

# Marine geological inventories around the Åland, the Baltic Sea, as part of Biodiversea LIFE IP project

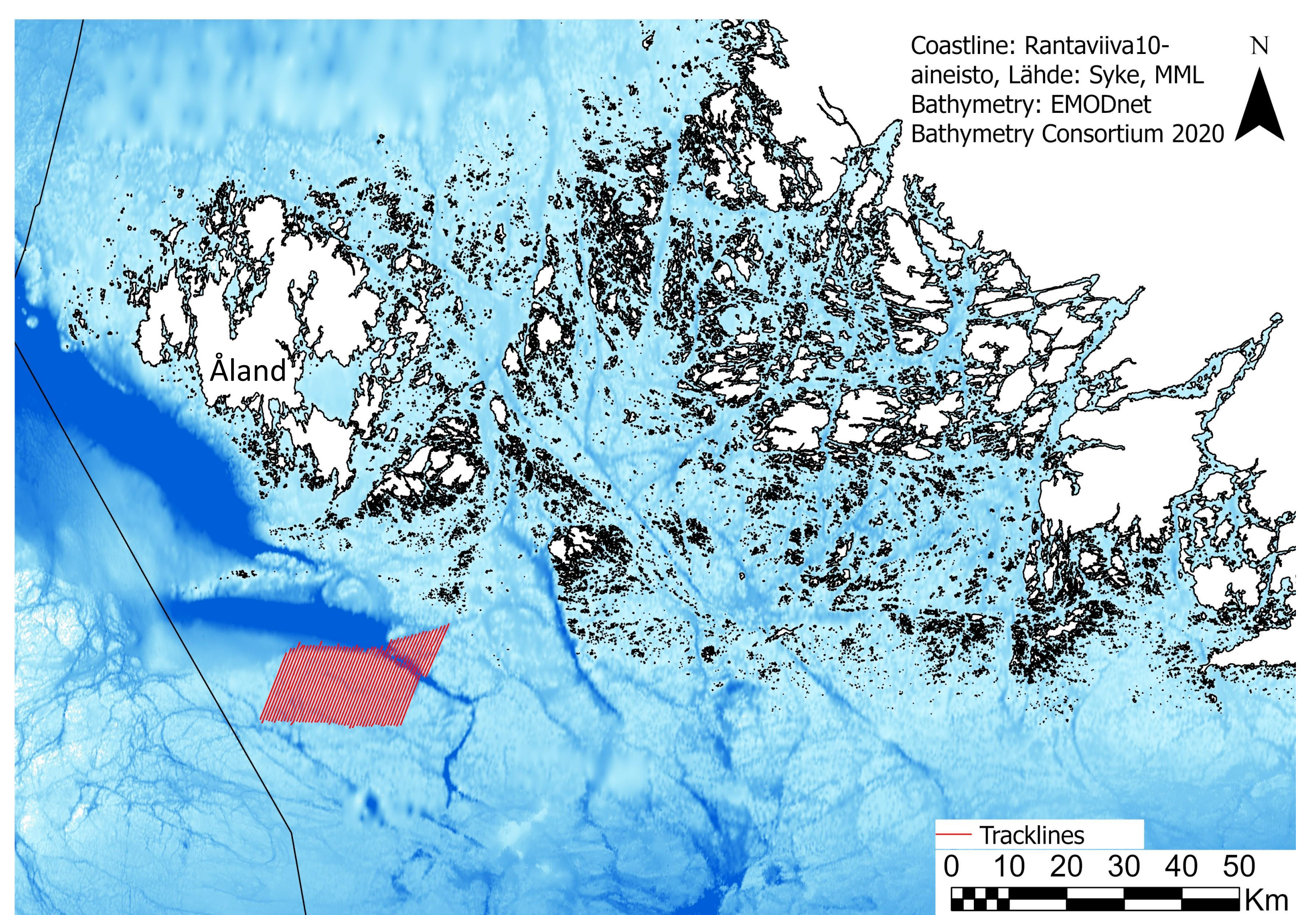


## Introduction

Biodiversea LIFE IP (2021-2029) is the largest collaborative project to date to safeguard the biodiversity of the Baltic Sea in Finland. The main objective of the project is to enhance the protection of marine nature and promote the sustainable use of natural resources in the marine and coastal areas of Finland. The project activities include inventories in the Åland offshore areas among others. Here the primary aim is to produce science-based information for selecting and establishing new marine protected areas (MPAs) in locations that have high nature values.

## Marine geological surveys

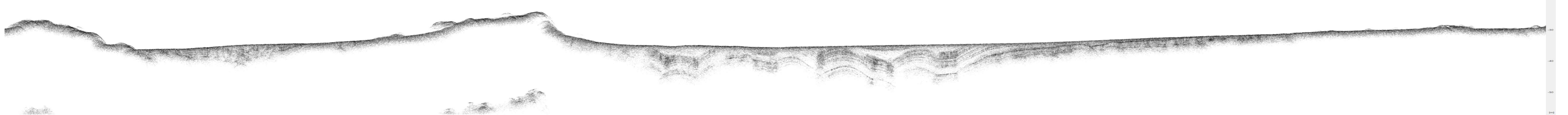
In relation to this, the Geological Survey of Finland (GTK) has focused on the geological mapping of the seabed around the Åland Islands. The marine geological surveys provide essential information on the seabed geodiversity, distribution of the sediments and background information for habitat modelling. The comprehensive mapping data supports and guides the planning and coordination of different uses of marine areas. The research areas have been selected in collaboration with other project partners to identify potential biodiversity hotspots and areas with nature values.



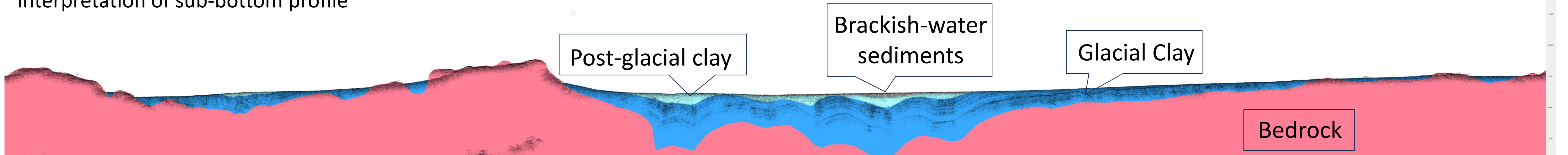
## Methods and Results

GTK has carried out marine geological surveys in an offshore area south of Åland in 2023 using different seismo-acoustic methods i.e., sub-bottom profilers such as Chirp sonars and seismic reflection profiler along with side scan sonar and multibeam echo sounder onboard R/V Geomari. Based on the preliminary results the research area is topographically heterogenic with bathymetry varying mainly from 10-70 m. The seafloor is dominated by underwater bedrock outcrops that may reach to depths of 10-20 m. Most of the bedrock depressions are filled with glacial and post-glacial clays which are covered with 5-10 m of brackish-water and modern sediments. Thickness of these clay basins varies from approximately 5-40 m depending on the depth of the basin. Thin sand layers cover the clay basins especially in the northern part of the research area which complicates the interpretation of the deepest sediment structures. The mapped data is used to make seabed substrate map of the research area which will be used in further investigations such as the selection of potential sampling sites.

Example of sub-bottom profile



Interpretation of sub-bottom profile



The seafloor is dominated by underwater bedrock (red) outcrops that may reach to depths of 10-20 m. Most of the bedrock depressions are filled with glacial (blue) and post-glacial (light blue) clays and brackish-water (grey) sediments. Sub-bottom profiles are from high frequency Chirp sonar.

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