asociación Paisaje Limpio and Asociación Vertidos Cero, called **eLitter**. Elitter is harmonized with other marine-litter methodologies (Marine litter watch, MARNOBA in Spain) and its litter classification is based on OSPAR protocol.
- If the **riverbed** is accessible eLitter is also used, but when is not accessible a dredge "Van Veen" have been used instead. This method has been applied in other marine-litter projects on seabed.
- **Floating booms:** it lets us know plastics rate in captured floating litter, and the water flow extrapolation.
- **Nets from a kayak:** to study the plastic concentration in **the water column** and the water flow extrapolation.
- **Water quality general analysis:** this analysis is useful to support the hypothesis about litter's source in a river, mainly where the source is the sewage as happens with wet wipes, ear sticks...

-**Case study:** river Lagares, a spanish river in Pontevedra, Galicia. The river Lagares flows into the Atlantic, in a Special Protection Area (SPA), a designation under the European Union Directive on the Conservation of Wild Birds.

The Asociación Paisaje Limpio is working on this river since 2018. We have applied the different methodologies explained before, in the river Lagares.