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The Flemish coast: life is beautiful!

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Abstract

Along the quite short Belgian coastline (65km), six Natura 2000 sites have been delimited on land and one at sea. This probably explains why from the 20 Life nature projects that up to now have been or are being executed in the Flemish region no less than four are focused on coastal areas. This paper offers a review of those four coastal Life nature projects and their achievements. The Life nature project 'ICCI' (1997-2001) aimed at re-establishing ecological relations between sea and land, between sandy beaches, mudflats, salt marshes and coastal dunes and between coastal dunes and polders from De Panne to Nieuwpoort and stimulating the policy of purchase of coastal dunes by the Flemish region. Its successor, 'FEYDRA' (2002-2005), has as main goal, the restoration of annex 2 - habitats in several coastal dune sites in Koksijde and Nieuwpoort. 'Salt meadows at the Flemish coast' (1999-2003) and its sequel, 'The Uitkerkse Polder' (2003-2008), strive for the maintenance or restoration of polder meadows with a rich topography by land purchase and an appropriate nature management. The Life nature projects 'ICCI' and 'Salt meadows at the Flemish coast' have achieved complete realisation of their objectives. Both other Life projects that are mentioned above are still being executed, but the prospects look good. Essential elements in this success have been a thorough scientific preparation and a sustained action for public support. The Life nature projects in the coastal zone have not only accomplished their initial program, but also had a favourable influence on the conservation policy of the Flemish government for the coastal zone; prospected the possibilities for a federal conservation policy in the marine environment and stimulated dialogue between conservationists on the one hand, local authorities and drinking water supply companies on the other hand.

Keywords: Flemish coast; Sea; Land; LIFE-nature projects.

Natura 2000 at the Flemish or Belgian coast

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 Belgian 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, three Special Protection Areas, 'the Western coast', 'the Poldercomplex' and 'the Zwin', have been designated by Order of the Flemish government of 17 October 1988, revised by the Orders of 20 September 1996, 23 June 1998 and 17 July 2000 (Fig. 1a).

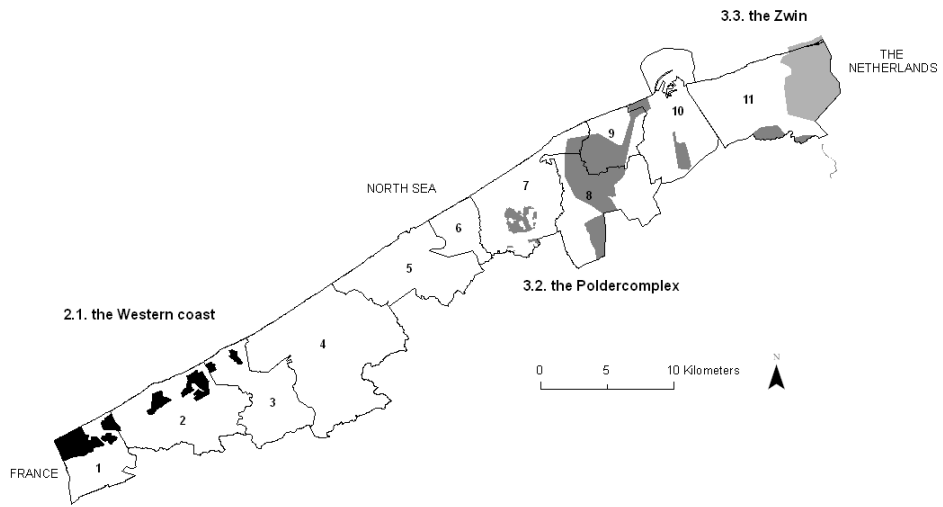
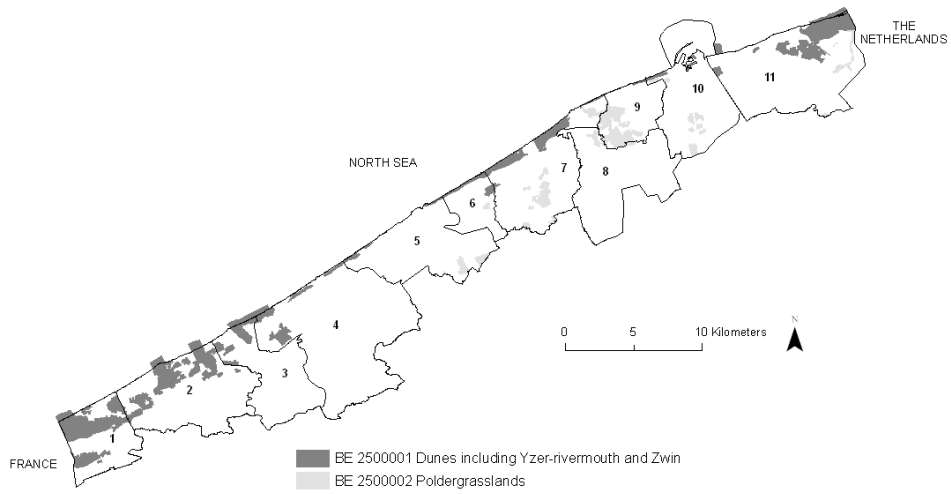


Fig. 1a. Situation map of the special protection areas SPA's on land (1=De Panne, 2=Koksijde, 3=Nieuwpoort, 4=Middelkerke, 5=Oostende, 6=Bredene, 7=De Haan, 8=Zuienkerke, 9=Blankenberge, 10=Zeebrugge, 11=Knokke-Heist).



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Fig. 1b. Situation map of sites of community importance SCI's on land (1=De Panne, 2=Koksijde, 3=Nieuwpoort, 4=Middelkerke, 5=Oostende, 6=Bredene, 7=De Haan, 8=Zuienkerke, 9=Blankenberge, 10=Zeebrugge, 11=Knokke-Heist).

By Order of the Flemish government of 4 February 2005 also part of the out-port of Zeebrugge and the Bay of Heist were temporarily designated as the Special Protection Area 'Breeding grounds of Coastal Birds in Zeebrugge and Heist'.

In the framework of the 'European Habitat Directive' 92/43/EEC, two Sites of Community Interest, 'BE2500001 - Dunes including Yzer-rivermouth and Zwin' and 'BE2500002 - Poldergrasslands', have been proposed by decision of the Flemish government of 14 February 1996, revised by the Order of the Flemish government of 24 May 2002 (Fig. 1b).

Also a part of the shallows in the Belgian territorial waters were proposed as Site of Community Importance in January 1996 under the name 'BEMNZ0001: Trapegeer – Stroombank' (Fig. 1c).

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 Belgian coast.

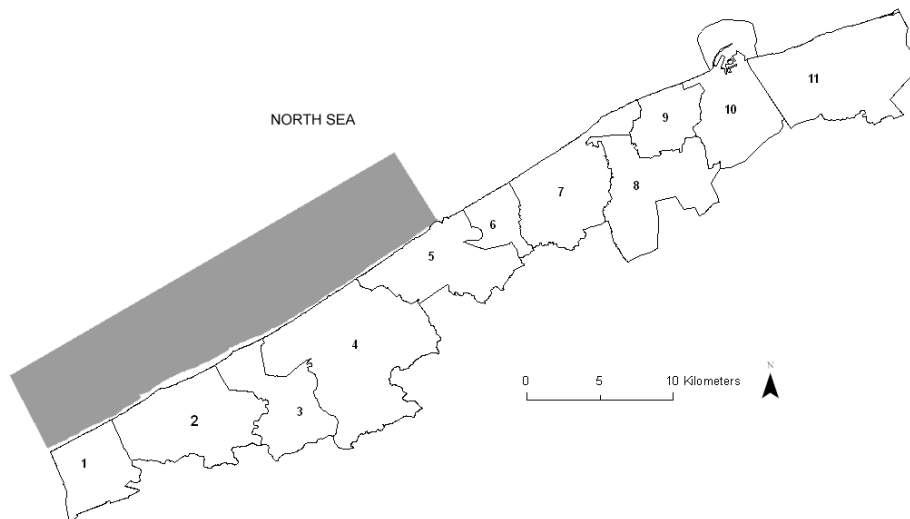


Fig. 1c. Situation map of sites of community importance SCI's at sea (1=De Panne, 2=Koksijde, 3=Nieuwpoort, 4=Middelkerke, 5=Oostende, 6=Bredene, 7=De Haan, 8=Zuienkerke, 9=Blankenberge, 10=Zeebrugge, 11=Knokke-Heist).

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, abbreviated as ICCI;
- Fossil Estuary of the Yzer Dunes Restoration Action, abbreviated as FEYDRA;
- Salt meadows at the Flemish coast;
- The Uitkerkse Polder.

This paper offers a review of these four projects, their concrete results and further achievements.

Integral Coastal Conservation Initiative (ICCI)

The ICCI – Life nature project (Fig. 2) was conceived in 1996 by the Nature Division of the Ministry of the Flemish Community, the federal government service Management Unit Mathematical Model of the North Sea and the Scheldt Estuary (abbreviated as MUMM) and the non-governmental organisations Belgian Nature and Birds Reserves (now Natuurpunt) and World Wide Fund for Nature. It was carried out from January 1997 to December 2001. Its theme was an integral approach for the conservation of the coastal ecosystem, involving its marine as well as its terrestrial component. Hence its name ‘Integral Coastal Conservation Initiative’ (not to be confounded with integrated coastal zone management). The Belgian coast features a quite remarkable sequence of sandbanks in the shallow sea, sandy beaches, mudflats, salt marshes, sand dunes, fossil sand dunes and polders. However, transitions between these different components are often artificially interrupted by dikes, buildings and other infrastructure. ICCI aimed at the restoration of natural transitions between sea and land, beaches or salt marshes and dunes, dunes and polders. The global budget of ICCI was € 2,499,172. The total budget that was invested by the European Union was € 1,124,628 (45%). The Nature Division of the Ministry of the Flemish Community invested € 901,899 (36.09%) the federal government service Management Unit Mathematical Model of the North Sea and the Scheldt Estuary (abbreviated as MUMM) invested € 239,502 (9.58%). The non-governmental organisation Belgian Nature and Birds Reserves (now Natuurpunt) invested € 177,244 (7.09%) and the non-governmental organisation World Wide Fund for Nature invested € 55,900 (2.24%).

Actions concerning the marine environment undertaken by the MUMM were:

- a quantification of the value and vulnerability of the marine environment as well as an assessment of the impact of human activities conflicting with nature conservation, as a basis for the limits to be imposed on such activities;
- an investigation of the possibilities of protecting a marine area by surveillance and an investigation of the technical, social and legal features of a marine surveillance scheme and carrying out a surveillance scheme on a trial basis;
- an effective wardening-scheme to reduce and prevent illegal fishing practices and oil-pollution;
- an inventory of shipwrecks in the Belgian territorial sea and
- a stranding manual for stranded marine mammals and birds and a vulgarising leaflet about the same subject.

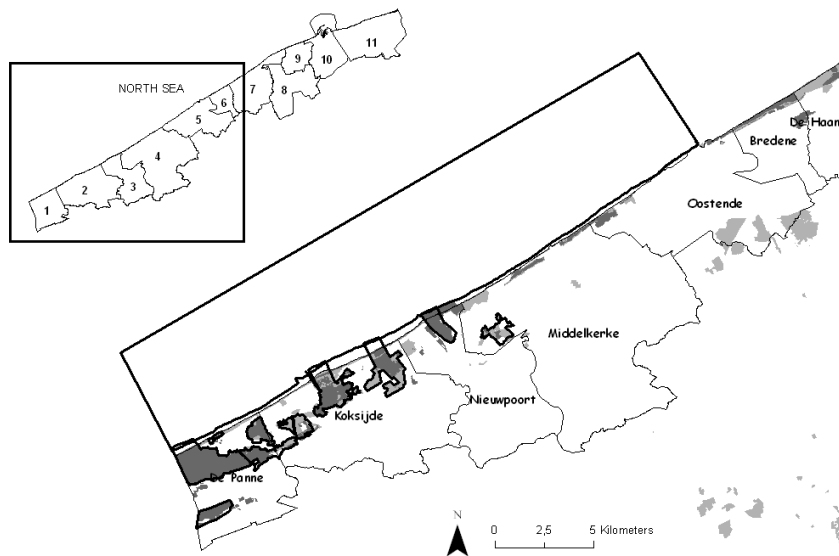


Fig. 2. Project site of the ICCI – Life nature project (dark grey: managed dune area; grey: nature site in the frame of the spatial planning legislation).

The scientific inspiration for ICCI 's actions on land was provided by the practical guidelines from the Ecosystem Perspective for the Flemish coast, the management plans for the Flemish regional Nature Reserves of 'De Westhoek' and 'De Houtsaegerduinen' at De Panne and, last but not least, the Nature Restoration Plan for the 'Yzer-rivermouth' at Nieuwpoort. All these scientific documents were previously elaborated between 1994 and 1996 by the University of Ghent and the Institute of Nature Conservation, on commission from the Nature Division of the Ministry of the Flemish Community.

The main actions of ICCI on land were:

- the restoration of mudflats, salt marshes and sand dunes along the eastern bank of the 'Yzer-rivermouth' at Nieuwpoort by the complete demolition and removal of a derelict naval basis;
- the restoration of wet dune slacks and 'grey dunes' by the removal of 30ha of scrub and exotic tree-plantations, followed by the introduction of grazing by large herbivores in the Flemish Regional Nature Reserves 'De Westhoek', 'De Houtsaegerduinen' and 'Ter Yde';
- the excavations of pools and ponds in the above-mentioned nature reserves as reproduction habitat for amphibians, more precisely the Crested Newt (*Triturus cristatus*) and the Natterjack toad (*Bufo calamita*);
- the scientific monitoring of the response of flora, vegetation, fauna and physical environment to the above-mentioned restoration and management measures;

- the purchase of at least 20ha of land in the dunes or dune-polder-transition zone in order to be designated and managed as nature reserves;
- the elaboration of a scientifically based management plan for the Flemish regional Nature Reserve of 'Hannecartbos' at Oostduinkerke (municipality of Koksijde) in the framework of an area-perspective for the Ter Yde dunes;
- the redaction and publishing of a brochure to increase public awareness and support for nature conservation along the western part of the Flemish coast;
- a debate between drinking water production companies and conservationists about groundwater extraction and nature management in the coastal dunes and a political debate about the purchase of coastal dunes for conservation purposes.

All these actions were carried out with a success that surpassed the original expectations. However, the merit of ICCI is, even more than the remarkable material output of its actions, the significant impulse this European co-funded project has given to the policy of dune purchase and further nature restoration actions at the Flemish coast by the Flemish regional authority. We refer about that to the contributions in the present conference about the purchase of dunes (Herrier *et al.*, 2005), the removal of scrub and trees (Leten *et al.*, 2005) and the restoring of dunes and marshes by removing buildings and soils (Herrier *et al.*, 2005). The management plan for the nature reserve 'Hannecartbos' that has been drawn in the frame of ICCI also offered the basis for a following Life nature project: FEYDRA.

Fossil Estuary of the Yzer Dunes Restoration Action (FEYDRA)

To enhance the practical and financial feasibility of the execution of the very ambitious management plan for the Flemish regional Nature Reserve 'Hannecartbos', the Nature Division elaborated in 2001 a second Life nature project (Fig. 3).

As then the derelict water treatment plant of Nieuwpoort, that stood in a relict of the same fossil beach plain as the one in which 'Hannecartbos' is situated, was acquired by the Nature Division, also the planned removal of that plant was included in the project. The projects name, Fossil Estuary of the Yzer Dunes Restoration Action, refers to the estuarine origin of the three 'coastal dune' sites in which actions had to be undertaken: the neighbouring Flemish regional nature reserves 'Hannecartbos' and 'Ter Yde' at Oostduinkerke and the regional nature domain 'Groenendijk' at Nieuwpoort. Until late medieval time the area wherein the three sites mentioned above are situated constituted the western branch of the then estuary of the river Yzer. The European Commission gave its approval and FEYDRA started in 2002 and is supposed to be completed in December 2005. The global budget of FEYDRA is € 1,309,521. As the project site is completely included in the site of community importance 'BE2500001 - Dunes including the Yzer rivermouth and Zwin', the principal objective of FEYDRA is the restoration of threatened habitats and species of the annex 1, 2 and 4 of the European Habitat Directive that are typical for the coastal dunes.

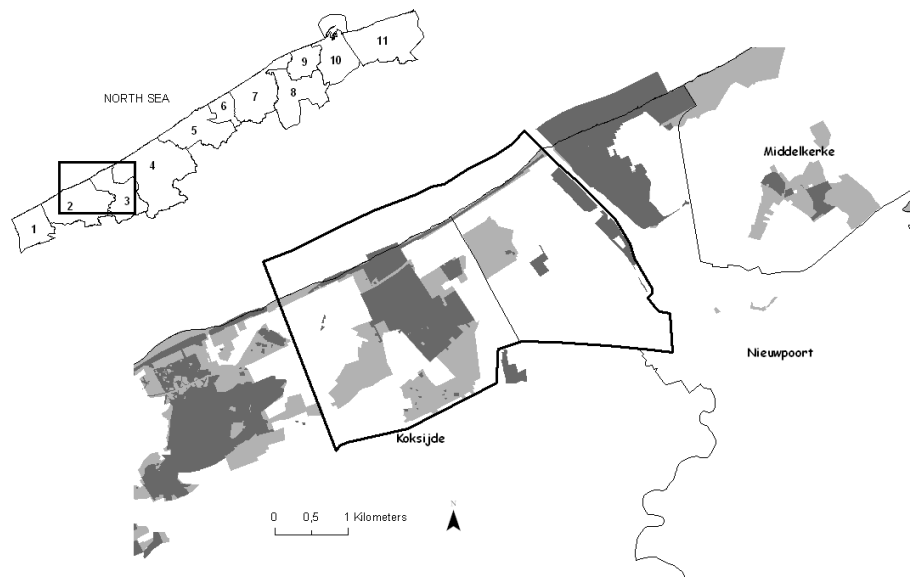


Fig. 3. Project site of the FEYDRA – Life nature project (dark grey: managed dune area; grey: nature site in the frame of the spatial planning legislation).

Main actions of FEYDRA are:

- the drawing of a scientifically based management plan for the Flemish regional Nature Reserve of ‘Ter Yde’;
- the removal of 4ha of scrub to restore a wet dune slack, dune grasslands and shifting sand dunes in the nature reserve ‘Ter Yde’ in execution of the above-mentioned management plan;
- the removal of 6ha of artificial Elder- and Poplar- woodland from the Flemish regional Nature Reserve ‘Hannecartbos’ to restore calcareous marshland in a fossil beach plain;
- the dredging of nutrient-rich sludge from a dune-rivulet in the nature reserve ‘Hannecartbos’ to restore mesotrophic open water with Chara-vegetations;
- the placement of two dams on the rivulet in the nature reserve ‘Hannecartbos’ in order to disconnect the groundwater regime of the whole concerned dune area from the artificial drainage in the agricultural area of the polders;
- the demolition and removal of the derelict water treatment plant of Nieuwpoort in the regional nature domain of Groenendijk to restore calcareous marshland;
- the scientific monitoring of the response of flora, vegetation, fauna and physical environment (especially the groundwater and the soils) to the executed restoration and management measures.
- the improving of the experiential quality of the Flemish nature reserve Hannecart Wood by improving the walking paths and replacing the barbed wire fencing by a more attractive and functional enclosure.

The deforestation of 6ha in 'Hannecartbos' and the influencing of the groundwater regime by the placement of dams on the dune-rivulet needed a preliminary Environmental Effects Assessment. As cutting down trees and removing shrubs on a large scale as well as raising the groundwater level are often experienced as disturbing by the public, communication with the large public and local authorities received a lot of attention from FEYDRA. A colourful leaflet about the actions in 'Hannecartbos' was published and distributed on a large scale, a public information evening took place and was massively attended, press conferences were organised and an exhibition about FEYDRA was built in the Flemish regional nature visitor centre 'The Nightingale'. At the start of the different stages of the removal of scrub in the Flemish nature reserve Ter Yde, all the local residents received information leaflets in their letter boxes about how and why the works would be carried out and while the various work projects are being carried out in the three sites of the project, information boards are erected on the sites so that those who pass by are aware of what is being done. At the beginning of the project a website (www.mina.vlaanderen.be/feydra/) has been developed for more information about FEYDRA. At the end of the project a report about the results of FEYDRA will be published and distributed on a large scale.

The present international conference is intended as a forum for the exchange of experiences with nature restoration in coastal dune and estuarine habitats along the European coasts, in order to stimulate initiatives and improve methods and techniques of nature restoration projects.

An essential contribution of the Life projects ICCI and FEYDRA to nature restoration and management along the Flemish coast was that they allowed the Nature Division to create five new jobs that are vital for a good management of the Flemish coastal natural areas. These members of staff, whose tasks meanwhile have been recognised as recurrent by the Flemish government, have been taken into permanent service. FEYDRA has also revived the dialogue between the local drinking water Company IWVA and the Nature Division. This dialogue resulted in 2005 into an agreement by which the IWVA owned domains 'Cabour' (surface area: 88ha) at De Panne and 'Ter Yde' (surface area: 25ha) at Oostduinkerke were given into management to the Nature Division. Domain 'Cabour' is one of the most well preserved 4,500 years old, fossil beach-wall sites of north western Europe, containing the priority habitat '2150 Eu-Atlantic decalcified fixed dunes (Calluno – Ulicetae)'. It is adjacent to the French fossil dune of Ghyvelde. The IWVA – owned domain 'Ter Yde' is situated between the Flemish regional Nature Reserve 'Ter Yde' (surface area: 59ha) on the northern side and the Flemish regional Nature Reserve 'Hannecartbos' (surface area: 32ha) on the southern side. The incorporation of this IWVA owned domain into the Flemish regional Nature Reserve allowed to join 'Ter Yde' and 'Hannecartbos' into one enlarged nature reserve (surface area: 116ha) and to lift barriers for a coherent management of the whole area. The management-agreement about the IWVA owned Cabour domain allows the expansion of the Flemish regional Nature Reserve 'The Dunes and Woods of De Panne' from a surface area of 539ha to a surface area of 627ha.

Salt meadows at the Flemish coast (Versweyveld, 2003)

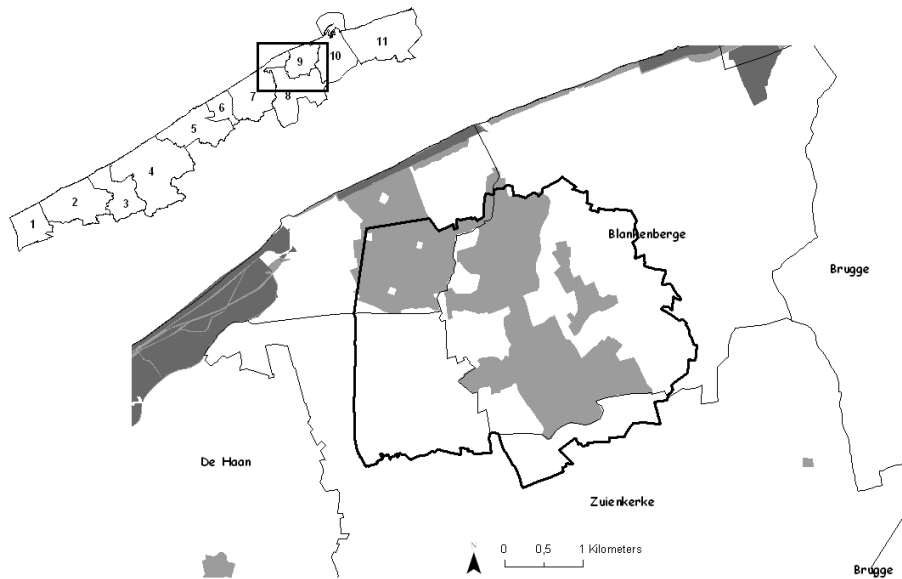


Fig 4. Project site of the Life nature project 'Salt Meadows at the Flemish coast' (dark grey: managed dune area; grey: nature site in the frame of the spatial planning legislation).

The Flemish coastal plain consists mainly of polders. The eldest parts of these polders are former peat bogs that have been inundated by the sea during the Middle Ages. These marine floods caused the bogs to become saline and left it covered with a fertile layer of clay. Peat and clay-extractions from the Middle Ages until quite recent time shaped the landscape into humid meadows with lots of ditches and pools. This historical landscape of humid meadows is not only important because of its non-tidal saline vegetation, but also attracts migrating birds in their thousands, especially the pink-footed goose (*Anser brachyrhynchus*), the lapwing (*Vanellus vanellus*) and the golden plover (*Pluvialis apricaria*). The 'Uitkerkse Polder' between Blankenberge, Zuikerkerke and Wenduine is with its surface area of 1,230ha one of the most extended polder meadow sites of the Flemish coast. Although strongly reduced in size by the development of the inner-port of Zeebrugge, the 'Dudzeelse Polder' with its remaining surface area of about 180ha, offers the qualitatively richest salt meadows of the Flemish coastal plain (Herrier *et al.*, 2002). Since the 1960's the agricultural activity in the polders has strongly intensified, resulting in ploughing up half natural grasslands and heightening low wet meadows with their pools and ditches into arable land, especially maize fields. The 'Uitkerkse Polder' and the 'Dudzeelse Polder', together with other meadow-complexes between Ostend and the Dutch border, are part of the Special Protection Area 'BE2500002 - Poldercomplex' that was designated in the frame of the Bird Directive and of the site of community

importance 'Poldergrasslands'. The non-governmental organisation (ngo) Belgian Nature and Birds Reserves, now Natuurpunt, who had already initiated the first conservation actions in the early 1990's, conceived and applied for a Life nature project in favour of the maintenance and restoration of salt polder meadows, especially in the 'Uitkerkse Polder'. The Life project 'Salt Meadows at the Flemish coast' was executed from 1999 to 2003 (Fig. 4). Its total budget amounted to € 1,490,000.

This Life nature project was designed to provide a major impetus for the pioneering work that had already been carried out in an extremely delicate social context. The two main components of this Life nature project were first the purchase of 60ha of degraded grassland followed by the restoration of its original micro-topography and secondly the broadening of the social and economic support for the conservation actions for the polders saline meadows. To this end, the possibilities for environment-friendly (soft) tourism were to be exploited to the full. Walking paths and bird observation huts were planned to be built in consultation with the tourist authorities. At the end of the project, all the actions had been successfully implemented. Again, at the end of the project more on-site conservation actions had taken place than originally foreseen. Not less than 95ha of land was bought and restored, instead of the 60ha that had been foreseen. More degraded grasslands than foreseen have been restored by re-opening ditches and ditch patterns and demolishing derelict buildings. A mobile exhibition was made to promote Natura 2000 through the Life restoration actions in the concerned site.

The attention for the polder-grasslands that was shown by the European Union through this Life nature project contributed to an impetus to the conservation policy of the Flemish regional authority for the concerned area. The Flemish government decided to increase the surface area of the proposed Site of Community importance 'Poldergrasslands' from 283ha to 545ha and to enlarge the surface area in the 'Uitkerkse Polder' being designated on the spatial zoning plans as 'nature site' from 245ha to 527ha. Immediate positive effects of this enlargement of the legally designated 'nature site' are an automatic prohibition to manure land and the right of first purchase in case land is offered for sale. Despite the opposition of some farmers to the conservation of the 'Uitkerkse Polder', Natuurpunt succeeded in concluding binding contracts with numerous local farmers to let their cattle graze the grasslands under strict conditions in this Acknowledged Nature Reserve.

Uitkerkse polder (Versweyveld, 2004)

In the continuation of the Life project 'Salt Meadows at the Flemish coast' the non-governmental organisation Natuurpunt conceived and applied a new Life nature project in favour of the maintenance and restoration of salt polder meadows in the 'Uitkerkse Polder'. The Life project 'Uitkerkse polder' started in April 2003 and is supposed to be completed in March 2008 (Fig. 5: project site). Its total budget is € 4,205,003.

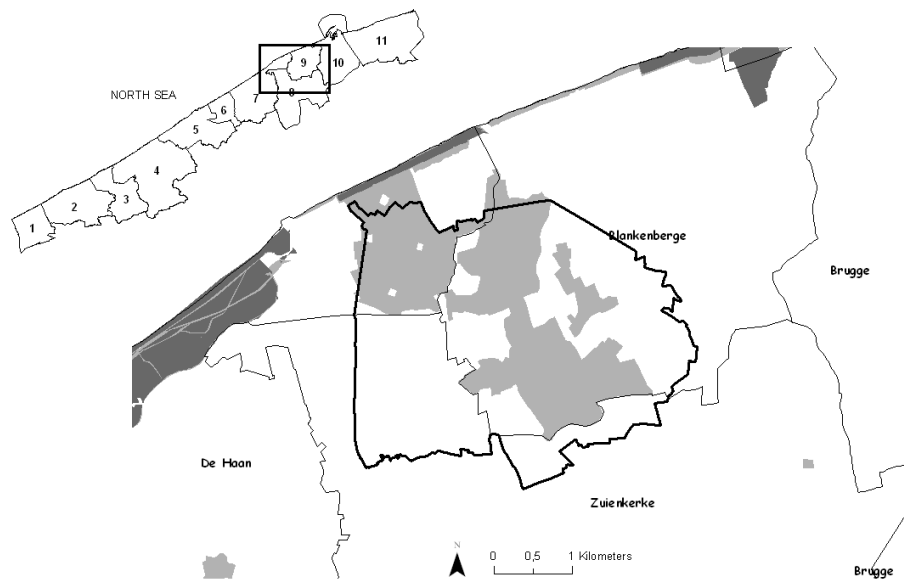


Fig. 5. Project site of the Life nature project 'Uitkerkse polder' (dark grey: managed dune area; grey: nature site in the frame of the spatial planning legislation).

The objectives of the project 'Uitkerkse polder' are:

- Large scale restoration of the unique salt meadows, concerning *Salicornia*-vegetations and *Glauco-Puccinellietalia* and their associated breeding species like Avocet, Common tern, Hen Harrier, Marsh Harrier, Spoonbill and Bluethroat.
- Restoring an inshore variety of 'Kreken' (large shallow inlets and bays), *Magnopotamion* habitats, grey dunes and *Calthion/Arrhetherion* meadows as well. All have almost or completely disappeared nowadays.
- Creating outstanding migrating, foraging and/or wintering conditions for species like Pinkfooted Goose, White-fronted Goose, Spoonbill, Short-eared Owl, Golden Plover, Ruff and Black-tailed Godwitt.
- Promoting and developing nature oriented tourism to ensure the social and economic embedment of Natura 2000.

The main actions are:

- the production of the necessary management schemes and a monitoring survey of the first results;
- the acquisition of approximately 120ha of land of which 30ha arable land in order to restore halophilous grasslands;
- large-scale restoration of salt meadows, extending of the existing 'core areas' and creation of new ones, with a total surface of app. 90ha;

- starting up recurring management (grazing management, hayfields) to obtain the optimal development and management of salt meadows and hay meadows and their associated species;
- the development and realisation of a broad program to develop the socio-economic potentials of the project area by means of the enlargement and re-styling of our visitor centre and the parking, the construction of new visitor facilities like a new bridge and footpath, an observation hide, new signposting and information panels, the drafting of a tourists walking brochure, the construction of a new permanent exposition at the visitor centre, the publication of articles, a layman's report and website for the general public;
- organisation of several activities in order to exchange experiences between other Life-projects and authorities, organisation of information meetings to inform local people.

Conclusions

The four Life nature – projects at the Flemish coast that until now have been or are being executed had effects that by far outreached their initial purposes. Of course they allowed large-scale nature restoration projects, such as the dismantling of the former naval basis of Lombardsijde and the partial deforestation of Hannecartbos, that without European support would have had much more difficulties to be realised. But as great a merit is the favourable influence these Life nature projects had on the dialogue between conservationists and other actors, not the least the water supply company IWVA and local authorities, and on the coastal conservation policy of the Flemish government, especially on its coastal dune purchase policy. In 1996 there were but three Flemish regional and two Acknowledged (private) Nature Reserves in the coastal dunes; in 2004 there were already 12 Flemish regional and four Acknowledged Nature Reserves here. This expansion of the number and surface area of nature reserves along the coast is for a good deal the result of the impetus given by the Life nature projects to the purchase and active management of coastal dunes and polders. The first Life nature project, ICCI, also led the fundaments for the further marine conservation policy of the Belgian federal government.

Life nature has been a blessing for nature conservation along the Flemish coast, as it has generated a dynamic that had never been seen before 1997.

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