

Project Title

Practical implementation of MSFD D10 on the Odesa coastline: microplastics in sediments and biota (invertebrates and demersal fish) and SOP validation for marine environmental protection

Project Data

Duration	Funding	Project location/ Region
01.02.2026-31.01.2027	18 311 €	Odesa / Ukraine

Project Partners

Who are the project partners?

- **Ukrainian Scientific Centre of Ecology of the Sea (Lead Partner)**
- **Institute of Marine Biology, NAS of Ukraine (Project Partner 1)**

What does each partner specifically contribute to the project?

- **UkrSCES (Lead Partner):**
Provides institutional hosting, supports the conduct of field sampling activities, access to laboratory facilities for sample processing, data management infrastructure, and expertise in marine litter monitoring under MSFD Descriptor 10 and BSIMAP-related activities.
- **IMB NAS of Ukraine (PP1):**
Provides additional scientific support for the PhD-related research component, methodological guidance on benthic and fish-related sampling and interpretation, and facilitates this by strengthening skills in laboratory work, microscopy, and the practice of microplastic detection in biological samples.

About the Project

What is the problem – and what do you want to change about it?

Microplastic pollution is an emerging threat to the marine environment of the Odesa coastline and the North-Western Black Sea. Although Ukraine has developed experience in monitoring beach, floating, and riverine macro-litter since 2016, microplastics in sediments (*sandy substrate*) and biota remain poorly studied and methodologically insufficiently standardized. The project addresses the lack of validated monitoring approaches and baseline data needed for practical implementation of **MSFD Descriptor 10** in Ukraine. It aims to improve scientific evidence for marine environmental protection and support Ukraine's alignment with European marine monitoring standards.

What are you doing specifically to achieve this goal?

The project will conduct seasonal field sampling at **5 coastal stations** along the **Odesa coastline**, covering areas with different anthropogenic pressure. It will analyze microplastics in **bottom sediments (*sandy substrate*), benthic invertebrates, and demersal fish**. Laboratory work will include sandy substrate processing, biota digestion, density separation, filtration, microscopy, QA/QC procedures, and external polymer verification by μ ATR-FTIR/Raman spectroscopy. Based on the results, the project will **validate and adapt Standard Operating Procedures (SOPs)** and **propose a minimum set of indicators** compatible with MSFD D10 and the national marine monitoring framework.

What is special or new about your approach?

This is one of the first targeted projects in Ukraine to **link microplastic contamination in sandy substrate with accumulation in marine biota (bivalve mollusks and demersal fish) on the Odesa coastline**, making it possible to assess not only contamination levels but also potential transfer pathways within the “sediment–biota” system. The project combines methodological validation with applied marine monitoring under wartime constraints. Its innovative value lies in **adapting SOPs to the specific conditions of the North-Western Black Sea (Ukrainian part)**, including organically rich matrices, seasonal variability, and local pollution sources. The project also creates a practical bridge between scientific research, national monitoring needs, and the applicant's PhD work.

The figure: What does the project actually do?

The project develops and tests a practical monitoring workflow for microplastics in the marine environment of the Odesa coastline:

field sampling → laboratory extraction and identification → polymer verification → statistical analysis → SOP validation → recommendations for MSFD D10 implementation.

It examines how microplastics accumulate in sandy substrate, benthic invertebrates, and demersal fish, and whether sediment contamination can help explain microplastic uptake in marine organisms.

The project will collect and analyze approximately **50 sandy substrate samples** and **100 biota samples** (fish and mollusks) from two seasonal sampling campaigns at **5 coastal stations**, generating the first structured dataset on microplastics in coastal sandy substrate and selected marine organisms along the Odesa coastline.

What remains? What concrete results are achieved, and who can use them in the future?

So far, the **project has achieved** important methodological and preparatory results:

- ✓ a comparative baseline of international microplastic monitoring protocols;
- ✓ the initiation of a draft SOP for sediments (*sandy substrate*) and biota;
- ✓ a project-specific Data Management Plan (DMP);
- ✓ a structured field sample base from the Odesa coastline;
- ✓ an initial biological material set for laboratory testing.

In the **next phase**, the project will deliver:

- validated SOP elements for microplastic analysis in sandy substrate and biota;
- the first project dataset on microplastics from selected Odesa coastal stations;
- an assessment framework for the sediment–biota relationship;
- recommendations for future MSFD D10-compatible marine monitoring in Ukraine.

These **outputs will be relevant** for:

- marine monitoring institutions in Ukraine,
- research laboratories and universities,
- MSFD and BSIMAP-related environmental reporting and policy work,
- regional Black Sea cooperation,

- and the applicant's PhD research on microplastic accumulation in fish and invertebrates.

See the project images
on the following pages



Project images

Image 1 of 4



Photo: © Dmytro Shelinhovskyi

Project images

Image 2 of 4

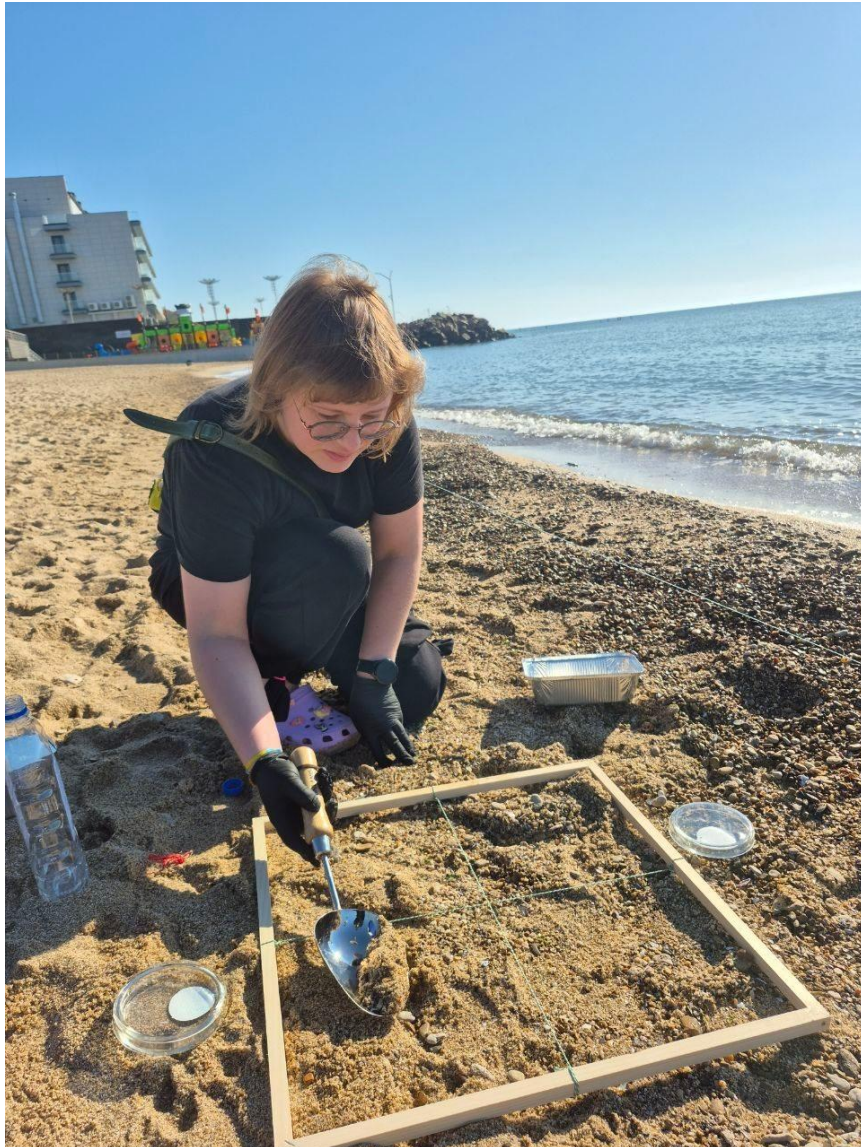


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Project images

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Arcadia beach.

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