

MicroCatch_Balt – How do Microplastics End up in the Baltic Sea?

Plastics in the Environment – Sources · Sinks · Solutions

The concentration of small and tiniest plastic particles is particularly high in river estuaries. This pollution must be caused somewhere between the source of the river and the estuary. The spectrum of possible polluters is large, and so is the range of different types of plastics that can end up in the environment. As an example of German Baltic Sea tributaries, the joint research project MicroCatch_Balt is investigating sources and sinks of microplastics in the Warnow river basin in Mecklenburg-Western Pomerania. Furthermore, important processes for the distribution of microplastics on their way to the open Baltic Sea are analyzed.

Samples Provide Information on Microplastic Content

Microplastics have been classified as a new category of marine pollution, which attracts increasing public attention and concern. Marine research is expected to provide insights into the origin, extent and effects of microplastics on water bodies and living organisms. The goal of the joint research project MicroCatch_Balt is therefore to identify the different sources and sinks of plastic particles in the tributaries of the Baltic Sea using the Warnow as an example.

To this end, the project participants collect samples in the Warnow river basin, process and analyze them for their microplastic content. Of particular interest are possible sources: Wastewater treatment plants, agricultural drainage ditches, soil erosion, industrial areas, but also boat varnish and extreme weather events. As potential sinks aquatic organisms, such as shellfish, worms and fish, beaches, and sediments will be sampled.

Identifying Hotspots

The researchers will integrate the data obtained into various regional models, adapt them to their requirements and combine them subsequently. This will allow the scientists to determine diffuse and point sources of microplastic inputs in the entire river basin, including estuaries and coastal waters. The combined models allow conclusions as to which sources are most important in different subregions of the river basins and also how many microplastic particles reach coastal waters through various routes.

Knowledge Transfer and Networking with Other Projects

The project participants intend to communicate their findings on entry paths and sources to the public with the help of an interactive multimedia learning module: The results will be presented as of animations on a multitouch table.



A modified electrostatic plastic separator separates microplastics from sediments and arable soils.

They will be displayed in a travelling exhibition in cities along the Baltic Sea coast. Besides, the exhibition will be accompanied by plenary discussions with representatives of local environmental authorities and researchers.

The project results could also provide initial indications for recommendations for action with regard to future monitoring and strategies against microplastics. Micro-Catch_Balt contributes to the coverage of the most important aspects of microplastic pollution of Northern German watercourses and their estuaries into the oceans through strong networking with other projects and providing stakeholders with the necessary expertise. Furthermore, through cooperation with other projects the comparability with data from other German river is ensured. Thereby it is possible to compare the pollution levels of different river systems.



Students inform themselves about the latest findings from research using a multitouch table.

Research Focus

Plastics in the Environment – Sources • Sinks • Solutions

Project Titel

Investigation of Sinks and Sources of Microplastics from a Typical Catchment Area to the Open Baltic Sea (Micro-Catch_Balt)

Grant Number

03F0788A-E

Duration

August 01, 2017 – July 31, 2020

Funding Volume

EUR 1,621,789

Contact

PD Dr. habil. Matthias Labrenz
Leibniz-Institut für Ostseeforschung Warnemünde (IOW),
Umweltmikrobiologie
Seestraße 15
18119 Rostock
Phone: +49 (0) 381/5197378
E-mail: matthias.labrenz@io-warnemuende.de

Project Partners

Forschungszentrum Jülich, Institut für Bio- und Geowissenschaften, Jülich
Fraunhofer-Institut für Graphische Datenverarbeitung, Rostock
Johann Heinrich von Thünen-Institut, Braunschweig
Leibniz-Institut für Polymerforschung Dresden e.V., Dresden

Website

www.io-warnemuende.de/microcatch-home.html

Publisher

Federal Ministry of Education and Research (BMBF)
Department of Resources, Circular Economy; Geosciences, 53170 Bonn
Department of Marine, Coastal and Polar Research, 53170 Bonn

Editorial Work and Design

Project Management Agency Karlsruhe (PTKA)
Project Management Agency Jülich

Print

BMBF

Photo Credits

Front page: A. Tagg, Leibniz-Institut für Ostseeforschung Warnemünde (IOW)
Back page: S. Kube, Leibniz-Institut für Ostseeforschung Warnemünde (IOW)

Version of

November 2018

www.bmbf.de