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In 1972, Gerald Scott published the seminal academic publication to link marine anthropogenic debris (hereafter litter) at sea to litter surveyed on two beaches on the Isle of Skye, a Hebridean island in Scotland, UK. Scott foreshadowed the state of marine and coastal environments today. We now know the consequences of this litter are varied, including animal entanglement and ingestion, chemical transport, and fragmentation. Despite representing ~32% of the UK's coastline, the Hebrides and northwest mainland Scotland are underrepresented in UK beach litter monitoring. But when surveys are conducted, beaches here represent some of the most polluted in the UK.

Here we present the findings of *50 Years of Litter on Skye*, a community co-designed research project that retraced Scott's footsteps with the help of the people of Skye. Two weeks of fieldwork were informed by six months of online community engagement. Nine beaches were surveyed following the OSPAR protocol, with survey areas split into 10m wide transects (the smallest width OSPAR permit). Where possible brand, provenance, and age were recorded. Community interviews were conducted to understand local beach cleaning efforts, common litter types, and the social significance of litter and beach cleaning in the community.

We categorised 13 909 items of litter across surveyed beaches, finding beach litter density to be one order of magnitude greater than the UK average. Litter populations varied significantly between beaches, with most litter associated with the fishing industry. Litter recovered dated back to 1989, and its provenance was traced to specific fishing regions along the east coast of North America. We found significant intra-beach variation between 10m transects, suggesting this survey width is not appropriate.

Community engagement identified specific issues with OSPAR categories. Adaptations to these may increase the suitability and uptake of OSPAR surveys in this region. Traversing the shore (Gaelic: *siubhal a' chladaich*) for marine debris has a long regional history, but the nature and value of the debris has changed considerably.

Accurately understanding beach litter is vital to informing industrial and legislative action. But standardising pollution survey methods for international applications necessitates generalisations that underrepresent, and fail to appropriately protect, certain coastlines and communities. Local knowledge is key in efforts to improve international litter monitoring.

6.09.P-Mo527 Citizen Science Integration and Public Engagement for Plastic Litter Monitoring in the North Sea Region: Insights from the TREASURE Project in the Living Lab Nieuwpoort

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Global plastic pollution is an ongoing and ubiquitous issue of environmental concern, requiring authorities, the industry, the public and researchers to work together and implement innovative methodologies to assess its impact and mitigate it. Within the framework of the TREASURE (Targeting the REDuction of pLAsTic oUtfLOW into the noRth sEA) project, we will initiate a series of targeted activities within the Living Lab of Nieuwpoort, Belgium. These activities will encompass mapping plastic accumulation and fate in the environment, identifying potential sources, and developing guidelines for effective collaboration with citizens and stakeholders, and to provide insight so mitigation measures can be established by policymakers based on our findings and results. Additionally, we will prototype a system to collect and remove plastic, and the knowledge gained will be shared and capitalized on for broader North Sea region improvements. To generate a broad dataset for plastic litter monitoring and to ideally spark environmental consciousness within the society, one of the strategies is to involve the general public in scientific projects, i.e. in citizen science projects. A successful example, among others, is the Plastic Pirates EU-project (www.plastic-pirates.eu/en), in which high school teachers and children participate in litter collection observation campaigns on riverbanks, or near water bodies. We will apply the Plastic Pirates methodology in the Living Lab of Nieuwpoort (Belgium) and the data acquired from these campaigns will inform stakeholders about accumulation zones and types of litter requiring mitigation management actions. We will further focus on questions such as assessing the efficiency of citizen science observations of plastic litter and on how to improve the data flow, including for EMODnet submission, to inform local authorities. In this work we aim to demonstrate the integration of citizen science into sampling and monitoring strategies for plastic litter, providing valuable insights to empower and inform local stakeholders.

6.09.P-Mo528 The PlastChem Project: Compiling material flows of plastic to prioritize action on polymers of concern

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According to the Global Plastic Outlook report, the production of plastic has been increasing exponentially, from ~ 2 million tonnes/year in the 1950s to 460 million tonnes/year in 2019 (OECD, 2022). Moreover, the business-as-usual scenarios indicate