

Macrophytobenthos in the Puck Bay in 2010–2018 Dataset

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Abstract

The dataset titled Biomass of macrophytobenthos in the Puck Bay in 2010-2018 contains data on the qualitative composition and biomass of macrophytobenthos (flower plants and macroalgae) in samples collected in the Puck Bay area (Gulf of Gdańsk, southern Baltic Sea) at 20 stations between 2010–2018. The data was supplemented with additional information: values of measured parameters of water and sediment, e.g. temperature and salinity of water, sediment granulometry, and selected photos documenting the identified taxa. The data show the changes that have occurred in macrophytobenthic communities over the years.

Keywords: macrophytobenthos; plant communities; biomass; algae; angiosperms; Puck Bay; Baltic Sea

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Specification table (data records)

Subject area	Botany, Ecology, Life Sciences
More specific subject area	Benthic plant communities
Type of data	Tables, Images, Map

How the data was acquired	The data was collected during projects conducted at the University of Gdańsk. Samples of macrophytobenthos were taken with Van Veen or Ekman grab between 2010 and 2013 and by a scuba diver using DAK in 2018. The plant material was kept at -20°C until analysis. All plants were identified to the lowest taxonomic level possible and sorted. The identified taxa were dried at 60°C to a stable weight in a Binder FED53 (Tuttlingen, Germany) drier and weighed to the nearest 0.001 g using an MS204S Mettler Toledo (Greifensee, Switzerland) scale. Biomass values were converted to g·m ⁻² . Depending on the project, the physicochemical parameters of the water (i.e. temperature, salinity, dissolved oxygen, chlorophyll and total particulate matter content) and sediment (i.e. granulometry, organic carbon and organic nitrogen content) were also measured
Data format	Raw. The tables are in .xlsx format, Images are in .jpg format, Map is in .pdf format
Data source location	MOST Wiedzy Open Research Catalog, Gdańsk University of Technology, Gdańsk, Poland
Data accessibility	The dataset is accessible and is publicly and freely available for any research or educational purposes. Share alike
Related research articles	Sokołowski, A., Ziółkowska, M. and Zgrundo A. (2015) 'Habitat-related patterns of soft-bottom macrofaunal assemblages in a brackish, low-diversity system (southern Baltic Sea)', <i>Journal of Sea Research</i> (103), pp. 93–102 Bełdowska, M., Jędruch, A., Zgrundo, A., Ziółkowska, M., Graca, B. and Gębka K. (2016) 'The influence of cold season warming on the mercury pool in coastal benthic organisms', <i>Estuarine, Coastal and Shelf Science</i> (171), pp. 99-105

Background

The rich plant meadows of the Puck Bay were severely degraded from 1960 to 1980 due to industrial plant exploitation (e.g. *Furcellaria lumbricalis* (Hudson) J.V.Lamouroux, *Fucus vesiculosus* L., *Zostera marina* L.), eutrophication and industrial pollution (Pliński 1982, Kruk-Dowgiałło 1991). However, the plant communities in the study area are still considered exceptionally rich and diverse compared to other marine ecosystems of the Polish coast (Gic-Grusza et al., 2009).

Access to data on the qualitative and quantitative composition of the plant communities in the Puck Bay is limited as the data produced within commercial projects are not made available and monitoring within the framework of the National Environmental Monitoring (Państwowy Monitoring Środowiska), although carried out since 2006, includes only 2 sites investigated twice a year. Therefore, the data collected in the Biomass of macrophytobenthos in the Puck Bay in 2010-2018 database, obtained during various



projects carried out at the Institute of Oceanography, University of Gdańsk, are a valuable complement to the monitoring data. The database makes it possible to trace changes in benthic plant communities with respect to composition and structure, and to supplement or verify information on the extent of occurrence of particular algal and vascular plant taxa.

Methods

The field studies were conducted in the Puck Bay (western shallow water part of the Gulf of Gdańsk, Baltic Sea) on benthic flora (macroalgae and flowering plants) along with environmental parameters measurements. The material for qualitative and quantitative analysis of macrophytobenthos was collected at 21 sites (Fig. 17.1) between 7th July 2010 and 14th October 2018. During 2010–2013, the samples of macrophytobenthos were taken with Van Veen or Ekman grab and in 2018 by a scuba diver using DAK. At all stations, 3–4 subsamples were collected. All subsamples were put in plastic bags and transported to the laboratory in a cool box. The plant material was kept at -20°C until analysis. All plants were identified to the lowest taxonomic level possible and sorted. The identified taxa were dried at 60°C to a stable weight in a Binder FED53 (Tuttlingen, Germany) drier and weighed to the nearest 0.001 g using an MS204S Mettler Toledo (Greifensee, Switzerland) scale. The biomass values were converted to $\text{g}\cdot\text{m}^{-2}$. The fieldwork and laboratory works were carried out according to recommendations of Helcom Combine (Part C, Annex C9) and the Polish National Monitoring Programme (Kruk-Dowgiałło et al., 2010).

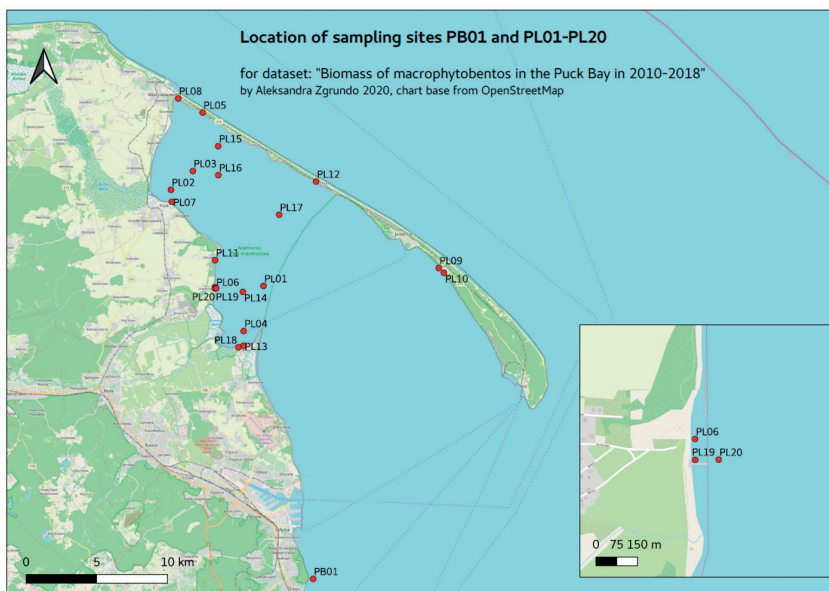


Fig. 17.1. Location of sampling sites



The morphological identification of macroalgae and flowering plants was based mostly on local key floras, e.g. Pliński and Hindak (2012), Pliński and Surosz (2013), Pliński and Szmeja (2013) and widely recognised literature, e.g. Braune and Guiry (2011), Bunker et al. (2017).

Simultaneously with field works aimed at macrophytobenthos collection, depending on the project, the physicochemical parameters of the water (i.e. temperature, salinity, dissolved oxygen, chlorophyll and total particulate matter content) and sediment (i.e. granulometry, organic carbon and organic nitrogen content) were measured. The detailed methodologies of collection of the samples and analyses of the environmental parameters are included in the publications of Sokołowski, Ziółkowska and Zgrundo (2015) and Beldowska et al. (2016).

Data quality and availability

In order to ensure the quality of the data obtained, sampling and analysis of the samples were performed using recommended methods and protocols (Helcom Combine, Part C, Annex C9; Kruk-Dowgiałło et al., 2010). The correctness of the data recording in the database was verified by a group of 31 students using the database during online classes.

The database contains gaps in relation to the physicochemical parameters of the water and sediment.

Dataset DOI

[10.34808/tnq7-nd63](https://doi.org/10.34808/tnq7-nd63)

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