

Restoration of the Yzer estuary dunes - BE

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
- Technical

3. Experiences that can be exchanged

Restoration of degraded coastal dune areas.

4. Overview of the case

A number of dune areas along the coast of Belgium have been under pressure from increased tourism, replacing traditional grazing, and other human interventions. Several dune areas were restored using different techniques in order to restore the natural conditions and enhance the area for visitors.

5. Context and Objectives

a) Context

This case focuses on the western branch of the Yzer estuary in Flanders that was dammed in the 14th century creating an area of land known as Ter Yde and a polder (a low-lying tract of land that adjoins an artificial water form that is enclosed by dykes). The dune area is located on the site where one of the branches of the former Yzer estuary flowed during the Middle Ages. It also created a stream, the Beek zonder Naam (The Nameless Brook), which flows through a hollow in the dune area – a rare phenomenon in Europe. The hollow was made into woodland (Hannecartbos) and the remaining dunes have been built on since the beginning of the 20th century to meet the increasing demands of the local tourism sector. The emergence of tourism in the area has resulted in a decline in the use of the dunes for grazing. The previously species-rich grasslands deteriorated with the invasion of sea buckthorn and the development of grass steppes. A sewage treatment plant was also built on the edge of the area although it has not been in operation for a long time.

b) Objectives

The project aimed to restore an important dune area (the grey dune is a priority habitat) and prevent further loss of dune areas.

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

a) Management

The environmental administration of the Flemish government was responsible for the restoration activities.

b) ICZM tools

The following restoration measures were conducted:

Restoration of the calcareous marshland and dune pools in Groenendijk

In Groenendijk, the ecologically valuable calcareous marshlands and dune pools with their typical fauna and flora were restored over a surface of 5 ha. The old wastewater treatment plant of Nieuwpoort was demolished and the grounds subsequently re-profiled. Before being able to start on the actual demolition work, the whole operation was carefully planned: the drafting of the work specifications, the evaluation of the offers and the work monitoring were subcontracted to an experienced engineering firm. These preliminaries were indispensable for the execution of the works. The demolition works were conducted between January - June 2005. In the initial phase of the demolition works all hazardous materials were removed. In the second phase the buildings and the infrastructure of the wastewater treatment plant were pulled down and all demolition material was removed. Upon completion of the demolition works the cleared grounds were given a relief ideally suited to the development of valuable calcareous marshland, dune pools, moss dunes and dune grasslands. In the late summer of 2005 a mowing and grazing management regime was implemented for the whole area. This type of management had already been implemented in 2003 on the soil sections where no excavations were required and this resulted in the re-appearance of orchids and a favourable vegetation development.

Nature restoration in Hannecart wood

The major management measures of the regional management plan for Hannecart wood had already been approved by Ministerial Order in 1999. Because of the unique, boggy soil in the wood, the implementation of the nature restoration measures was not a straightforward process. It was necessary to proceed with great care and to use specially adapted equipment: all the machines were equipped with low pressure tyres so as not to damage the soil. Too much pressure on the soil during the works would have jeopardized the appearance of the desired flowering meadows. As Hannecart wood is an area with a high water level the works had to be carried out in the period of the lowest water level (late summer). Bog Pimpernel, Cowslip and Blunt-flowered Rush have already been found.

Restoration of dune grasslands and flowering meadows

The de-forestation occurred in two phases. This split allowed problems encountered during the first phase to be prevented in the second (e.g. the manner in which the work site area was demarcated and the removal of stumps). Throughout the work, it was ensured that the sedge vegetation was not damaged as these plants are vital to the small Desmoulin's whorl snail (*Vertigo moulinsiana*), one of the target species. To obtain a landscape of the greatest possible variety the regional hawthorn bushes were maintained. The existing channel pattern in the wood was maintained for historic reasons and to safeguard the humidity gradients as this ensures even greater biodiversity. The de-forested section of Hannecart wood is now subject to meadow management to ensure the felling surface develops into the desired flowering meadows. Moreover, Shetland ponies continue to graze actively and will contribute to the good development of the flowering meadows and dune grasslands. In the spring of 2005, various types of charophytes had already appeared in the cleared trenches showing that one of the target habitats is already developing well.

A more natural water balance in the Ter Yde-dune complex

The water level in the polders is regulated artificially and has a direct influence on the phreatic water level in Hannecart wood and the rest of the 'Ter Yde' dune complex. By installing two adjustable weirs it is now possible to better manage the water level of the Nameless Brook: the dune valley vegetation and flowering meadows indeed require a sufficiently high phreatic water level. The Nameless Brook also contained a large amount of nutritious silt. By clearing the dune brook a situation was created that is deficient in nutrient substances - ideal for the typical charophyte vegetation that was desired and for the Crested ne

Restoration of the open dune landscape in Ter Yde

The restoration of the open dune landscape is prescribed by the regional management plan of the Flemish nature reserve Ter Yde. This was approved by Ministerial Order in 2003. A closed Sea buckthorn thicket (1 ha) located near the eastern edge of a large dune slack ('Orchid dune slack') consisting of wet depressions and dry dune ridges, was removed in order to contain the overgrowth of the dune slack by the Sea buckthorn thicket. This occurred by means of power saws and forest mowers. The material was removed by hand from the grounds. To expose the soil as much as possible and to create optimum germination possibilities for the plants, the humus layer was raked up and removed by hand. On the cleared grounds there is now a diversity of dune grassland and moss dune species. In the area from which the thicket was removed various specimens of Rue-leaved saxifrage, Yellow-rattle, Spring vetch and Beach centaury, Common milkwort, Blue fleabane and Common restharrow have been found. The section from which the thicket has been removed is mowed annually and is also grazed by Shetland ponies. On the western side of the dune slack a small Beech-Willow wood and a row of poplars (0.4 ha.) were removed in order to restore moss dunes and dune grasslands rich in orchids. The underlying humus layer was also removed.

The felling of the trees and bushes with chain saws and forest mowers also brought an end to the negative effects of the seedlings, leaf fall and shading of the open part of the highly valuable 'Orchid dune slack'. All the felled material was removed via a fixed route by means of a tractor and trailer fitted with low pressure tyres. This helped limit the damage to the soil. Moreover, rubber mats were placed in the most fragile locations to restrict the pressure exerted on the soil by the machines to a minimum. Indeed, if the pressure on the soil is too great this could hinder the development of the desired vegetation and the return of the relevant plants and animals due to track formation and soil compression. This work method also yielded good results and this section is now mowed and grazed by Shetland ponies and sheep. Some 3 ha. of Sea buckthorn thicket were removed from a dry dune slope. The underlying humus layer was scraped down to the bear sand to allow the sand to shift again. Thicket was cleared from a wet dune slack (0.5 ha.) using forest mowers and a sickle bar. The underlying humus layer was also removed. All the material was removed by hand. The removal of this thicket was intended to restore the wet dune valley vegetation and to create a biotope for the Natterjack toad.

All the work had a strong element of networking activities and raising awareness among the local authorities and the many tourists who regularly stay in the region.

7. Cost and resources

The total budget was € 1,309,522 of which there was a Life contribution of €654,761.

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

At the end of the work the following results were achieved:

- Fossil lime-rich shore restored on 5 ha.;
- Favourable conditions for grey dunes restored over a 260 ha.area;
- Calcareous marsh vegetation restored on 10 ha. of a primary dune slack;
- Restoration and long-term management of wet dune slacks and grey dunes; and
- Dissemination of the results and expertise.

The work created effective large-scale management of the water level and developed lines of communication with the public and semi-public authorities to ensure the long-term protection of the Natura 2000 sites. The undertaking also increased knowledge of the dunes through scientific monitoring. Through communication of results and awareness-raising initiatives, the work has generated interest for a wider public access to the protected sites and given an extremely strong impulse to the management of the nature domain Groenendijk and to the Flemish nature reserves Hannecart wood and Ter Yde

9. Success and Fail factors

The attention for communication ensured everyone clearly knew why the nature restoration works were being carried out: that it represented an added value for the holiday-maker and increased the impact of nature conservation. The restoration actions and the improvement of the footpaths and replacement of the fencing of Hannecart wood enhanced the perception of the dune areas and are therefore positive for nature-based recreation. A better dialogue with the local authorities generated concrete results: the signing of management agreements with the local water company for two areas, the launch of the drafting of regional management plans for these areas and co-operation with the commune Koksijde. The region has the necessary infrastructure for a sustainable future.

10. Unforeseen outcomes

None so far.

11. Prepared by

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12. Verified by

It has not been possible to verify this case.

13. Sources

- FEYDRA Life - nature programme 2002-2006 LIFE02 NAT/B/8591 (undated) Ministry of the Flemish Community



FEYDRA Fossil Estuary of the Yzer Dunes Restoration Action - laymans text (5.19 MB) 