World's first city-wide plastic survey: Harnessing people power to help with plastic pollution in Portsmouth

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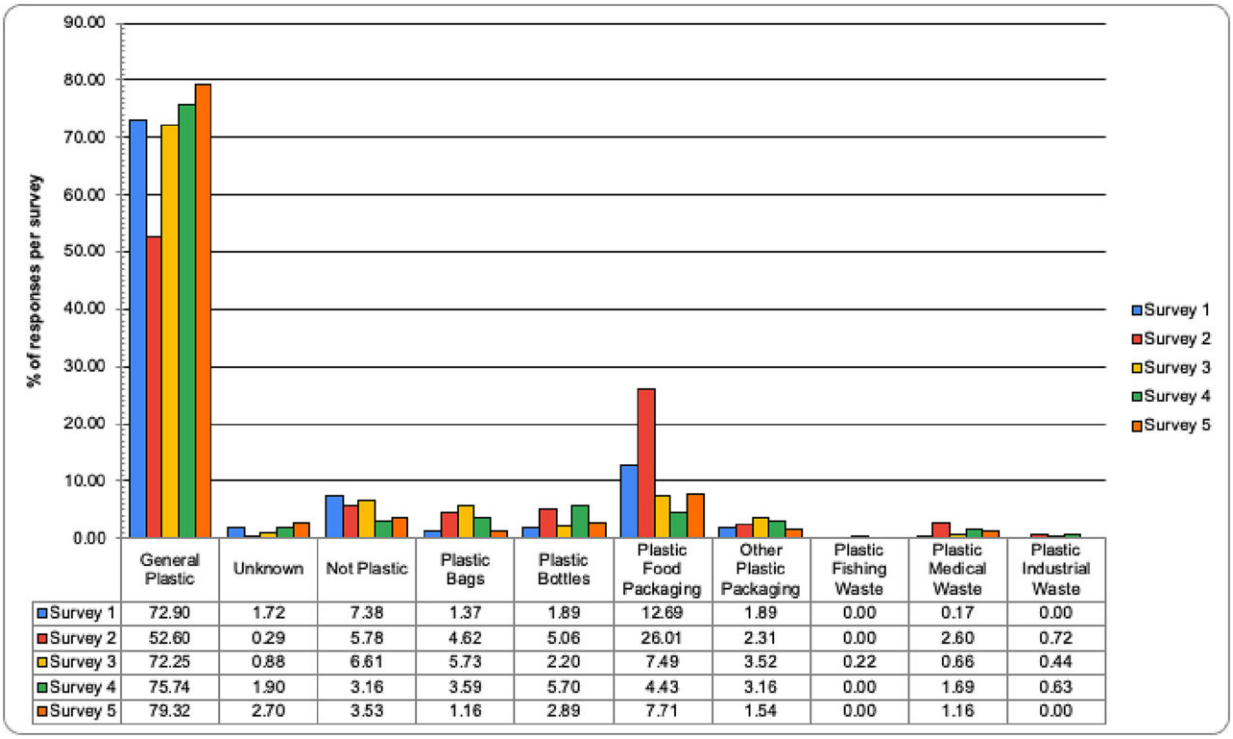

	General Plastic	Unknown	Not Plastic	Plastic Bags	Plastic Bottles	Plastic Food Packaging	Other Plastic Packaging	Plastic Fishing Waste	Plastic Medical Waste	Plastic Industrial Waste
Survey 1	72.90	1.72	7.38	1.37	1.89	12.69	1.89	0.00	0.17	0.00
Survey 2	52.60	0.29	5.78	4.62	5.06	26.01	2.31	0.00	2.60	0.72
Survey 3	72.25	0.88	6.61	5.73	2.20	7.49	3.52	0.22	0.66	0.44
Survey 4	75.74	1.90	3.16	3.59	5.70	4.43	3.16	0.00	1.69	0.63
Survey 5	79.32	2.70	3.53	1.16	2.89	7.71	1.54	0.00	1.16	0.00

Data classifications by survey. Credit: *Marine Pollution Bulletin* (2023). DOI: 10.1016/j.marpolbul.2023.115116

A UK city has become the first in the world to use city wide surveys to track plastic waste, in an effort to tackle plastic pollution.

The research, published this week in *Marine Pollution Bulletin* relied on the help of local people and businesses to map 'hotspots' of plastic rubbish in Portsmouth. The MAPP (Mapping Portsmouth Plastic) project is a world-first—a city-wide plastic survey, designed to help find solutions to reduce plastic waste in urban areas.

Tackling the issue of urban plastic waste is complex and much of this litter reaches the world's oceans with severe environmental impacts. However, the monitoring of urban litter is often piecemeal at best, if done at all.

Citizen science, the action of utilizing the public to support research, has been used to excellent effect for both research and engagement, usually for area clean-ups such as beach cleans. However, to date very few studies have assessed plastic pollution at a city scale.

Researchers from the Revolution Plastics research initiative at the University of Portsmouth analyzed data gathered by a mobile phone app to better understand the patterns and movement of plastic waste in Portsmouth. The app allowed anyone to contribute to mapping plastic pollution in the city. Local volunteers simply downloaded it on their mobile phones and submitted photographs of the plastic waste they encounter in their daily lives.

Five mapping surveys took place in total and the Revolution Plastics team was then able to build a picture of where and when plastic waste is building up, and the different types of plastic pollution found in the city.

The study has compiled a significant dataset of 3,760 photographs which have been classified by plastic-type to assess patterns of plastic pollution in the UK city of Portsmouth, UK.

The method is shown to have significant potential for further

development to facilitate detailed analysis of plastic litter in urban centers across the world.

Lead Researcher, Samuel Winton from Revolution Plastics at the University of Portsmouth, said, "It is estimated that 13 million tons of plastics reach the ocean every year from land-based sources. It's clear that cities like Portsmouth are a key source of plastic waste which, when mismanaged, can enter the aquatic environment."

"We are really grateful to the people of Portsmouth for helping with the collection of data. With plastic waste and climate change very much on the agenda at the moment, it is developments like this that can and will make a real difference."

"The study has created the evidence base for solutions to reduce plastic entering the sea and the wider environment. It has helped us understand more about plastic flows within the city and ultimately work to tackle plastic waste at source."

Professor Steve Fletcher, Director of Revolution Plastics at the University of Portsmouth, added, "With climate change very much on the agenda at the moment, it is developments like this that can and will make a real difference. The app has helped create the evidence base for solutions to reduce plastic entering the sea and the wider environment. The more people that use the app, the more researchers will understand about plastic flows within the city and ultimately work to tackle plastic waste at source."

More information: Samuel Winton et al, Harnessing citizen science to tackle urban-sourced ocean plastic pollution: Experiences and lessons learned from implementing city-wide surveys of plastic litter, *Marine Pollution Bulletin* (2023). DOI: 10.1016/j.marpolbul.2023.115116

Mobile phone app: jetsam.tech/

Provided by University of Portsmouth