

Communication and Outreach: Desktop Study on Marine Litter

Plastic in a bottle

One aspect of PAME's *Desktop Study on Marine Litter including Microplastics in the Arctic* is to set afloat up to five "plastics in a bottle" from across the Arctic. The specially designed capsules will be equipped with a GPS transmitter to illustrate how expansively marine litter can travel, even among continents, and contribute to the adverse effects of marine litter.

Potential drift of *Plastic in a bottle*

Based on discussions with the Icelandic Meteorological Office and a leading expert in ocean currents.

Five areas have been identified as potential release points for the bottles, including: USA (e.g., Maine on the east coast, Alaska on the west coast), Netherlands, Iceland (east coast), and Northern Norway. These areas have been discussed with an expert on oceanography and meteorology (Dr. Halldór Björnsson) and a leading expert in Iceland on ocean currents (Dr. Steingrímur Jónsson). According to these experts, one cannot expect an object like the plastic capsules to travel to certain areas with ocean currents. Weather and waves may have substantial effects on bottles in addition to currents. The map below illustrates broadly how these capsules could travel if released in the areas noted above.



PAME and Verkís

The PAME Secretariat met with the Icelandic Engineering company *Verkís* in November 2017. They have designed and manufactured bottles, equipped with a satellite transmitter that provides its location every four hours via a GPS receiver, enabling viewers to observe the journey of the bottle in real time. Previous experiments by *Verkís* have seen their bottles travel thousands of miles across the Atlantic Ocean, lasting well over a year and reaching destinations as far as Scotland and Faroe Islands (having begun in Iceland).

The image below shows actual routes bottles have traveled following release in Iceland, and the design of the bottle (inset).



Costs

- All costs in USD

Item	Costs per unit	Costs for 5 bottles
<i>Verkís</i>		
Bottle	500\$	2500\$
GPS transmitter	300\$	1500\$
Launch / transportation	300\$	1500\$
Other costs	2000\$	2000\$
TOTAL		<u>7500\$</u>

The PAME Secretariat has applied for funding from the Icelandic Ministry of the Environment (answer expected late Jan. 2018).