REST-COAST

Foros Bay

Pilot Fact Sheet

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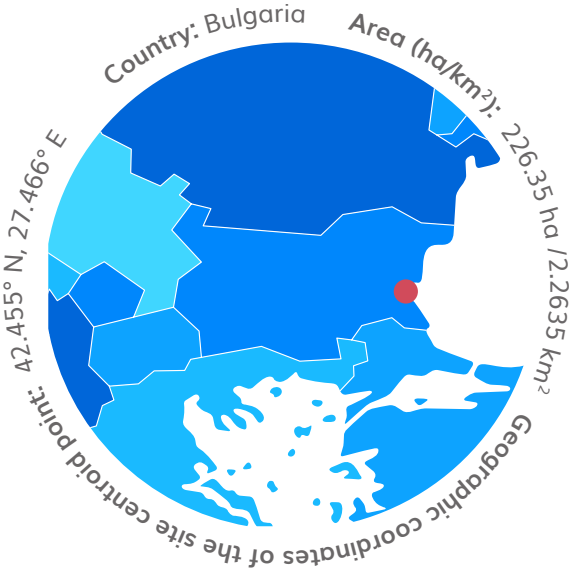
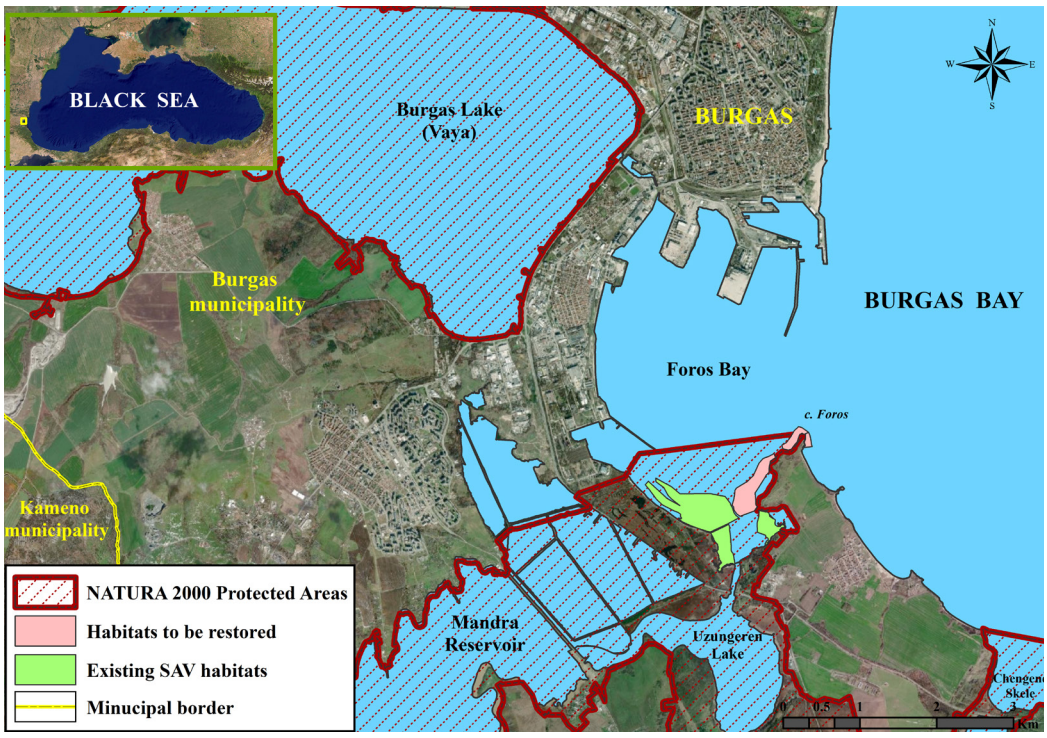


Ecosystem type

Coastal and transitional waters

Key species and key habitats



The area accommodates habitat of submerged angiosperm plants (*Zostera* spp., *Stuckenia pectinata*, *Zannichellia palustris*). It is a protected area under NATURA 2000 both Habitat and Bird Directives (protected zone code BG0000271 / name "Mandra-Poda"; protected zone code BG0000273 / name "Burgasko ezero"). Important habitats on the site are 1110 "Sandbanks which are slightly covered by sea water all the time", 1130 "Estuaries", 1160 "Large shallow inlets and bays", 1170 "Reefs (brown, red and green algae communities)". 23 critically endangered, 35 vulnerable and 29 endangered species are found in the project area.

Organisation responsible for the pilot

Institute of Oceanology, Bulgarian Academy of Sciences

This project receives funding from the European Union's Horizon 2020 Innovation Action under grant agreement No 101037097.

Pressures, threats and issues

The Foros Bay is a part of the Burgas Bay, the largest Bulgarian bay. It is the most wave-sheltered area along the coast, and is a focal point for both unique natural diversity and human uses. In the past, several dramatic changes occurred in the bay and the adjacent watershed area. Previously, the coastal area was a wetland almost completely covered with hygrophytes and hydrophytes; there were sand dunes, hinterland was never flooded instead sustainably used as vineyards. The Port of Burgas was built in the northern part of the bay in 1903 and since then it was expanded several times. Next, drainage of some swamps began in 1921 in order to reclaim land for urban areas.

In 1928-1929, a stationary fishing device (guard) – low structure partially covered with water – was built dividing the Foros Bay into two parts parts: the inner one experiencing severe impact by polluted freshwater inflow, while the outer freely exchanging waters with the Burgas Bay. Although the device is no longer in use, the stone barrier still exists, thus modifying the natural circulation in the bay.

In the 1960s the western part of Mandra Lake was dammed to create a reservoir, which supplies fresh water to the oil refinery. Moreover, a portion of the wetlands nearby was converted into oxygenation (presently stabilisation) ponds. A canal was dug to connect the Burgas Lake and the bay. The human impact further increased by building a shipyard and a marina in the western part of the bay. Meanwhile, both Mandra and Burgas lakes, and the bay itself, have become increasingly eutrophic (two wastewater treatment plants and a lot of tributaries flowing through rural areas with intensive agriculture discharge into the area).

The most recent expansion of the port of Burgas was completed in 2005, and a new general plan for port development is currently being prepared.

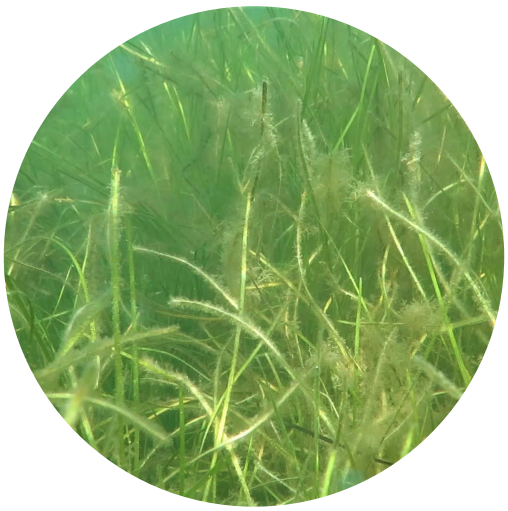
To summarise, human intervention has caused a significant change in the area's aspect, structure, and functioning; the sea-land structural and functional connections have also changed. While most of these changes are irreversible, our current task is to try finding a way to preserve the area as a biodiversity reservoir and to prevent further deterioration.

Expected impact of the project

Beaches and angiosperm habitats have been identified as potential NbS building blocks, assisting in improving coastal protection from waves and storm surge floods, promoting local biodiversity, and increasing carbon sequestration.

The main benefits the project will deliver

- Conservation of coastal habitats
- Lowered flooding and erosion risk
- Improved biodiversity
- Improved carbon sequestration



Seagrass ecosystem
Photo by Elitsa Hineva, PhD

Z. noltei
Photo by Elitsa Hineva, PhD

Stakeholders

- The Ministry of Environment and Water together with the Black Sea Basin Directorate and the Regional Inspectorate of Environment and Water, Burgas District Governor, Municipality of Burgas, Centre of underwater archaeology (Sozopol);
- The community as a whole, nature lovers and environmental protection volunteers, village tourism, local fishermen
- Organisations with land and natural resource management responsibilities: the Ministry of Environment and Water together with the Black Sea Basin Directorate and the Regional Inspectorate of Environment and Water, Burgas District Governor, Municipality of Burgas
- Oil Refinery, fishermen and private hydro engineering companies interested in hard coastal protection

Heavily modified Foros Bay area showing the former fishing "guard", Photo by Nataliya Andreeva, PhD

Foros Bay pilot site, Photo by eng. Bogdan Prodanov, PhD

Key variables of relevance to REST-COAST

- Wave action, water circulation, sediment transport, flooding and erosion hazard and risk, evaluation of ecosystem services

The restoration effect will be monitored using indicators that are applied on a regular basis. These include:

- **Population and habitat level indicators** – monitoring of the condition of the target species and habitat area
- **Biodiversity indicators** – eDNA application, number of bird species
- **Hydrological** – waves, currents, discharges

It is anticipated that ecosystem restoration will bring socio-economic benefits, increase the economic output and add short and long-term values to local communities. Small-scale fisheries, village and wildlife tourism will grow due to the increase of biodiversity. Moreover, lowering the flood and erosion risks by virtue of nature based coastal protection would reduce the damage to life and property as well as the likelihood of incurring financial costs.