

## ZENO, THE LATEST LIFE NATURE – RESTORATION – PROJECT ALONG THE FLEMISH COAST

Dewulf E.<sup>1</sup>, Van Nieuwenhuyse H.<sup>1</sup>, Herrier J.-L.<sup>1</sup> and Lozie P.<sup>1</sup>

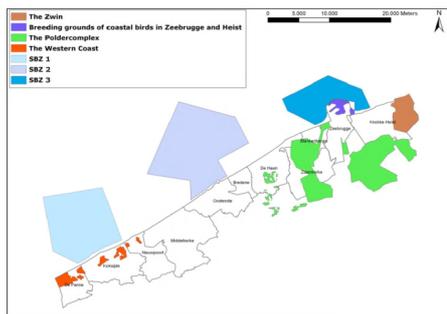
<sup>1</sup> Agency for Nature & Forests of the Flemish Ministry of Environment, Nature and Energy, West-Flanders

**Keywords:** Restoration and management of Coastal Dunes and their transition to the Polders, NATURA 2000 habitat types: 2130 Fixed coastal dunes with herbaceous vegetation ('grey dunes'), 2190 humid dune slacks. NATURA 2000 species: amphibians: *Triturus cristatus*, *Hyla arborea*, *Epidalea calamita*, birds : *Egretta garzetta*, *Platalea leucorodia*.

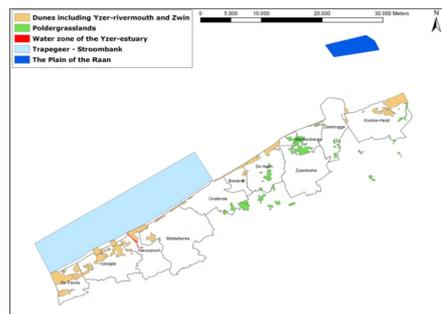
### Introduction

In the federal state structure of Belgium the competence for environmental matters, including nature conservation, is bestowed to the Belgian federal authority in the territorial sea beneath the low water line and to the Flemish regional authority on land (including the tidal beaches) above the low water line. At the Flemish coast, several Natura 2000 sites have been delimited at sea as well as on land.

In execution of the '**European Birds Directive**' 49/709/EEC, 7 Special Protection Areas have been designated by different orders of the Flemish government (Map 1). In the framework of the '**European Habitat Directive**' 92/43/EEC, already three Sites of Community Interest have been designated on land, and two areas in the Flemish territorial waters are recognised (Map 2).



**Map 1:** Map of the Special Protection Areas in the framework of the European Birds Directive 49/709/EEC at the Flemish coast



**Map 2:** Map of the Special Areas for Conservation in the framework of the Habitat Directive 92/438 EEC at the Flemish coast

It is then obvious that 'L'Instrument Financier Européen pour l'Environnement', abbreviated as LIFE, more precisely LIFE nature, would play an important role as a tool for the practical implementation of the Natura 2000 – network at the Flemish coast.

So far, four LIFE nature projects have been granted and have been or are being executed in the coastal region of Flanders:

- 'Integral Coastal Conservation Initiative (= ICCI)' at the Flemish West coast;
- 'Fossil Estuary of the Yzer Dunes Restoration Action (= FEYDRA)' in Nieuwpoort and Koksijde;
- 'Salt meadows at the Flemish coast' in Blankenberge;
- 'The Uitkerkse Polder: a surplus value for nature and people' in Blankenberge.

With the experience and results of these successful LIFE nature projects it was time for a fifth one, ZENO! ZENO stands for Zwindunes Ecological Nature Optimisation and is a LIFE nature project of the Agency for Nature and Forest of the Flemish government (ANB). The project area is the Flemish Nature Reserve 'The Zwin Dunes and Zwin Polders' at Knokke-Heist.

During the 20th Century a large part of this area was largely negatively influenced by human activities. Grey dunes and wet slacks are now subjected to invasion by scrubs and grasses. Also the nature values of dune meadows decreased resulting from too strong fertilization in the past. The main objective of the LIFE nature project ZENO is the restoration and maintenance of the natural habitats that are typical for coastal dunes and their transitions to salt marshes and polders. A second objective of the project is communication with the public, the exchange of information and the dissemination of experience about the restoration and maintenance of transition grounds from dunes to polders and from dunes to salt marshes in Europe.

### Materials and methods

The legally approved management plan of the concerned nature reserve “Integral perspective and management plan for the Flemish nature reserve ‘The Zwin Dunes and Zwin Polders’ at Knokke-Heist, with attention for recreational joint use” is the basis for the LIFE nature project ZENO. It offers a detailed description of the methodologies to be used in order to remedy the damages inflicted upon the natural environment, thereupon to ensure the maintenance of the restored nature and to make recreation in the area possible without damaging the natural environment.

### Results and discussion

First important thing by a LIFE nature project is a **good preparation** like the timely application for a building permit, technical reports, some relevant studies (hydrological, historical,...)... to assure a good progress of the project.

The LIFE nature project ZENO is divided in different actions:

- Restoration of wet dune slacks and pools: Most of the pools and wet dune slacks have in the course of the past decades been subjected to invasion by shrubs and grasses. The shrubs will locally be cleared and existing pools will be deepened and enlarged and some new pools will be dug out.



Figure 1: Restoration of wet dune Slacks in the Groenpleinduinen (2008)



Figure 2: Restoration of wet dune slacks and pools in the northern grazing unit (2008)

- Restoration of the natural dune habitats in and around the old sandpits (2008-2009): During the past century, exotic tree species, mainly Pine trees (*Pinus pinaster*) were planted on, and pits dug out for sand-extraction. By cutting down a number of trees surrounding the ponds, a half-open landscape and a connection between two dune grasslands that surround the woodland will be restored. Sludge will be partially dredged from the sandpits and the steep angled slope of the banks will be smoothed out.

- Restoration of the micro topography of the 'Kleyne Vlakte' (2009-2010): The southern part of 'The Zwin Dunes and Zwin Polders' used to be a tidal shore plain with salt marshes that ever since the second half of the nineteenth century has been separated from the sea by a dyke. During the first half of the 20<sup>th</sup> century, the eastern part of this area known as the 'Kleyne Vlakte' was levelled for the construction of an airfield. At the present time this area consists essentially of flat meadows, that for decades have been too strongly manured. Excavations will restore the original landscape of this fossil beach plain with its creeks and low dunes, and will allow the development of wetlands.

- Removal of old infrastructure: Until the sixties every summer a horserace took place, called 'Concours Hippique'. Some old concrete infrastructure of the former jumping remained. Thanks to the LIFE nature project ZENO a pool now replaces the concrete obstacles and makes the original course of the 'Paardenmarkt-Creek' again visible in the landscape and artificial rows of cultivated poplars were removed. This action was executed in September 2007 and restored the wet grasslands and the half-open character of the transitional grounds from dunes to polder.



Figure 3: the jumping before the works



Figure 4: the jumping after the works

- Grazing management: Until the First World War cattle, goats, horses, donkeys and sheep grazed the dunes. As a result of the absence of such grazing since the middle of the 20<sup>th</sup> century, grasses and scrubs started to invade the grey dunes, the dune grasslands, and the wet dune slacks. That problem will now be tackled by digging out soil, cutting down trees and shrubs, mowing, and by introducing efficient grazers like Scottish Highland cattle, Shetland ponies and Konik horses. A new grazer that would be re-introduced for the first time in the project area is the Dunc Goat, a typical Belgian race of goats that was grazing until the first World War at the Flemish coast.

For this reintroduction the Agency for Nature and Forests is working together with '**Foundation Living Heritage**', a non-profit organisation that aims at the maintenance of the original indigenous, mostly very rare local breeds of stock and cattle.

- Exchanging information: During the execution of the works information boards are erected at appropriate locations to inform the visiting public of the current accessibility and layout of alternative routes. They also provide an explanation about the work methodologies and explain the rationale for the works. In addition, the public was informed about the aim of ZENO during the evening information session on 29 January 2008, but also through the dissemination of leaflets, the website ([www.lifenatuurzeno.be](http://www.lifenatuurzeno.be)), different press releases and conferences, excursions, information signs. Also an exhibition and an international workshop will be organized. Communication is very important in a LIFE nature project and the attention for recreational joint use is just as important as the restoration of the biodiversity and natural processes. Only that way you can create a social basis and receive respect of the public.

### Conclusions

The five LIFE nature projects at the Flemish coast had already and still have effects that outreached their initial purpose. They not only allowed **large scale nature restoration** in a short time that without European support would have been very difficult to realise, but the very important surplus value of these projects is **the influence they had and still have on the dialogue between the conservationists and other actors**, and on the coastal conservation policy of the Flemish government, especially on its coastal dune purchase policy. In 1997 there were but three Flemish regional (450 ha) and three Acknowledged (private) Nature Reserves (118 ha) in the coastal dunes; in 2008 there are already 11 Flemish regional (1217 ha) and 9 Acknowledged Nature Reserves (417 ha) at the Flemish coast.



LIFE-ZENO is now running for more than a year. The first results of LIFE-ZENO are hopeful: a revived dialogue between the manager of the nature reserve and several other actors that even resulted in a new European project proposal, a great dynamic in the nature reserve, enthusiastic visitors and people living in the neighbourhood, a fast execution of the management plan, and last but not least: a restored NATURA 2000 site!

### References

- Herrier J.-L., Killemaes I. and Noels C. (2005) Purchase of dunes: the first step towards nature restoration along the Flemish coast p. 55-68 In: Proceedings 'Dunes and Estuaries 2005' – International conference on nature restoration practices in European coastal habitats. Koksijde, Belgium, 19-23 September 2005. Herrier J.-L., Mees JK, Salman A., Seys J, Van Nieuwenhuysse H. and Dobbelaere I. (Eds). VLIZ Special Publication 19. xiv+685p.
- Herrier J.-L. and Van Nieuwenhuysse H. (2005) The Flemish coast: life is beautiful! p. 13-26 In: Proceedings 'Dunes and Estuaries 2005' – International conference on nature restoration practices in European coastal habitats. Koksijde, Belgium, 19-23 September 2005. Herrier J.-L., Mees JK, Salman A., Seys J, Van Nieuwenhuysse H. and Dobbelaere I. (Eds). VLIZ Special Publication 19. xiv+685p.
- Termote J. (2004) Landschapshistorische studie van het Vlaams Natuurreservaat 'De Zwinduinen en –polders' te Knokke-Heist. Rapport Westtoer i.o. Ministerie van de Vlaamse Gemeenschap, AMINAL, Afdeling Natuur, cel Kustzonebeheer. 88p.
- Zwaenepoel A., Cosyns E., Lambrechts J., Ampe C., Langohr R., Vandenbohede A. and Lebbe L. (2007) Integrale gebiedsvisie en beheerplan voor het Vlaams Natuurreservaat 'De Zwinduinen en –polders' te Knokke-Heist, met aandacht voor recreatief medegebruik. Wvi, Aeolus & Universiteit Gent i.o.v. Agentschap voor Natuur en Bos, cel kustzonebeheer.