

Improving the status of the coastal lagoon Tryggelev Nor - DK

1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space

2. Key Approaches

- Participation
- Ecosystems based approach
- Socio-economic
- Technical

3. Experiences that can be exchanged

The implementation of measures to improve the hydrological status of a coastal lagoon and its supporting biodiversity.

4. Overview of the case

Ensuring that agricultural inputs of nitrogen and phosphorus are reduced to an extent that 68 ha. of wetland were restored and a seawater inlet be established to enhance water exchange to allow the nutrients in the lagoon sediment to be washed out.

5. Context and Objectives

a) Context

Tryggelev Nor is one of several coastal lagoon areas that discharges into the Baltic Sea. This particular area is located both within an SPA and an SCI on the island of Langeland at the southernmost tip of Denmark. Over the years, the lagoon has suffered from increasing eutrophication and stagnation, which has severely negatively affected the conservation status of both the lagoon itself and its resident bird populations, such as the bittern (*Botaurus stellaris*) and the spotted crake (*Porzana porzana*).

Many of the problems can be traced back to the draining of the nearby Nørreballe Nor in 1883 to make way for new agricultural fields. This effectively removed one of the principal natural water filtering systems leading to the lagoon. Action was taken in the 1990s to reduce the more diffuse sources of agricultural pollution through the application of the Nitrates Directive and the use of agri-environmental schemes. However, the fact remained that the lagoon itself was still highly eutrophic since it no longer had the means of flushing out the nitrogen-rich waters that had built up over the last half century. Tryggelev Nor is a central part of a wetland network in the region, that also includes Piledybet, Ristinge Nor, Klise Nor, Gulstav Mose and Keldsnor. Thus, it was necessary to improve this network and the biological diversity of coastal wetlands in the region in order to improvement the conservation status of Tryggelev Nor.

b) Objectives

To obtain a favourable conservation status of the coastal lagoon in Tryggelev Nor and to improve the ecological conditions for a number of bird species of Annex I of the Birds Directive, for example *Botaurus stellaris*, Marsh Harrier (*Circus aeruginosus*), and *Porzana porzana*. The trophic state of Tryggelev Nor had to be changed towards a much more nutrient-poor state and the

overall hydrological state improved,

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

The wetland and water exchange work were carried out by Fyn County in collaboration with advisors and contractors. The impact of the project on nature and the environment in the area was monitored by Fyn County in collaboration with the Danish Bird Protection Foundation and the National Environmental Research Institute.

b) ICZM tools

The initiative was preceded by an extensive planning phase and investigations of the technical and land ownership aspects of establishing the wetland were initiated several years before the beginning of the work. One of the most important tasks was to consolidate the land to ensure that the farmers who relinquished land to the new wetland in Nørreballe Nor were compensated with other arable land. The land consolidation process took two years. Another important aspect of the initiative was the drawing up of agreements with the landowners neighbouring Tryggelev Nor as the water exchange project would reduce drainage of minor areas of land adjoining the coastal lagoon. Considerable nature management work was carried out:-

- A seawater inlet was established in the shingle beach that separates Tryggelev Nor from Marstal Bay. In addition, measures have been taken to minimize flooding of neighbouring land.
- Nørreballe Nor was re-established as a wetland and now comprises a 54 ha lake surrounded by 14 ha of wet meadow. The wetland in Nørreballe Nor also contributes to fulfilment of the target for wetland establishment stipulated in Action Plan on the Aquatic Environment II.
- Unwanted vegetation has been cleared from the salt meadows around Tryggelev Nor, and livestock pens have been established at Nørreballe Nor and Tryggelev Nor to facilitate habitat management by grazing.
- The total area of natural habitat in the Special Area of Conservation has been enlarged by 68 ha, including bird islands for breeding water birds.
- The water level in Tryggelev Nor has been stabilised to maintain the reed bed, among other things, to help the bittern.
- The possibilities for public access and information have been improved.

7. Cost and resources

The total budget was € 1,236,030 of which there was a Life contribution of €618,015.

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

All objectives were implemented and accomplished, creating the conditions for a favourable conservation status of the coastal lagoon in Tryggelev Nor. The monitoring results show that the nutrient load via the new lake, Nørreballe Nor, has decreased: nitrogen input has decreased by 60% due to improved retention capacity (the Nørreballe Nor lake) in the catchment. The external phosphorus input has not yet decreased but this is expected to happen when the new lake becomes more ecologically stable. This has thus created the possibility for the area to develop into a rich wetland area with a wide variety of breeding birds.

9. Success and Fail factors

Involvement of the public was a key aspect of the project, both to ensure openness about the work and to ensure a high degree of public ownership.

10. Unforeseen outcomes

None to date.

11. Prepared by

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12. Verified by

It has not been possible to verify this case.

13. Sources

- EU LIFE-Nature project “Improving status of coastal lagoon Tryggelev Nor, Denmark - IMAGE” (undated) Fyn County, Nature Management & Water Environment Division, in cooperation with
- the Danish Bird Protection Foundation under the Danish Ornithological Society and the Royal Society for the Protection of Birds



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