

**Realm:** Freshwater, Coast, Marine | **Biodiversity threat:** Changes to hydromorphology  
**Stakeholders/sectors:** Environment, tourism, shipping, agriculture | **Strengths:** Linkage framework; Maps; Stakeholder processes; Modelling; AquaLinks tool



## Case Study 5 Improving integrated management of Natura 2000 sites in the Ria de Aveiro Natura 2000 site, from catchment to coast, Portugal



### Minimising the impacts of dredging and flood bank extension:

In 2018/2019, in the Ria de Aveiro two management interventions will have negative unintended impacts on biodiversity: 1) a dredging programme to manage water flow and navigability in Ria de Aveiro coastal lagoon, and 2) the extension of a flood bank to stop surface saltwater intruding onto local farmland. The goal of this study is to apply adaptive management and minimise foreseen but unintended management challenges in a Natura 2000 protected area, which crosses fresh and marine waters, in the context of EU water and nature-related Directives.

### Where and what are the challenges?

The Ria de Aveiro area is rich in biodiversity and supports a variety of economic, cultural and recreational activities. The region is subject to a complex variety of land and water uses and potential conflicts, and a number of human activities place pressures that affect the hydromorphological conditions of the lagoon and the adjacent freshwater section of the Vouga River, the Baixo Vouga Lagunar, such as dredging and the flood bank. The region is also vulnerable to ocean storm surges and coastal erosion, and to torrential rain and flood events, meaning that it often requires human intervention to protect or to enable economic activities.

### What was done?

We assessed the overarching policy plans, programmes, and objectives that manage biodiversity within the case study, as well as the key governance institutions. Stakeholders were engaged at different steps, contributing data, information, and their views so that we could understand the current and future situation, and how it might change under new management. Here, we used: i) models that assessed the risk to habitats caused by human activities; ii) stakeholder knowledge on the current state and trends of the environment and human activities in the Ria de Aveiro; and iii) the results of maps and modelling of the different ways stakeholders value the ecosystem and the goods and services it provides.

### Local recommendations:

Recommendations were made for two scales, the entire Natura 2000 site and the Baixo Vouga Lagunar. We propose a plan to restore saltmarshes and seagrasses, harmonise monitoring across EU Directives, and incorporate stakeholders and integrate territorial management instruments to mitigate the expected, unintended impacts of the flood bank extension and dredging in the Ria de Aveiro Natura 2000 site. The restoration measures should be framed in the Sectoral Plan for Natura 2000 Network, which is the territorial management tool to implement Portuguese policy for conserving biological diversity.

### General lessons learned for managing biodiversity

Ecosystem-based management plans should be co-created with input from local stakeholders and policy-makers. To protect biodiversity, managers should consider climate change projections. For the successful implementation of the identified water and nature policies in places like the Ria de Aveiro Natura 2000 site, any actions need to ensure the involvement of users and landowners.

### Local impact:

The Ecosystem-based management plan is foreseen to support the development of the Vouga estuary management plan, as well as actions for a more comprehensive understanding of the social-economic implications of ecosystem services provided by these aquatic habitats. Local stakeholders were supportive of the approach, "ecosystem-based management allows for a 'correction' of less good results" and appreciate that it is "concerned with beneficiaries, as well as biodiversity".

Find out more about Case Study 5 on the AQUACROSS Information Platform and [aquacross.eu](http://aquacross.eu)

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