NATURA2000

Information and communication on the designation and management of Natura2000 sites

Main Report 3: Towards Integrated Management

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Contents

1. Introduction

1.1 Objectives of the project

Following the selection of Special Protection Areas (SPAs) and Sites of Community Importance (SCIs) according to the Birds and the Habitats Directives, most European Member States are now in process of formally designating SPAs and SACs (Special Areas of Conservation). These protected areas collectively form the European Union's Natura2000 network. Member States are also selecting and implementing adequate management approaches and instruments to maintain and restore the favourable conservation status of protected species and habitat types and to prevent damage to the integrity of the sites. Both actions follow Articles 6.1 and 6.2 of the Habitats Directive.

To help the Member States, the European Commission wishes to improve the knowledge and exchange of information and good practice both on the designation process of SPAs and SACs and on the establishment of conservation measures and instruments for these areas. Furthermore, the Commission wants to stress the importance of the sites and their management by involving a wider group of stakeholders in the development of so-called integrated management, in accordance with Article 2 of the Habitats Directive.

The project 'PREPARATORY ACTIONS- Lot 2: Information and communication on the designation and management of sites' (tender ENV.B.2/SER/2007/0076) is intended to help the Commission to achieve these objectives.

1.2 The main tasks and the consortium

The main tasks of the project are to:

- collect and produce information on the procedures applied for designating SCIs and SPAs as sites at the national level in the different Member States;
- collect and produce information on the management procedures and to identify and analyze rates of success and good practices of integrated management;
- elaborate a new communication tool on potential and integrated socio-economic development in sites that allows networking and exchange of experience amongst stakeholders and managers and;
- elaborate a scheme for the award '*NATURA2000 PARTNER'* under the responsibility of the Member States and the award '*NATURA2000 PARTNER of THE YEAR*' of the Commission.

To fulfil the tasks as described above, a consortium of Alterra Wageningen UR (the Netherlands), Research Institute for Nature and Forest (INBO, Belgium) and Centre for Ecology and Hydrology (CEH, UK) was formed.

The results of the project dealing with the designation of the sites are described in Van Apeldoorn et al. (2009a) and are summarized in Van Apeldoorn et al. (2009b).
The results of the project dealing with the management of the sites are described in Kruk et al. (2009a) and are summarized in Kruk et al. (2009b).

The communication tool mentioned "Natura2000 Good Practice Exchange" can be found at: http://www.natura2000exchange.eu.

More information on the award scheme can be found in Sier et al. (2009).

In this report we will elaborate on the concept of integrated management as an option for managing the sites. In the first part the meaning of integrated management will be explored. In a second part we give some examples of management approaches that we think illustrate best the concept of integrated management and its potential to achieve the Natura2000 goals.

2 Towards more involvement in managing Natura2000 sites

The Article 2 of the Habitats Directive states explicitly that the management of the Natura2000 sites should be executed within the economic, social and cultural context of the sites taking into account the regional and local circumstances. This, and given the total area of the Natura2000 network in the Member States, compared to the area of proper nature reserves currently owned or rented by authorities or nature conservation NGOs, make it plausible that the traditional nature conservation practices will need some adaptation. Indeed, in many Member States nature conservation policy is strongly based on the traditional sectoral allocation and division of responsibilities when it comes to resource planning and management in the rural areas.

In many countries, sites and areas are thus protected under sectoral legislation. Some of these are managed by specific agencies (for instance National Park managers); others however –not seldom the majority- lack appropriate management. Finally, there are countries where acquisition of land by nature conservation institutions, subsequently management by own means, remains the most important conservation strategy. In Flanders (Belgium) for instance, this is illustrated by the evolution of the percentage of reserves in ownership by these nature conservation institutions that increased from 35% in the 1980s to 62% in 2004. However, acquisition budgets are limited and although the total area of protected sites increased enormously due to the initiation of Natura2000 in 2004, the budgets for acquisition in Flanders remained the same or have even been cut. The situation in southern Finland provides another example. Besides the meadows in the cultural landscapes of the rural areas, it are the forests which sustain most of the typical biodiversity. However, only 1.4% is state-owned where that is 13.4% in northern Finland. Since purchasing the land designated for conservation was the tradition up till now, this will not be affordable any more now that new European conservation commitments have been adopted. Consequently, the Finnish authorities had to change their policy and developed new conservation mechanisms to achieve the biodiversity goals, the so-called Southern Finland Forest Biodiversity Programme (METSO).

So, it can be concluded that the engagement to protect and manage the total area of sites of the Natura2000 network in the member states, often a tenfold of what is actually owned by conservation organisations and agencies, will in all probability force the old policies to be changed. Close collaboration with the private sector and with stakeholders is then no longer out of question.

All the alternative strategies applied start from a collaborative approach where private sectors and stakeholders work together with authorities, in order to reach agreed conservation goals. However, involving stakeholders should not be so new or extraordinary. Indeed, the principle of sustainable development states that ecological, cultural, social and economic dimensions should be respected with regard to any development, thus including nature conservation. So, implementing objectives of

biodiversity conservation on scientific evidence alone, disregards the social, political and economic factors that are always involved in any decision about conservation sites.

To attain the Natura2000 objectives in collaboration with several stakeholders, successful management is crucial. In this respect, a bottom-up approach seems to be fruitful and inevitable. Planning that is elaborated on a local basis would probably work far better than a strict top-down approach that follows a hierarchical principle and starts from objectives and measures set at the level of the central authority. Starting from the local level makes it possible to match the viewpoints of the authorities and those with private interests in the process, so that dialogue between the parties will be possible. Indeed, analysing the recent series of conflicts concerning the implementation of Natura2000, it is clear that nature conservation is more than simply applying a catalogue of ecological criteria and rules. The aim should be to include a socio-cultural dimension alongside the ecological and economic ones. Many examples and experiences showed that this is essential for a successful biodiversity policy (Malmsten 2003).

3 Definition

From the above, it can be concluded that, inevitably, the management of Natura2000 areas will include the participation of private sectors, land users and land owners and calls at best for integrated management plans. In the ideal situation, this would mean:

> *Integrated management of Natura2000 sites, a management approach in which interested parties, stakeholders and regulators reach general agreement on the best mix of conservation objectives and measures, the sustainable use of natural resources and the development strategies for these Natura2000 sites. Moreover, they agree upon the shared responsibility for the collaborative execution and the follow-up of the management plan. The coordination serves the management of the Natura2000 site as a whole, taking full account of its relationship with the wider surroundings.*

The extent of the participation, the share and the allocation of responsibilities and tasks, the partners involved, etc., will vary widely according the region the Special Area of Conservation (SAC) is part of, the characteristics of the SAC in question and the policy context.

As said, the above refers to the most comprehensive interpretation of integrated management for nature conservation. But also less inclusive management, schemes where involvement of stakeholders and interested parties is not a priority issue, can be called 'integrated'. Then integration concerns more the definition and the selection of a range of objectives that has to be achieved by the management, and the way a complex ecosystem is analyzed and the measures to manage it are selected. In such cases however, responsibility for the arrangement of the management remains with the nature conservation sector. Depending the location, the size and the composition of the SAC (for instance a small natural habitat that is part of a larger nature park), this approach can be justified. And also for particular sites and specific habitats and species that require precise management techniques that do not allow for an alternative or that are difficult to be combined with another land use or interest, management by a specialized conservation agency or NGO can well be the only option.

4 Motives for integrated management

The motives to turn to integrated management are various. Four major types can be distinguished:

- increasing the effectiveness of management of complex systems
- increasing nature conservation policy effectiveness
- ensuring the provision of ecosystem services
- dealing fairly with stakeholders' interests

Each of these reasons leads to a slightly different interpretation of the notion of integration in the management plans, and each of them, or a combination of motives, can be at stake in Natura2000 sites.

4.1 Increasing the effectiveness of the management of complex ecosystems.

Maintaining complex systems, as are many of the broad Natura2000 habitat types, such as the aquatic communities of rivers and lakes, needs an adapted management that pays attention to the different components of that system. This is reflected in the different ecological requirements with respect to ecosystem attributes that have to be met in order to reach a favourable conservation status for the habitats and species. Therefore, a wide range of disciplines and techniques has to be applied, in order to achieve the specific conservation goal. Concentrating the management efforts on the target species or habitat only, will not yield the desired results. On the contrary, to be successful, the complexity of the system demands a kind of ecosystem approach, with management efforts aimed at the different components of the system in order to reach the shared goal. Optimally, this management should then be based on an interdisciplinary assessment of the complex system to make clear what should be done, and when and where particular measures have to be taken (see e.g. box 1a,b).

Such a complex 'eco'system can be a particular larger area as well, with a mixture of features and functions, each linked to more of less specific values and interests. The wellbeing of inhabitants and visitors, the social fabric, the potential for current and future economic activities, the societal development of the area in general, depend on the harmonious and sustainable development of the area. Competing or one-sided demands call for improved planning and management methods when developing the region, methods that start from and build on the complexity and interdependency of the components. Coastal zones are a good example: the rapid and fundamental changes they currently undergo, make such an integrated policy more than necessary. So the recommendation of 2002 on Integrated Coastal Zone Management (ICZM) of the European Union, is more than welcome. Without doubt, the success of the management and maintenance of Natura2000 sites in coastal areas, will depend on their inclusion in the broader Integrated Coastal Zone Management (see e.g. STRING II, subproject ICZM 2002-2004).

Example of best practice Integrated Management

Life in UK Rivers

The River Eden Conservation Strategy

In the UK, Conservation Strategies are developed for some important rivers. These strategies are good examples of how an ecosystem approach can be translated into an *integrated management plan*. The strength of this approach is that it succeeds in identifying the main ecosystem characteristics that have to be controlled, together with the partners that have responsibility for that management.

Each river conservation strategy identifies the conservation measures necessary for its SAC, describes appropriate safeguards against deterioration or disturbance, and represents an aid to assessing any plan or project affecting the SAC. In essence, the strategies set out a management plan for securing conditions whereby a SAC site can contribute to achieving favourable conservation status for its designated habitats and species.

As said, the target species and habitats are studied and managed as being part of a complex ecosystem. Thus the crucial questions that the strategies and preceding assessments have to treat, are:

- what sort of water quality does the species need to survive and reproduce successfully?
- are there substrates or other physical conditions that favour the species or, on the contrary, cause them to decline?
- what is the extent of interdependence with other species for food or breeding success?

With respect to the ecological requirements of the species, the results of these analyses are then elaborated for the following series of attributes:

- flow levels
- water quality
- substrate quality
- channel morphology
- riparian vegetation
- access
- interspecies competition
- human exploitation

For each of these attributes, the strategy identifies a series of management aims, highlights any existing initiatives that are already working towards achieving these aims, and, where necessary, proposes a series of further actions. These actions are then prioritised according to their importance for delivering the favourable conditions.

The table illustrates how the different management aims are represented, how they relate to the existing situation and initiatives, what actions could be formulated and who should be involved.

*(**further reading**: Locke & Robinson, 2003)*

Box 1a

Water quality management: Agriculture and development

Vision	Management Aims	Current Intensity and Location	Existing Initiatives [1]	Comments / Current Monitoring	Proposed Actions	Organisational Involvement: Lead	Organisational Involvement: Other Partners	Priority
Agricultural sources								
Watercourse free from contamination from sheep dips (organophosphate and synthetic pyrethroid) that are toxic to aquatic life.	Ensure no sheep dip enters the watercourse. Potential sources of dip include: Disposal of spent dip; wet sheep fording the watercourse; or poor management of ageing dipping facilities.	Extensively used, especially across the upper catchment tributary areas. Has caused problems when misused, e.g. has impacted on:- • 20 km of River Irthing 1996. • 5 km Swindale Beck 1997. • 7 km River Lowther 1998. • Gill Beck 1999.	NFU guidance leaflet distributed to all members. EA's* Best Practice farm guidelines distributed during farm visits. EA Groundwater Regulations include the disposal of spent dip, with database of records maintained and reviewed every 4 years. Problems with dipping can be reported via the EA's free-phone number for pollution reporting. DEFRA Code of Good Practice	EA routine chemical and biological water quality monitoring programme.	**WQ1** Farm visits / grant scheme for promotion of farm infrastructure improvements.	ERT	FWAG, CFL, EA Env. Mgmt. NFU, RDS	Top
					WQ2 Investigate advantages and risks of a trial subsidised sheep-dip neutraliser scheme, and implement if suitable.	EA national Env.Mgt		Medium On-going
					WQ3 Training in pollution prevention & control for farm advisors.	EA Env.Mgt	FWAG, CFL, ERT, RDS	Medium
Watercourse free from contamination from other agrochemicals: herbicides and pesticides.	Minimise the risk of accidents, e.g. due to poor handling or storage; and ensure the impact from any incidents is minimal. Ensure the correct disposal of, and minimal impact from, spent chemicals.	Such agrochemicals have limited use across the catchment.	EA's free-phone number for pollution reporting. Farm visits highlight poor practice and promote BASIS type stores. EA Groundwater Regulations include the disposal of spent agro-chemicals.	EA routine chemical and biological water quality monitoring programme.	*Limited risk –watching brief by EA.*			
Watercourse free from contamination from diffuse pollution from NPK fertilizers	Correct timing and rates of application limits run-off into watercourse.	Routinely used on intensive pasture.	EA, CFL currently working on nutrient budgets with 12 farms on Crosby Fell. National FWAG nutrient budget project DEFRA / EN / EA study of diffuse pollution and geology due April 2002. CSS /ESA agreements	EA routine chemical and biological water quality monitoring programme.	**WQ4** Nutrient budgeting to reduce fertilizer application in targeted sub-catchments. *Watching brief by EA.*	FWAG	ERT, CFL, EA, RDS, NFU	High

Box 1b

The conservation strategy for the River Eden, produced as part of Life in UK Rivers, is a good example of this integrated approach. Life in UK Rivers is a project that developed methods for conserving the wildlife and habitats of rivers within the Natura 2000 network. The strategies, also elaborated for other rivers in the UK identified as SACs, demonstrate how the statutory conservation and environment agencies have developed conservation objectives, and drawn up action plans with their local partners for achieving the favourable conservation status of the listed habitats and species. English Nature reports that describe the approach, for instance Locke & Robinson (2003), demonstrate how such a strategy can be developed. Detailed information can be found on the website of the project: http://www.english-nature.org.uk/LIFEinUKRivers/

4.2 Increasing nature conservation policy effectiveness

Biodiversity policy has two main reasons to move towards integrated management.

4.2.1 Capacity problems and the consequent contracting out to private partners

As said before, the amount of Natura2000 sites that has to be managed properly, often exceeds the capacity of governmental agencies and traditional conservation organisations. Purchasing or redeeming lands for conservation areas would require unrealistic amounts of funds, let alone its necessary management. Then, efficiency and effectiveness are decreasing and fulfilling the commitments is no longer ensured. Therefore, collaboration with private partners, often on a contractual basis or via management agreements, is established. Indeed, former experiences may have shown that the participation of the private sector is a prerequisite for the conservation measures to be successful. In that case, instruments and procedures are developed by the authorities to facilitate the involvement of targeted stakeholders. The conservation objectives and the measures to be applied are to a great extent defined by the authorities. These, plus the ecological conditions to be maintained or improved, are decisive regarding the partners in question. Well-known examples are the agri-environmental management schemes that involve farmers and that are established in many member states. The kind of compensation payments that go along with these agreements are also used to establish proper management in Natura2000 sites.

The eastern part of the island Nyord, Denmark, is a famous example. It is a very low lying marshland dominated by brackish grassland, which is inundated with irregular intervals, particularly during winter due to wind-events. This SAC is of the upmost importance for nesting birds and especially migrating birds. However, the area is equally important for local farmers, as it is mainly used as extensive grassland, either for livestock directly feeding on the areas, or for hay cutting. Since 1971 the Danish Ornithological Society gradually acquired more and more land and declared it a bird sanctuary (approx. 190ha). Farmers moved away. So, the challenge for the new management is to preserve the extensive grazing by cattle, while not compromising the huge number of nesting birds that are not tolerant to grazing. The solution is the introduction of a zoning grazing system where the cattle are not allowed in areas with

nests before the young birds are on the wings. Because of the size of the area and the vulnerability of some nesting sites, not all grassland will be grazed at the end of the season. Then, some 100ha are mown and the hay is used as winter fodder for the cattle. Today, with the compensation payments and the production of meat, several farmers can earn a living in this Natura2000 site. Other examples of integrated management plans where this motive plays a role, are given in Chapter 11 (for instance 'Meadows in the Massif des Bauges' and 'Marshland of De Weerribben and De Wieden').

4.2.2 Avoiding societal problems

Serious conflicts regarding designation and management of conservation areas often arise because stakeholders have the impression that local interests are totally ignored. Traditional and existing land use are not taken into account when environmental authorities define the objectives that eventually pose restrictions on private land (use) and decide upon the obligatory management measures that have to be executed. In a conflict in which neglected, deep-seated interests and values are at stake, reaching a solution only comes from voluntary negotiation and participation. Appealing to legislation and strict procedures is then not an alternative to reach a lasting commitment and participation. And thus, more and more collaboration with stakeholders and interested parties is pursued and local interests are respected in order to avoid problems that hinder or totally block the realization of the conservation plans. This was for instance the lesson learned in Flanders (Belgium). Previous attempts to realize an ecological network of protected sites, including Natura2000 sites, almost failed because of a lack of active participation of stakeholders. Therefore, today these stakeholders are actively involved in the definition of the favourable conservation status of the sites and the following preparation of the management plans. The agreement between local hunters and the Danish Ornithological Society in the above mentioned island of Nyord, is another example. For decades there was a big debate about hunting that frustrated the proper management of the site. But in 2007 an historic compromise was reached. Based on scientific research it was agreed upon that shooting is not allowed inside the reserve, but that it is permitted outside. Indeed, it turned out that the quality of the reserve as a safe site was so high and reproduction so successful, that a 'surplus' of birds was produced. Hunting then, during restricted periods, didn't affect the populations (Madsen 1998a, 1998b).

Nyord Habitat Area (part of DK006X233)

4.3 Recognizing and optimizing ecosystem services

Ecosystems have multiple functions for society. And so do Natura2000 sites. Usually their importance reaches far beyond their function as a sanctuary for biodiversity. Since the Millennium Ecosystem Assessment (2005) clearly showed that healthy ecosystems are essential to achieve sustainable economics and living conditions, awareness has increased and efforts are spend to identify and quantify the services of different ecosystem types. Hence, recognizing the services provided by SACs, will add considerably to clarify the role they have for society and consequently will justify even more their maintenance and proper management. So, their importance is not only linked to biodiversity but equally to the so called provisioning services, the regulating services, the cultural services and the supporting services. Objectives for SACs should then be defined in equal terms.

There are projects that demonstrate the strength of this rather new approach. The integrated management of reed beds along the coast of Estonia and Southern Finland (see Chapter 11) is convincing in this respect.

Another nice example concerns the tidal marshes along the River Scheldt (Belgium). Their designation and proposed management are the result of a detailed study of the services these ecosystems provide for society. The importance of the mud flats as a site for Natura2000 target habitats and species was undisputable. Thus they were included in the list of proposed sites. The proper designation with a precise circumscription, position and total area in the Scheldt estuary however, was not based on these biodiversity criteria alone, but also on the ecological requirements that ensure the provision of other ecosystem functions (see box 2). Water purification and high tide flood control are the most important. An important effect of applying this ecosystem services approach to conservation planning was that broader support to protect the marshes was gained among partners and stakeholders that traditionally are not involved in biodiversity conservation: port authorities and agencies responsible for water quality control and for the navigability of the river.

Example of best practice Integrated Management

Recognizing and optimizing ecosystem services
Tidal marshes along the River Scheldt

The tidal marshes along the river Scheldt provide a series of ecosystem services that were approved after detailed studies of the river ecosystem. And thus their importance for society goes far beyond the role they have as a habitat for rare and threatened species. Results of the studies showed for example that, with each tide, considerable exchanges of nutrients, minerals and biomass between the marshes and the river are taking place. Marshes import nitrogen and phosphorous in inorganic form, which stimulates the production and vegetation growth of the marshes. During low tide the marshes export silicon and high energy organic carbon. This in turn increases the production in the river, especially of the diatoms that depend on silicon and are an important link in the water purification chain.
Modelling made clear that an extra 1500ha of tidal marsh in the River Scheldt estuary is needed to remove the silicon limitation for diatoms and 500ha extra are needed for stabilizing the estuarine food chain and water quality improvement.
Traditionally, such an increase of 'just mud' would undoubtedly have raised a lot of objections. However, the acknowledgement of the natural water purification that could be optimized in this way, and the fact that the marshes also play a vital providing role in other ecosystem services such as flood control, made the enlargement acceptable for most of the key players. So, raised sites (until recently productive agricultural polder areas) have been restored and can be flooded again, the realignment of the river has been revised and new flood control areas with a controlled reduced tide have been arranged.

Based on a presentation by *Patrick Meire & Eric De Deckere, University of Antwerp, Dept. of Biology, Ecosystem management research group*,
and on *Van den Bergh et al.* (2005); *Struyf et al.* (2005).

See also *Chapter 11*, 'Tidal mudflats and marshes in a flood control area, River Scheldt'

Box 2

4.4 Dealing fairly with stakeholders' interests

In many cases, SACs are privately owned and are of direct interest for the owner or user, other than by their function as a sanctuary for rare habitats and species alone. But also SACs on public land offer a lot of opportunities for other functions and activities that are relevant for society. On a more general level, the potential of ecosystem services made this clear. For defined sites, the direct profits made on yields of traditional land use, are obvious. With integrated management, these interests can be taken into account.

Here, integration means that existing land use, the interests of users and landowners, are included in the objectives of the SAC, as far as they are compatible with the set conservation goals. The latter, however, can be re-interpreted, in an attempt to define alternative conservation objectives and measures that also make it possible to achieve the favourable conservation status, but at the same time leave room for the realization of the other societal and private interests. Often, the involvement concerns a voluntary cooperation of the stakeholders, resulting from a mutual trust and understanding and the conviction of the necessity to engage and to share responsibilities in order to achieve objectives of general interest. Besides, stakeholders understand that also profit can be gained from this collaboration, as for instance, retention or increase of commercial activities. This type of stakeholder involvement and collaboration does not start from a legal obligation. Authorities however can give incentives and support to promote voluntary collaboration. A lot of the cooperation between stakeholders in the sphere of recreation and tourism in national parks and in and around Natura2000 areas, are examples of this voluntary involvement.

A good example of this type of integration is the way recreational activities and the harvest of reed for commercial purposes are incorporated in the management plan for the Natura2000 areas 'De Weerribben' and 'De Wieden' in The Netherlands (see box 3). Together, these two areas are the most important marshlands of north-west Europe (12000ha) with a unique fauna and flora. All the different stages in the natural succession from open water to peat-bog are present. Water dominates in this area, and all communities depend on it in one way or another. So it is of the upmost importance that the water regime is not negatively influenced by pollution or eutrofication or by a lowering of the ground water level. The area, of which De Weeribben is a National Park and De Wieden will be designated as National Park shortly, is famous for its recreational potential too. People can go there for canoeing, cycling and hiking. Every year approximately 1.000.000 visitors come to the area; tens of thousands of them make trips by boat. During cold winters with enough ice, 60.000 to 70.000 skaters participate in skating marathons. Several local businesses let out bicycles and boats. And hikers and cyclers together spend about 900.000€ yearly on food and drink. here are 103 camping sites with a total of more than 6000 places. So, tourism is a major source of income for the inhabitants of the area. Reed-cutting for roofing material is another economically valuable activity. Some 300 leaseholders harvest around 2000ha of reed beds during the winter season. Leaseholders also carry out, on a contractual basis, some of the nature management during the summer. However, the sector of reed-cutters is confronted with a decrease of income

generated by management agreements and faces a lowering of the price for reed because of the import of reed from central and eastern Europe.

Example of best practice Integrated Management

Integrating stakeholders economic interests
De Weerribben and De Wieden

To combine its function as a nature reserve of international importance with the role it has as an outstanding area for nature-based recreation, the management plan of the Natura2000 sites 'De Weerribben' and 'De Wieden', pays a lot of attention to recreation management. Routes for canoeing, hiking and cycling are clearly marked. A zoning plan ensures that peace and quiet is maintained in the area, and so certain areas may not be entered, while others are closed during the breeding season. So, a 1000ha no-entry zone will be created. The use of motorboats is subject to specific rules; rowing boats, canoes are battery operated boats are allowed.

In the new management plan (2009-2015) the different recreational activities are specified, together with their potential impact on biodiversity and the measures that have to be taken to avoid a negative impact. Finally, the need for restrictions posed on certain activities is determined. This overview forms the basis for a discussion with the sector and the establishment of an agreed collaboration plan.

The regulations regarding commercial reed-cutting will become stricter in the new management plan. Indeed, traditional reed management did not always respect the ecological requirements of the target habitats and species. Problems occur regarding hydrology (e.g. unnatural lowering of the water table or flooding of parcels), disturbance during the breeding season and inappropriate frequency of cutting. New regulations define the code of good practice for reed-cutting and give details regarding frequencies and management of the water table. It is however recognized that the leaseholders can not change their timing and practice immediately. Therefore the nature conservation agency and all stakeholders have agreed that by 2010 the new management scheme should be put into practice.

Further reading:
Provincie Overijssel 2008. *Werkdocument Natura 2000 De Wieden & De Weerribben, versie 13 augustus 2008*
http://www.provincie.overijssel.nl/natura2000
http://www.npdeweerribben.nl/

Box 3

As a result of the rather bad economic prospect, the sector is not very attractive anymore and successors who want to invest in the business, are becoming rare.

In Chapter 11 more examples are given, for instance 'Reed beds and coastal meadows in South-Finland and Estonia', 'Steppe landscape in El Planerón'.

4.5 Integration in the second instance

Often, integrated management and stakeholder involvement start on a voluntary basis. However, active stakeholder involvement can also be the result of legal obligations, although this involvement is seldom imposed directly. Regularly, the agencies, administrations, NGOs and economic sectors that are active in a particular common area do not automatically work together to achieve the set conservation goals for that site. On the contrary, economic and land use activities, supported by their agencies, may hinder or oppose the successful development and maintenance of a Natura2000 site. The conflicts that results from that may bring a claim for compensation, in accordance with the rules of the Birds and Habitats Directives.

From resistance to collaboration
Nature in the SAC of the Port of Antwerp

Initially, the relation between the port authorities and the nature conservation agency and NGOs was rather problematic. A large part of the port is designated as SPA under the Bird Directive. And because of the strict regulations of this Directive, biodiversity was perceived as an obstacle for economic expansion. Indeed, the construction of new docks was initially forbidden. Compensation was compulsory, as foreseen in the Bird Directive, and thus the port authorities, together with competent administrations, defined the places where new nature development projects could start. Only after these sites showed sufficient and promising developments towards the target habitats, the constructions of the docks could start. This is in line with the Natura2000 regulations. The foregoing collaboration resulted in a deepening of the cooperation and the agreement on a comprehensive structure and management plan for nature in the whole harbour territory. In that plan it is stated that 5% of the port's area will be arranged and managed as stepping stones and corridors between SACs. Moreover, it is agreed that an adaptive nature management will be executed on industrial plants, infrastructure, etc. Note that the location of the port, along the tidal River Scheldt, is the natural place for highly dynamic ecosystems and for species that are adapted on this conditions. So, the presence of only temporary habitats that may shift in time and space is no hindrance for the populations of these species.

Box 4

Establishing this compensation, may then need the 'unnatural' collaboration of stakeholders and private sectors with the authorities responsible for nature conservation. Specific procedures and ordinances are often developed by these competent authorities to facilitate this collaboration.

Examples of frictions between Natura2000 objectives and economic developments in different port areas throughout Europe, and the way they were solved, show the potentials for integrated management in these rather un-natural settings. A good example is the way Natura2000 target habitats and species are dealt with in the spatial and economic development plans for the port of Antwerp (Belgium). Being obliged to compensate for the loss of a part of a SPA, the port authority, the city of Antwerp, the nature conservation agency and Natuurpunt, the conservation NGO, agreed on a strategic development plan for the port of Antwerp with fixed and improved objectives for biodiversity (see box 4).

5 Levels of socio-economic stakeholder involvement and responsibility

Because of the different motives to set up integrated management plans, the content of this plans varies accordingly. An important aspect is the level of involvement of stakeholders of the different socio-economic sectors. On the one hand, integrated management can mean that the private sector, landowners and users only participate in the execution of set management plans, while on the other hand they can be actively involved in the definition of objectives and targets too. So involvement can be less or more far-reaching and fundamental. Are stakeholders confronted with measures they can only take as such, or can stakeholders draw their own plans?

- The least fundamental in stakeholder participation is the pure execution of measures by order of nature conservation authorities and organisations. Stakeholders do what others have decided. In reverse, they receive incentives in exchange for their contribution.
- A next level of participation is when stakeholders are engaged because of their professional skills and insights. Because of their good knowledge of a site or of the environmental and ecological conditions, they can be best placed to decide about the measures to be taken to achieve the conservation objectives. In this case, the selection of the management techniques and the execution of the management plans are done according to the insight and experience of the socio-economic stakeholder. However, the nature conservation targets are set by the nature conservation authorities.
- Finally, engagement and involvement can be 'complete' when also the biodiversity objectives are discussed and agreed upon in joint collaboration by all key players in an area. Next the appropriate management to achieve the defined goals is determined by everybody involved and agreement is sought about the responsibilities and the division of the tasks for the execution of the plans.

The formal involvement of stakeholders in the preparation of an integrated management plan may also differ regarding the phases of the procedure. Involvement that starts in an early stage often means that the participation is greater (including mutual definition of the objectives; greater chance of satisfying the interests of all parties more chances to achieve optimal attuning of interests) than an involvement starting in later stages of the development of the plan. In the latter case, collaboration will likely concern the execution of set management measures or the avoidance of activities with a potential negative impact on the ecosystems.

The procedures to elaborate and establish an integrated management plan can be defined in a legal document. In other cases, the procedure is agreed upon on an ad hoc basis, tailored to the specific circumstances, the stakeholders, the land use and activities, the type of the SAC. In general, coordinators and managers who want to

establish effective and fully integrated management plans, have to spend a lot of effort in finding and maintaining the balance between the actual process of active participatory planning and the sustained execution of the management itself. There is often so much emphasis on reaching the agreement, that the implementation phase receives too little attention, a fact that can erase all of the achievements of the collaborative process. Preferably, the implementation schedule, the resource commitments by the individual stakeholders within the specified timeframe, and optionally contingent clauses, need to be refined and spelled out in a written document. Finally, agreements on all issues should be considered as binding by the parties.

6 Character of the agreement

Agreements can include different kinds of incentives for the execution or design of management measures. The height of incentives is important, because it has an impact on the total budget and hence on the financial feasibility of the management of all Natura2000 areas in a country.

- The most common way to provide incentives is by paying for Natura2000 contribution services. A stakeholder receives a certain remuneration for his activity, if he puts some extra effort into appropriate management or if he adapts his traditional measures so that he meets conservation requirements, but at the same time loses income because of decreased yields. Then compensation payments are justifiable. For example in Wallonia (Belgium) a forester gets 40€ per hectare if he executes some specific tasks.
- Far less common are the non-physical credits. By adapting or abandoning activities that formerly deteriorated the conservation status, or by developing activities that contribute to the conservation status of a Natura2000 area, the stakeholder gets a 'Natura2000-friendly' status or image. This may make this stakeholder more exclusive and therefore interesting for his clients. Higher revenues may be gained and by that the costs of the measures taken can be recovered or compensated. For example in De Weerribben (NL) a campground owner considers Natura2000 as a opportunity and therefore he:
    - invested in an environmentally-friendly water treatment system,
    - developed a nature education walk in cooperation with the State Forest Service,
    - set up a camp ground lay-out that supports biodiversity,
    - is a partner of the nature activities centre with the State Forest Service,
    - informs his guests about Natura2000
    - stimulates his guests to use electric boats instead of motorboats

These initiatives give his camping site a green image, which attracts clients, returning the investment and stimulating his colleagues to copy his approach.

- Finally, there are the natural remunerations. The authority provides a licence and does not have to pay anything, because the stakeholder gets its profit from the activities he exploits. Stakeholders get a permission for specific activities under certain conditions that contribute to their profit and simultaneously to the achievement of Natura2000 targets. So, the daiiary-farmers and the bee-keepers in the Massif des Bauges (France) jointly use and manage the species rich Natura2000 meadows. Doing so, they can produce a high quality regional cheese brand (Tome des Bauges) and a specific honey brand (Miel du Parc naturel regional du massif des Bauges).

7 Factors that are important for integrative, collaborative ecosystem management

In the foregoing, different types of integrated management and different motives to join such integrative processes, were analyzed. This revealed a lot of conditions that has to be met in order to achieve truly integrated projects. Here we want to summarize these crucial factors. Therefore we make use of the comments we gave before and of the conclusions that can be found in the relevant literature on this subject. Indeed, there is already some experience with integrated management of nature areas. From these management plans it can be learned which factors determine the final success of a project. In a review article by Keough & Blahna (2006) the following factors are listed as being decisive:

1. *Agreement on integrated and balanced goals*. The challenge is to meet social, economic, and ecological goals simultaneously. When this is achieved, the project and management become (in theory) socially acceptable, economically feasible and ecologically sustainable. This condition makes it important to analyse to what extent set nature conservation or biodiversity objectives can be interpreted and slightly modified, in order to give room for other goals to be met. Here, a less flexible top-down approach, with rather strict biodiversity goals defined on a higher policy level, will pose more restrictions than a bottom-up approach where mutual objective achievement can be the starting point.
2. *Assurance of inclusive public involvement*. The challenge is to include all potential stakeholders in the process, regardless of their relative size or influence. This asks for appropriate and clear decision-making rules and procedures that allow organisations and individual stakeholders to participate in the process.
3. *Facilitating real stakeholder influence.* In this respect, the central question is if stakeholder input is actually used and if it has a real impact on final decisions. A positive side effect will be that stakeholders are empowered through meaningful participation. Besides on the flexibility of the original goals, much will depend in this respect on the phase in which stakeholders are involved in the project. In general, 'the earlier the better' holds here.
4. *Importance of a consensus group approach.* Here a balance among a broad range of values is sought after, and as such this condition relates to the first. However, it also concerns the development of trust amongst the partners in a project and the certainty that all opinions count and can be discussed. All this adds to the ease with which commitments for final decisions and tasks will be achieved.
5. *Achievement of collaborative stewardship.* The objective of the participative planning process should be that stakeholders develop a sense of ownership for and become personally invested in the plan or decision. This is by far one of the most important conditions to assure a lasting dedication to the project.

6. *Arrangement of appropriate monitoring and adaptive management.* This relates to the fact that monitoring holds stakeholders accountable for evaluating management effectiveness and provides assurance that management efforts are focusing on agreed-upon goals. So, in an effective and successful integrated management project, the responsibility of stakeholders goes beyond the definition of goals and the selection and execution of management measures. Through engaging in the monitoring, these stakeholders can also assess the success of their own efforts and hence may adapt practices if necessary.
7. *The availability of multidisciplinary data and information.* If these data are not available for all participants, identifying and balancing a broad range of values and achieving a transparent planning process will be difficult. This condition requires that efforts are spent to present data and information on all the aspects of the project in a clear and comprehensible way. Indeed, specialists and laymen have to work together.
8. *Provision of economic incentives.* Equity considerations are critical for developing long-term support for management plans. As shown before and in the examples of the next chapters, these incentives can be of quite different types. However, sustained efforts and contributions of participants will seldom be possible without economic incentives. So, in the preparation of an integrated management project, attention should be paid to develop a structural basis for these enduring incentives. Ideally, the project should then have the potential to evolve towards a stage of self-support.

8 Effectiveness of nature conservation measures in integrated management plans

Apart from the arguments in chapter 7 that are important with regard to the optimal planning process, the final success of the conservation measures in integrated management plans depend also on a range of *ecological factors*.

1. **Restoring, improving or maintaining the suitable environmental conditions** is a first prerequisite. The proper management of the SAC will surely contribute to this. However, much will depend on the quality of the environment outside the protected area. Especially in smaller SACs, the site's abiotic conditions are affected by external factors: acidifying or eutrophicating depositions, inflow of polluted or nutrient-loaded water, flooding or desiccation because of an altered hydrological regime outside the protected area, disturbance by land use practices, etc. are examples. So, a general environmental management of the wider surroundings, that is adapted and targeted, and aims to achieve suitable conditions for the most vulnerable habitats and species, will in many cases be as important as the proper management of the SAC itself. Integration is then also a matter of collaboration with the authorities and institutions in charge of the general environmental management and with those who decide upon land use outside the SAC. The objective is to avoid negative impacts from outside and minimize the edge effects. Most of the projects presented in Chapter 11 focus on this prerequisite; for instance 'Marine sites of the Thanet coast' and 'West Polesie Bioshere Reserve'.

2. **Applying the right management techniques and establishing codes of good practice** are a second condition. Besides the choice of the appropriate measures, the precise execution of these measures, their application at the right time and with the optimal frequency and proper intensity, will ensure that ecological processes are controlled as foreseen. Then habitat qualities are met, enabling the maintenance of the characteristic biodiversity of the SAC in general and the target species and habitats in particular. When it is impossible to describe all techniques in detail, an option is to establish codes of good practice. Then the final conditions to be met are described; rather than the specific measures themselves. Again, this allows the users to assess their own practice and to adapt if necessary. The 'Thanet Coastal Codes', mentioned in Chapter 11, are an illustration of this approach.

3. **Recognizing the spatial context of the SAC** is a third aspect to which attention should be paid. Indeed, even when environmental conditions are optimal and the species and habitat management excellent, the preservation of target species and habitats is not automatically ensured. All species require certain minimal areas to sustain a viable population. Depending on the species, this can be quite large. So often these minimal areas are not met, and the species depends on a network of habitats situated within reach, within the dispersal range of the species. In such a case, the success of the management depends on the site's position in such an ecological network. The Natura2000 policy takes account of this prerequisite in general. Article 10 of the Habitats Directive requires the member states, where they

consider it necessary, to improve habitat conditions outside the SACs and to develop ecological corridors in order to enable the species to disperse and move through the surrounding countryside. In the management of 'De Weerribben and De Wieden' this landscape ecological aspect is actively taken into account, as explained in Chapter 11.

Integrated management plans have to deal with these spatial considerations too. On the one hand, this can be done by including the objective to enlarge the SACs in an attempt to reach the minimal area of a habitat, suitable to sustain viable populations. On the other hand, the management plan may include the objective to contribute to the establishment of a larger functional ecological network. The sentence in the definition of integrated management '*The coordination serves the management of the Natura2000 site as a whole, taking full account of its relationship with the wider surroundings*', refers to this objective. So, the integration of objectives and interests of the SAC itself is extended to the wider area which it is part of. Especially for smaller areas, where integrating different goals or interests is not automatically purposeful, attaining the set objectives for the SAC may depend on its proper integration in that surrounding countryside.

In this respect, proper integrated management of a SAC and other protected areas, does not differ much from management of these sites following the **ecosystem approach**. Indeed, the SAC should be seen as being part of a larger entity, with which it is interrelated. As such, the site and its biotic communities cannot be isolated from the surrounding natural and cultural landscape. It are these functional interrelations between the site and the wider countryside that would be decisive for the selection of the different objectives and functions that can be combined and achieved through the integrated management of the site. That was also one of the conclusions of the METSO-programme in Southern Finland, which included the very successful strategy of promoting the voluntary implementation by private forest owners of management measures in favour of biodiversity preservation (see box 5).

" The ecosystem approach should be applied to harmonise the different uses of forests at the regional level, considering factors including the need to safeguard biodiversity, requirements of river basin planning landscape management, timber production, the use of wood energy, recreational activities, hunting, game management, the picking of wild berries and mushrooms, nature tourism, and the promotion of cultural values and social sustainability."
(Ministry of Agriculture and Forestry, Ministry of the Environment, 2006. Final report on the monitoring and evaluation of the METSO Forest Biodiversity Programme for Southern Finland. Summary and Conclusions of the Evaluation Report. 3 November 2006)

Box 5

The *ecosystem approach* is defined as "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way" (Convention on Biodiversity, 1992).

Twelve guiding principles summarize the rationale of the concept.

1. The objectives of management of land, water and living resources are a societal choice.
2. Management should be decentralized to the lowest appropriate level.
3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.
4. There is a need to understand and manage the ecosystem in an economic context.
5. Conservation of ecosystem structure and function to provide ecosystem services should be a priority.
6. Ecosystems must be managed within the limits of their functioning.
7. The approach should be taken at the appropriate spatial and temporal scales.
8. Processes and objectives for ecosystem management should be set for the long term.
9. Management must recognize that change is inevitable.
10. Ecosystem managers should seek the appropriate balance between integration, conservation and use of biodiversity.
11. Decision-making should consider all forms of relevant information (scientific, indigenous and local).
12. Involve all relevant sectors of society and scientific disciplines.

9 Integrated management and supporting programmes that facilitate the coordinated management

Integrated management can be set up for individual sites according to a specific plan for that area. Undoubtedly, the fact that these management plans are perfectly suited for the SAC, that all interests are recognized and that the key players are involved, contribute to the strength of these plans and account for the success of the management. However, even more can be attained when such plans are accompanied by programmes that facilitate the coordinated management of a series of similar sites. There are two important arguments for that.

1. A programme may concern *a geographical region*. Integration is then striven for at the scale of the individual sites but also at the scale of the complex landscape it is part of, including other SACs. The advantage of integration at the landscape level is that the landscape ecological interrelations and mutual functions can be taken fully into account. The site's management measures can be chosen starting from the requirements and objectives defined in the broader perspective of the complex landscape. On the other hand, this landscape ecological approach may also reveal where in the region additional measures are necessary for the benefit of the SAC. Indeed, the geographical context, the presence, the type and distribution of other habitats, and the land use pattern may all define where particular actions are needed to complete an ecological network, to facilitate dispersion, to attain suitable environmental conditions, etc.

2. A programme may equally concern the *coordination of the management of a series of similar sites*. Then the programme will deal with the analysis of the common management needs, the determination of common interests, the development of appropriate management techniques and schemes and the promotion of the application of the best practices. The advantage of such programmes is that the efficiency of individual management actions increases considerably, such that it is worth developing specific measures and instruments and enabling managers and stakeholders to learn from each other.

A good example of the latter is the METSO-programme of Southern Finland that was set up to promote individual involvement in biodiversity conservation of private forest owners and to facilitate this involvement by means of a number of targeted instruments. One of the instruments was the formation of Collaborative Networks (Kaljonen et al., 2007). These networks were chosen through a competitive selection process. The network organisations include forest and environmental authorities, educational organisations, forest owners' organisations and nature conservation NGOs. The main objective in the scope of the METSO-programme, was forest biodiversity conservation at a local level, based on voluntary, landowner-driven principles, where authorities, NGOs and other collaborating actors could participate. These networks then make conservation contracts. The most popular are: saving key biotopes and increasing the volume of decaying trees, and leaving some trees alive in felled areas, to become, in time, dead-wood. The assessment of the results of the first

METSO-programme pilot phase (2002-2007) was positive on all aspects and formulated recommendations to further improve the effectiveness of this coordination programme, evolving further towards truly integrated or ecosystem approach-based management (see box 6).

Recommendations for a new programme of action and funding (METSO programme)

- *National and regional conservation objectives should be defined*
- *An extensive ecologically defined conservation network should be established*
- *The need to safeguard each area's characteristic biotopes and species should be prioritised*
- *The geographical scope of the voluntary conservation measures tested in the METSO Programme should be extended to cover the whole of Finland*
- *Habitats and threatened biotopes that fulfil conservation biological criteria should be surveyed, preserved and in some cases managed, and they should become more interlinked*
- *Voluntary measures should be exploited to conserve and extend valuable habitats and sites with high species diversity*
- *Co-operation networks should be set up to promote biodiversity at regional level*
- *The ecosystem approach should be applied to harmonise the different uses of forests at the regional level, considering factors including the need to safeguard biodiversity, requirements of river basin planning landscape management, timber production, the use of wood energy, recreational activities, hunting, game management, the picking of wild berries and mushrooms, nature tourism, and the promotion of cultural values and social sustainability*
- *Genetic biodiversity should also be considered when conservation networks are built up*

(Ministry of Agriculture and Forestry, Ministry of the Environment, 2006. Final report on the monitoring and evaluation of the METSO Forest Biodiversity Programme for Southern Finland. Summary and Conclusions of the Evaluation Report. 3 November 2006)

Box 6

10 A checklist for real integrated management plans

Following the definition and the remarks given in chapter 3, the criteria for assessing the integrative nature of management plans can be selected. They concern the following aspects:

- the type and number of parties involved
- the number and type of objectives pursued
- the type of involvement of the stakeholders
- the character of the planning process

Hereafter these four aspects are briefly analysed. From them the criteria to assess the integrative nature of management projects can be derived. Because 'integration' is not an absolute notion, but ranges from weak integration to strong integration, a differentiation is made between a high and a moderate level of integration. At the end of this chapter all criteria are listed in a table.

10.1 Type and number of parties involved

Four categories of parties can cooperate to prepare integrated management plans: 1) policy and management authorities, 2) nature conservation NGOs, 3) private land owners and 4) actors with a direct or indirect economic interest, i.e. land users and economic sectors. The first two mainly deal with the general interest (public domain), the following two principally deal with private interests.

Because the biodiversity targets for the designated Natura2000 sites are set in many Member States at the site level and in others at a higher level (provincial, regional, etc.), and because relations have to be defined between the site objectives and the commitments regarding favourable conservation status, entered into by national authorities, statutory conservation agencies or administrations of the relevant government ministry will most likely be involved in the preparation of the management plans. When cooperation only concerns different authorities or authorities together with NGOs, the integration may be considered as being rather weak. Indeed, there is always a risk that local interests are neglected. When, on the contrary, private land owners and economic sectors are also involved, integration for this criteria can be considered as being optimal.

The socio-economic sectors and activities that can contribute to the integrated management of Natura2000 sites are very divers. Industry, tourism, agriculture, defence, transport, nature conservation, forestry, hunting, water management and education, are examples. The extent and type of collaboration vary and depend amongst others on the composition and the location of the site. A stakeholder belonging to a particular socio-economic sector can enter into an arrangement on their own initiative, or can be stimulated and supervised by the sector's organisation.

In the latter case, experts of the sector organisation may cooperate on a higher level with representatives of nature conservation agencies, apart from the specific SACs, in order to achieve general agreements and arrangements, to produce guidelines of good practice, to provide technical and general information on Natura2000 for their sector members or to demonstrate the opportunities and benefits of positive collaboration with the SAC managers. In view of attaining an optimal participation of the local communities in managing the Natura2000 sites, the involvement of the local land users will be more integrative than collaboration with only sector organisation's representatives.

The involvement of several stakeholders in the negotiation on a common management agreement can make the procedure more laborious, as with an increasing number of stakeholders and sectors, chances on conflicting interests augment. While there is no fixed limit to the size, and the number of potentially interested parties depends on the particular Natura2000 site itself, dealing with larger groups can result in unmanageable group dynamics. On the other hand, very small groups can result in many of the different stakes not being covered by those present. As a result, the number of stakeholders involved is not a criteria to assess the integrative character of a management plan.

- *Collaboration of public authorities + nature conservation NGOs + private land owners + land users & economic sectors*: **high level of integration**
- *Collaboration of public authorities + nature conservation NGOs*: **moderate level of integration**
- *Collaboration of public authorities*: **moderate level of integration**
- *Collaboration of local land users & economic sectors*: **high level of integration**
- *Collaboration with only sector organisation's representatives*: **moderate level of integration**

10.2 Number of objectives pursued

Besides the central nature of conservation objectives related to the favourable conservation status of the species and habitats concerned, other objectives for the SAC may be defined. Some of these refer to the ecosystem services provided by the site, for instance the potential for water purification or their role in flood control. Others are directly related to the use people make of the site, for instance for leisure or education. A third category concerns objectives linked with economic activities and thus with the income of stakeholders. The more objectives can be achieved without hampering the core nature conservation target set for the SAC, the better. The total number of goals could thus be an indication of the level of integration. However, when the management of Natura2000 sites has to contribute to the sustainability of societal development as well, the extent of meeting social, economic and ecological goals simultaneously is a better way of assessing the integrative nature of that management. Certainly when, making clear that the integrated management

plan equally pursues social and economic goals in addition to the ecological objectives, turned out to be determining for its successful implementation.

Depending the size, the composition and the spatial arrangement of the habitats and ecological conditions, different functions associated with the objectives can be spatially integrated or segregated. This does not however influence the integrative character of a management plan.

- *Achievement of social, economic and ecological goals simultaneously*: **high level of integration**

10.3 Type of involvement of the stakeholders

In chapters 5 and 6 the type of involvement of the stakeholders was explored. It concerned the level of responsibility in preparing and executing the management plan and the type of agreement between the manager of the plan and the stakeholders in order to achieve the set goals.

On the one hand, stakeholders can collaborate in all phases of the preparation and execution of the management plan. In that case, the integration of the interests and the skills of all parties is complete. When, on the other hand, stakeholders only engage in the execution of the management plan, following the instructions of the management authorities and organisations, integration is only marginal.

Collaboration of economic sectors, land owners and land users may be stimulated by all kind of incentives, mostly as compensations and reimbursements for efforts provided. These incentives help to increase integration. One can argue however that the dependence on the financial or material stimuli of public authorities also shows that the integration process itself is not proceeding well. Full integration would then mean that contributing to the maintenance or the management of the SAC without compensations, yields enough profits for stakeholders to convince them to collaborate. So, the management project is economically feasible, socially acceptable and ecologically sustainable; another condition for fruitful integrative management.

- *The definition of biodiversity and other site specific objectives, the selection of appropriate management measures and the execution of the management are jointly decided between all parties involved*: **high level of integration**
- *The execution of just the set management measures is done through collaboration with several stakeholders*: **moderate level of integration**
- *Stakeholder collaboration without compensations*: **high level of integration**
- *Stakeholder collaboration on the basis of compensation and reimbursement*: **moderate level of integration**

10.4 Character of the planning process

The preparation of the management plan can be arranged with a top-down or a bottom-up approach. When applied rigorously, the first approach leaves little room for the vision and knowledge of other parties. This tend to be typical for a policy that

starts from the viewpoint that society can be constructed in a technical way. In this case, the government is reactive to societal objectives and often imposes decisions on society. So, participation of stakeholders is kept to a minimum and it is the general experience that successful implementation of these decisions is rather low. But when on the contrary, the policy style of a country is anticipatory and open for new social relationships, new social practices and for achieving consensus for protected area management schemes, the chance of successful implementation and full integration are much greater.

- *Management plan preparation following a bottom-up approach*: **high level of integration**

As said in chapter 5, stakeholders can start to contribute at different stages in the preparation of a management plan. Being involved already in the early stages often means that the participation is greater (including definition of the objectives; more chances to achieve optimal attunement of interests) compared to an involvement that only starts in later stages of the development. In the latter case, collaboration will likely concern the execution of set management measures or the avoidance of activities with a potential negative impact on the ecosystems.

- *Participation in preparing the management plan from the early stages on*: **high level of integration**
- *Participation in preparing the management plan only in the later stages*: **moderate level of integration**

Overview of the criteria for assessing the level of integration of SAC management plans

Criteria	**Level of integration**	
	high	moderate
- *Collaboration of public authorities + nature conservation NGOs + private land owners + land users & economic sectors*	X	
- *Collaboration of local land users & economic sectors*	X	
- *Achievement of social, economic and ecological goals simultaneously*	X	
- *The definition of biodiversity and other site specific objectives, the selection of appropriate management measures and the execution of the management are jointly decided between all parties involved*	X	
- *Stakeholder collaboration without compensations*	X	
- *Management plan preparation following a bottom-up approach*	X	
- *Participation in preparing the management plan from the early stages on*	X	
- *Collaboration of public authorities*		X
- *Collaboration of public authorities + nature conservation NGOs*		X
- *Collaboration with only sector organisation's representatives*		X
- *Participation in preparing the management plan only in the later stages*		X
- *Stakeholder collaboration on the basis of compensation and reimbursement*		X
- *The execution of just the set management measures is done through collaboration with several stakeholders*		X

11 Integrated management; examples of best practice

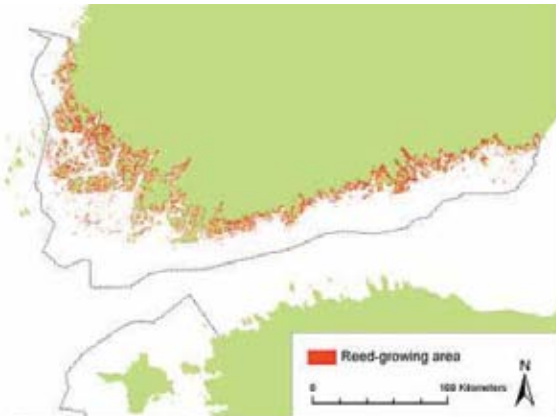
Based on the preceding considerations and criteria, examples of integrated management projects and plans are selected. Information was collected through a literature and website search and by asking the contact persons that contributed to the other tasks of this project. It turned out that information to demonstrate the integrative character of management plans and projects is scattered and quite often incomplete. Therefore, deciding whether or not a project is really integrated is not unequivocal, and remains subjective. Hence, the projects described and presented in this report are but examples. However, all of them seek for integration with regard to the objectives of the management, the organisation of the management, the allocation of tasks and responsibilities, and the active involvement of local stakeholders. Some of them have a bigger focus on the integration of goals (for instance those that concentrate on ecosystem services). Others are marked by the diverse economic interests that can be achieved. Some concentrate on the participatory and integrative character of the preparation of the plan. A few attempt to contribute to the sustainable development of a wider region.

The following examples are presented:

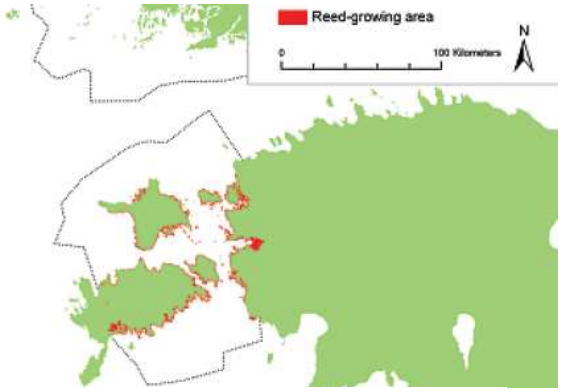
Integrated management of reed beds and coastal meadows along the coast of South-Finland and Estonia

Introduction – the high nature values of reed beds and coastal meadows

Reed beds and coastal meadows are typical habitats along the South-Finnish and Estonian coasts. The reed beds are most common; altogether, they extend over about 30000ha along Finland's southern coastal areas and approximately 20000ha in de Väinameri region of Estonia. Coastal meadows are more rare. In fact a large area was replaced by reed due to the lack of or the change in traditional management.



Reed patches in the Finnish study area



Reed patches in the Estonian study area

Reed beds and coastal meadows are of the highest importance for biodiversity. They are sanctuaries for a great number of typical species and communities. For example in these northern regions, five bird species depend completely on the reed beds for nesting and foraging: Bittern (*Botaurus stellaris*), Bearded tit (*Panurus Biarmicus*), Reed warbler (*Acrocephalus scirmaceus*), Great reed warbler (*A. arundinaceus*) and Water rail (*Rallus aquaticus*). Thus it is not surprising that out of the 10 largest reed beds in Southern Finland, 9 are Natura2000 sites.

Deterioration and restoration of reed beds

The change of land use practices not only had a direct negative impact on biodiversity, especially that of the coastal meadows; the general functioning of the ecosystems also deteriorated. Thus, in the large rivers, the purification potential dropped considerably, causing a severe pressure on the Baltic sea, where, consequently, the system changed also and the purification potential decreased accordingly. The resulting blooms of toxic algae are well known in this respect. Solving this complex problem may only be possible when a new, integrated management regime of the reed beds is adopted.

Besides being an important habitat for biodiversity and contributing to the purification of the sea water, reed beds also provide other services. They produce construction material for the traditional roofs, they may supply fuel for bio-energy and in combination with coastal meadows they form a very attractive landscape with a high cultural value, ideal for recreation and leisure activities. So, the coastal zone reed beds and meadows form an optimal network of habitats that serve water protection, biodiversity, recreational and utilization purposes simultaneously.

Reed entrepreneur Mihkel Ling is showing a Finnish group how to identify the best-quality reed for thatching. Saaremaa, Estonia. March 2006. Photo: Eija Hagelberg.

Management for multiple purposes

This multiple functions of reed beds were taken as the starting point for the preparation of an integrated management plan for these habitats along the South-Finnish and Estonian coast. The aim is to manage the reed beds with an emphasis on biodiversity, as well as on water quality protection, bio-energy production, construction material production, landscape values, recreation and cultural heritage. To be effective and appropriate, the aim is to select management techniques and equipment that will enable all objectives to be achieved in a balanced way. The whole idea resulted in the Finnish Reed Strategy Vision 2018.

In early summer (June) there are a lot of nutrients in the stem and the leaves of reed, which makes it a nutritious and delicious food for cattle. Early summer cutting is the most effective way of eliminating reed. Reed cutting for cattle fodder, carried out in Mietoinen, Southwest Finland, on 20th June 2007. Photo: Kimmo Härjämäki.

As it deals with a complex ecosystem that has to be studied and managed on a landscape scale, and because the potential objectives and benefits are varied, the elaboration of such an integrated management plan for the Finnish reed beds started with an interdisciplinary

Late summer reed harvesting (July and August) is the most effective way of reducing nutrients from the sediment, because at this time of the year most of the plant's nutrients are found in the stem and leaves. This material could be suitable for biogas production, cattle doesn't like it. Reed cutting in Jorsinen, Southern Savolax, Finland on 26th July 2007. Photo: Eija Hagelberg.

analysis of the ecosystem and extended surveys to yield the data necessary to make the plan. A detailed mapping and typology of the reed vegetation served as the basis. Then, a landscape ecological interpretation and a study of the landscape history elucidated the spatial interrelations and the environmental conditions of the ecosystems. Finally, the quality of the different reed beds for the production of construction material, the biomass of the beds, their importance for biodiversity, for water quality control, recreation and landscape values, were assessed.

Cutting is the main technique for reed management. Burning is sometimes applied in order to start the restoration of former coastal meadows. The well developed meadows are mown and grazed by cattle. In the management scheme, the frequency and timing of the mowing and cutting of the reed beds are in line with the requirements of the different goals set for individual sites that are included in the target area of the plan. Winter harvest yields a dry biomass, suitable as a fuel for bio-energy production, and as material for roof construction, garden covers, decoration, etc. Also to create optimal reed habitat conditions for biodiversity, winter harvest is preferred. Cutting and mowing during the summer season is preferable to reduce the nutrient content of the system when cut in late summer), to produce fodder for cattle (when mown in early summer), to produce biogas as an energy source and last but not least to restore the coastal meadows.

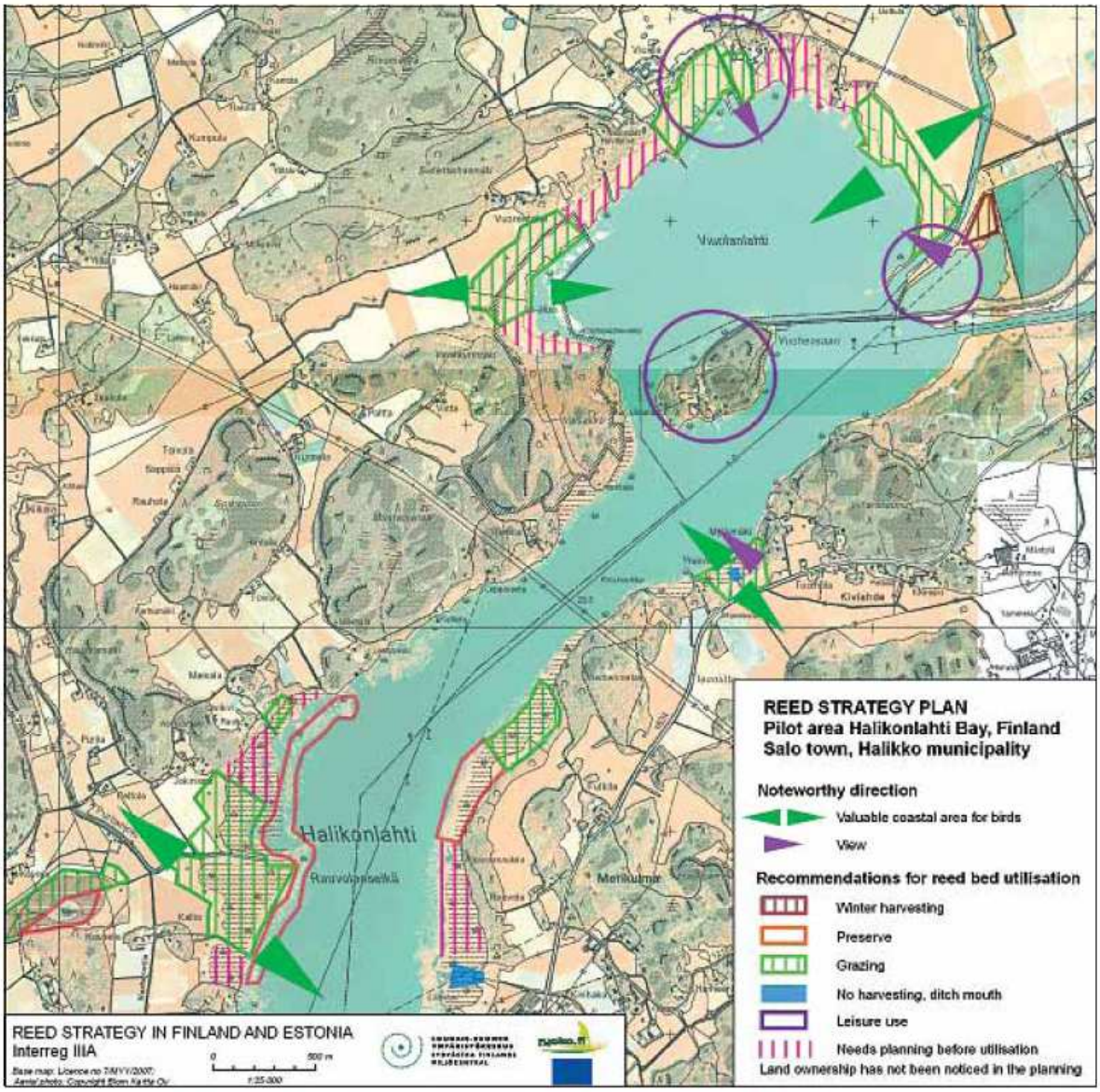
Burning reed in early spring in Mietoinen, Finland. Burning old reed in spring makes the coastal meadow suitable for grazing cattle in early summer, as old reed is not suitable for the nourishment of cattle. Burning should no longer be carried out once birds have begun nesting. Photo: Emil Raimoranta.

Tasks for the future

In the project "Reed Strategy in Finland and Estonia" (Interreg IIIA), the objectives for the reed beds along the coast of southern Finland were defined, the surveys and analyses were completed and the appropriate management techniques selected. What needs to be done now, is the further organisation and division of tasks and responsibilities in order to achieve the multiple goals. A promotion campaign that highlights the added value of nature's products ('meat with the flavour of a diverse and species rich landscape') should accompany the management, so that they find their way to the market and feasibility of the management is ensured.

Reed briquettes on left and middle, wood briquette on right. Photo: Teemu Kettunen.

All illustrations were taken from the publication: Read Up on Reed



The reed strategy map of Halikonlahti Bay, in the municipalities of Salo and Halikko, Finland. Map: Eija Hagelberg.

Partners

Southwest Finland Regional Environment Centre

Tallinn Technical University

Turku University of Applied Sciences,

Cursor Ltd,

Southeast Finland Regional Forest Centre

Several other subpartners and collaborators such as Turku city and Salo town

Project

Finnish-Estonian Interreg IIIA –project "Reed strategy in Finland and Estonia"

Website: http://www.ymparisto.fi/default.asp?contentid=247909&lan=FI
http://www.ruoko.fi/index.php?page=english

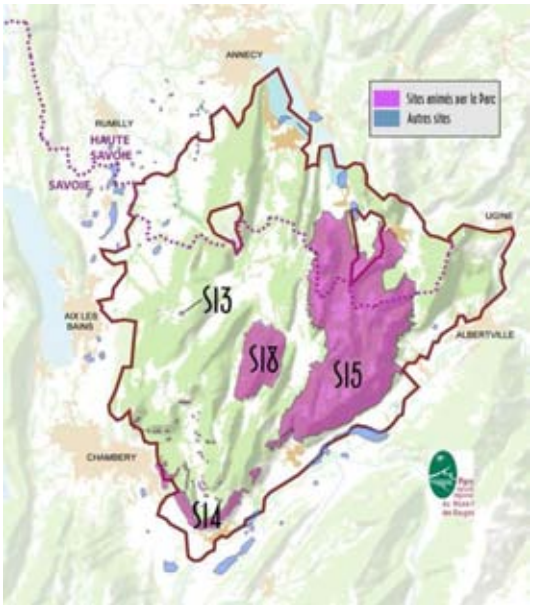
Further reading

Read Up on Reed. Edited by Iiro Ikonen and Eija Hagelberg, 2007, Southwest Finland Regional Environmental Centre. Available on the internet: www.ymparisto.fi/julkaisut

Integrated management of species-rich meadows in the Massif des Bauges, France

Natura2000 sites in a Regional Nature Parc

The 'Parc naturel regional du Massif des Bauges' (Savoie, Haute Savoie, France) is situated in the Northern Pre-Alpine region. Its total area is 95000 ha. The area is well known for its beautiful landscapes, the rich biodiversity it sustains and the high quality agricultural products that are produced there. All this is reflected in the different objectives that are formulated and pursued by the Parc Management and the different stakeholders that are active in the Parc.



The importance of the Massif des Bauges for biodiversity is obvious. Seven Natura2000 sites are inside the borders of the Parc. Natura2000 target plant species are amongst others *Potentilla delphinensis*, *Eryngium alpinum*, *Circaetus gallicus* and *Tetrao tetrix*. Besides mountain forest, moors and rock habitat, the extensive species-rich alpine grasslands, approximately 6000 ha in total, are home to a lot of highly characteristic species. However, these grasslands are also an important resource for the local farmers, who specialize in dairy-farms and cheese production. Almost 240 such farms are active in the Parc. Hence, conservation objectives and production interests have to be brought into line with one another.

Flowers, cheese and honey

The scenic beauty, much appreciated by hikers, the specific biodiversity of the grasslands and the production of high quality cheese and honey are closely related to each other. Indeed, maintaining and enhancing these qualities depends on the proper use and management of the grasslands. This interdependence was the starting point to establish an integrated management for the grasslands, in favour of the different objectives.

Preserving the species-rich grasslands which are the basis for all other purposes, is a first objective. Abandonment and lack of management are a threat for these grasslands that slowly but steadily are overgrown by scrub. The success of biodiversity preservation will thus depend to a greater extent on the ability of the farmers to adapt their management in order to reach the habitat's and species' ecological requirements.

Farmers adapt their management

In the Parc de Massif des Bauges, respecting agri-biodiversity is not achieved by implementing and imposing strict management rules which force the farmers to adopt dictated management measures. On the contrary, the Parc authorities appeal to the farmers' management skills in order to achieve the set goals. In contrast with most other agri-environmental management schemes, here the agreements are formulated in terms of the results that have to be achieved. No prohibitions or obligations regarding the techniques used, are imposed. When it was launched in 2008, an assessment of the agricultural practices that are most favourable for the flora, field visits and information meetings for the farmers were organized. As a result, this "prairies fleuries" agreement (flower rich grassland) was adopted by 65 farmers for a total area of 875 ha of grassland. It is the aim that in a couple of years, 4000 ha and 220 farms will have entered the agreement.

Farmers receive incentives: the "prairies fleuries" agreement comes in 2 tiers, one basic (89 €/ha/y) and one that also includes the detailed registration of all management activities (106 €/ha/y). Added to these are the incentives under the PHAE2 scheme, the nationally organized agro-environmental grassland premium, that seeks to preserve grassland and promote its extensive use. The total sum farmers receive is then between 146 and 182 €/ha/y.

The success of the "prairies fleuries" scheme is linked with the straightforward monitoring routine, developed by the Parc in collaboration with INRA-Avignon. Farmers can do that themselves, or in any case they can regularly assess the impact of their management. The method is simple: the objective is achieved when at least four plant indicator species from a pre-defined list of 24 species are present in each third of a parcel. When this is the case, the grassland habitat is considered to have a good conservation status while, at the same time, it yields a high quality fodder for dairy cattle and cheese production.

Bee-keepers and dairy-farmers collaborate for biodiversity and landscape

Until now, there was little, if any, collaboration between farmers and bee-keepers, and their respectives needs and views were poorly understood. As part of the new management plan for the Parc, the establishment of a partnership between farmers and bee-keepers is now stimulated and facilitated. Indeed, their mutual understanding and cooperation is of the upmost importance to preserve the area and its unique plant biodiversity.

The mutual agreement established between the farmers and the bee-keepers includes:

- that the farmer gives permission to the bee-keeper to enter the pastures and informs him when he works in the grassland;
- that the bee-keeper informs the farmer when he goes to his hives and that he sets up a fence around the hives to prevent accidents. The bee-keeper is allowed to place up to 20 hives.

The Parc authorities will further help by installing platforms for the hives in the parcels that will be used by the bee-keepers.

To promote the liaisons and the integrative management, several initiatives are in operation:

- an award for agro-ecological excellence is presented annually;
- the regional cheese brand IGP/AOC, for instance the Tome des Bauges, is promoted;
- a specific brand for the honey 'Miel du Parc naturel regional du Massif des Bauges' will be created for those bee-keepers that enter into an agreement with a farmer.

Partners

Parc naturel regional du Massif des Bauges

l'Association des Agriculteurs du Parc

le Syndicat d'Apiculture de Haute-Savoie

Rucher des Allobroges

Financial support

La Région Rhône-Alpes

Le Conseil Général de Savoie

Le Conseil Général de haute-Savoie

Ministère de l'agriculture et de la pêche

European Commission

Website: http://www.prairiesfleuries.fr/

http://www.parcdesbauges.com/

Liste des plantes indicatrices des « prairies fleuries » du massif des Bauges

Integrated management of tidal mudflats and marshes in a flood control area along the River Scheldt, Belgium

A unique wetland ecosystem

The river Scheldt estuary with a string of tidal mudflats and marshes along an uninterrupted salinity gradient from the sea to far into the freshwater reaches, is rather unique in Europe. Although water quality was very poor until recently, the whole estuary is of the upmost importance for migratory birds, which can reach 230,000 individuals. So, for 21 waterbirdspecies the estuary has international importance and hence large areas are designated according the Ramsar Convention and the European Bird Directive; 4,190 ha upstream of the port of Antwerp, 7,086 ha downstream. Moreover, the variety of tidal mudflats, reed beds, willow thickets and alluvial meadows –the latter only on limited areas, justified that large parts of the alluvial plain and the riparian habitats are designated under the Habitat Directive as well; 6,006 ha in total.

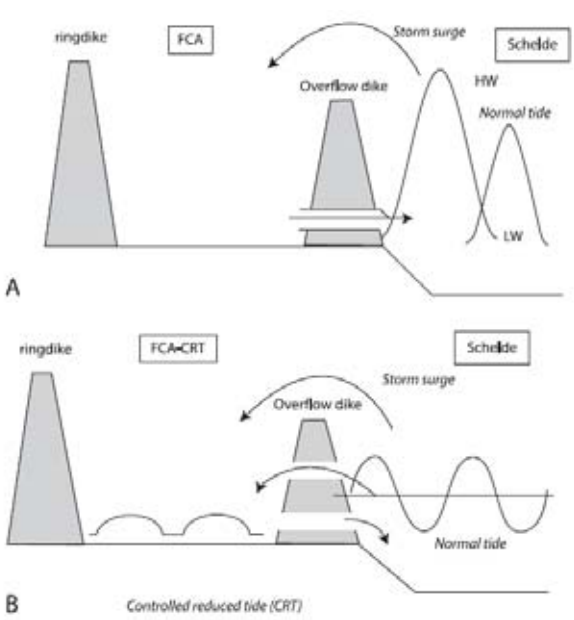
A unique wetland ecosystem under threat

The Scheldt catchment is one of the most densely populated and industrialized regions of Europe. The port of Antwerp, the core of the economic expansion of the region, depends completely on the navigability of the river.

Downstream of Antwerp, coinciding with the area of main port development, extends the highly productive agricultural polder area. The concentration of economic activities and the ever-increasing urbanization led to continued demand to adapt the river by channel deepening, partial canalization and discharge control. As a result the river and estuary now have a decreased retention capacity, increased peak discharges, increased tidal amplitude, as well as increased sedimentation rates, turbidity and current velocity. The original habitats and river communities became substantially impoverished and the total ecosystem was brought very close to complete breakdown. The single measures taken in the past could solve isolated and targeted problems for some time, but did not result in a complete and lasting improvement. On the contrary, the risk for flood hazards and the deterioration of biotic communities continue. Therefore, a truly integrated Dutch-Flemish management plan, the *Long-Term Vision for the Scheldt Estuary* was developed. It engages the governments to 'develop a healthy and multifunctional estuarine water system that can be utilized sustainably for human needs'. Its goals and management measures are integrated from three perspectives: accessibility, flood management and safety, and ecology.

Flood control measures go hand in hand with biodiversity conservation

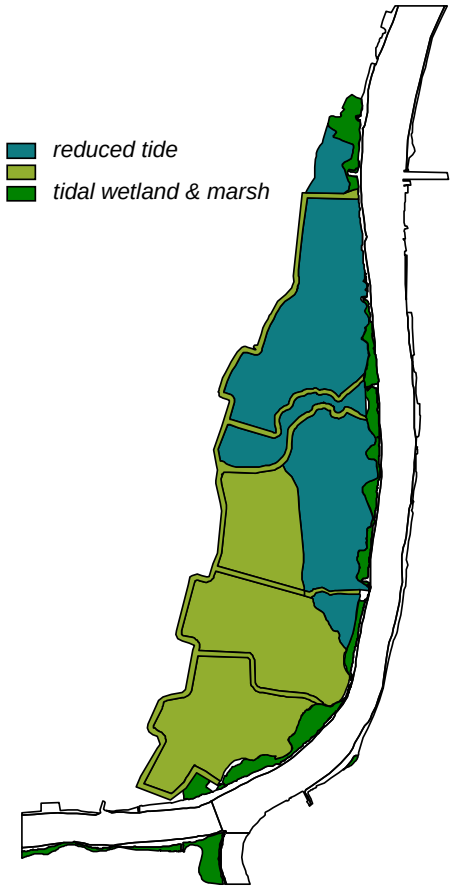
One of the measures proposed in the Long-Term Vision and that was also included in former management plans, is the creation of flood control areas. They constitute extra storage capacity for water during storm surges. A special type is the flood control areas under controlled reduced tide. Where the 'normal' flood control area is only inundated at extreme storm tide, once or twice a year, the one with controlled reduced tide is flooded twice a day, at high tide. This is achieved through sluice management with an inlet sluice placed higher in the dyke and the discharge sluice beneath. The natural conditions of tidal marshes are mimicked; the higher the natural tide, the more water that flows in with a maximum at spring tide and hardly any water at slack water.



A: functioning of a Flood Control Area
B: functioning of a Flood Control Area under controlled reduced tide
(from Van den Bergh et al. 2005.)

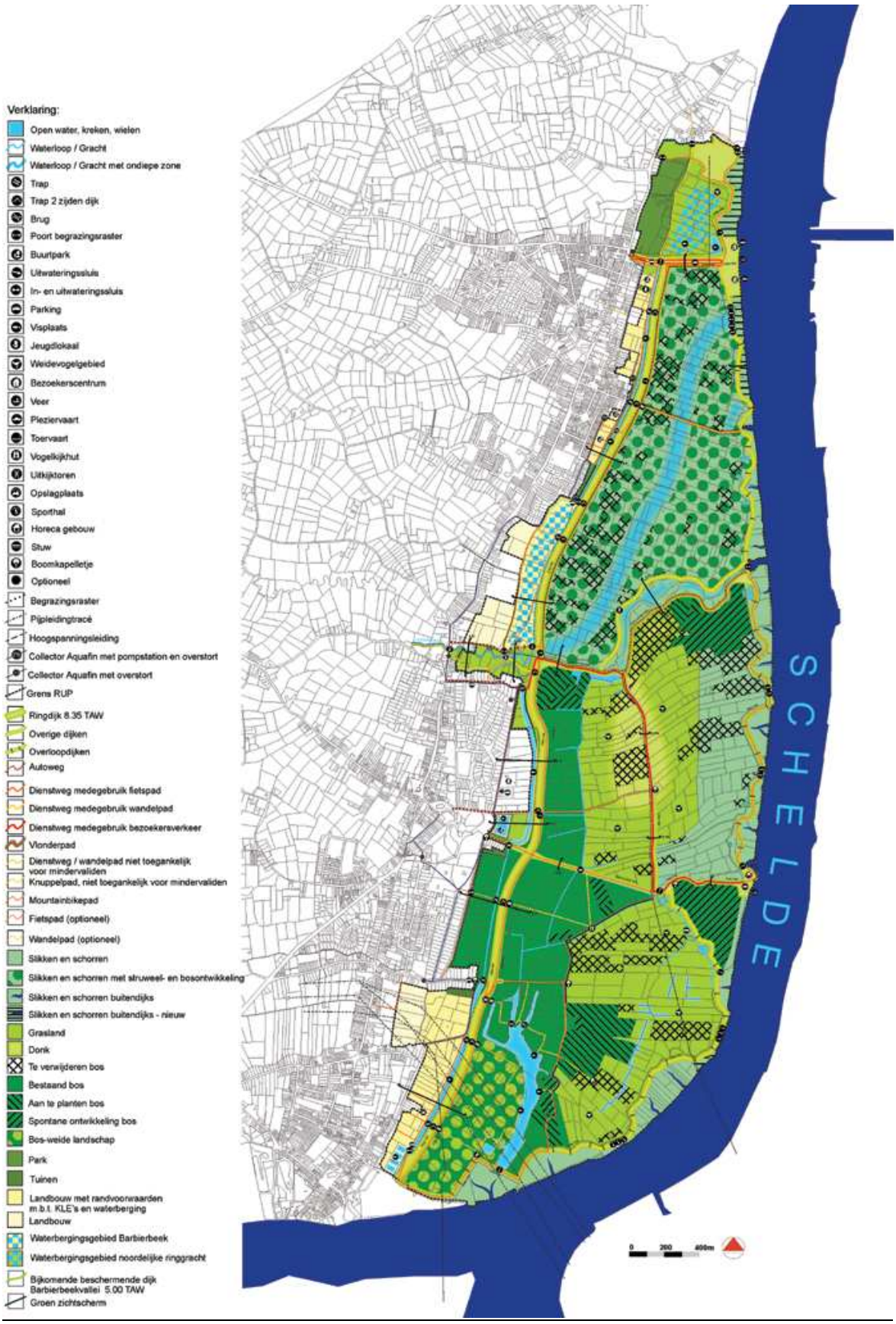
The Natura2000 site of the polder of Kruibeke, Bazel and Rupelmonde, 600 ha, is reconstructed and managed as a flood control area with controlled reduced tide. A smaller pilot-project of 10 ha, Lippenbroek, was installed in 2006 to monitor its ecological functioning and its performance as a storage basin. This yielded the data to create and restore optimal conditions in the larger area. It was concluded that multiple purposes could be achieved; tide is reduced and water stored, the water quality improves due to increased oxygen levels, removal of nitrogen and the release of dissolved silica. And last but not least, estuarine habitats and species-rich communities develop successfully. Creeks have already been formed and fish as well as birds are abundant.

A sustainable and multifunctional Natura2000 site along the river Scheldt



The Flood Control Area of Kruibeke-Bazel-Rupelmonde, currently under construction will be fully operative in 2011. It consists of two parts, a non-tidal section that functions as a normal flood control area, and an area with reduced tidal action (about 300 ha in total) where all sequences of tidal mud flats and tidal marshes will develop. In the non-tidal section, the aim is to develop meadow bird habitats (approx. 150 ha) and alluvial forests, both protected under the Bird and Habitat Directives. A small creek from the catchment is diverted into the tidal habitat. The tidal habitats are not managed; pattern and succession are determined by the natural dynamics. Sedimentation will be monitored so that eventually measures can be taken to maintain the storage capacity. However, silting up is avoided thanks to the enlarged discharge sluices that provoke a strong current at low tide, dislodging the sediments and dragging them back to the river. The non tidal wetland area consists of a mosaic of grassland, tall herb vegetation, ditches and pools, willow thickets and small alder woods that makes the ideal landscape for the typical and highly diverse biodiversity of the broad alluvial plains. The wet grasslands are managed by mowing and grazing. Farmers, who used the original polder before it became a flood control area, are now paid for executing this nature management. Alder woods at the land side of the flood control area (influenced by seepage water from outside the alluvial plain), develop naturally.

Accessibility for recreation is assured through a network of duck-walks and paths on the lower dikes that compartmentalize the area. Some paved roads are suitable for cycling. And finally, the visitor centre provides custom information to everyone, especially the code of conduct in case of a storm alert. Indeed, it is and remains a flood control area flooded more or less regularly, depending on the part you are in. Thus an alarm system is put in place and information is posted in various languages throughout the area.


Verklaring:
Open water, kreken, wielen
Waterloop / Gracht
Waterloop / Gracht met ondiepe zone
Trap
Trap 2 zijden dijk
Brug
Poort begrazingsraster
Buurtpark
Uitwateringssluis
In- en uitwateringssluis
Parking
Visplaats
Jeugdlokaal
Weidevogelgebied
Bezoekerscentrum
Veer
Pleziervaart
Toervaart
Vogelkijkhut
Uitkijktoren
Opslagplaats
Sporthal
Horeca gebouw
Stuw
Boomkapelletje
Optioneel
Begrazingsraster
Pijpleidingtracé
Hoogspanningsleiding
Collector Aquafin met pompstation en overstort
Collector Aquafin met overstort
Grens RUP
Ringdijk 8.35 TAW
Overige dijken
Overloopdijken
Autoweg
Dienstweg medegebruik fietspad
Dienstweg medegebruik wandelpad
Dienstweg medegebruik bezoekersverkeer
Vlonderpad
Dienstweg / wandelpad niet toegankelijk voor mindervaliden
Knuppelpad, niet toegankelijk voor mindervaliden
Mountainbikepad
Fietspad (optioneel)
Wandelpad (optioneel)
Slikken en schorren
Slikken en schorren met struweel- en bosontwikkeling
Slikken en schorren buitendijks
Slikken en schorren buitendijks - nieuw
Grasland
Donk
Te verwijderen bos
Bestaand bos
Aan te planten bos
Spontane ontwikkeling bos
Bos-weide landschap
Park
Tuinen
Landbouw met randvoorwaarden m.b.t. KLE's en waterberging
Landbouw
Waterbergingsgebied Barbierbeek
Waterbergingsgebied noordelijke ringgracht
Bijkomende beschermende dijk Barbierbeekvallei 5.00 TAW
Groen zichtscherm
SCHELDE
0
200
400m

Partners

Flemish Government, Waterwegen en Zeekanaal NV – Division Zeescheldt

Flemish Government, Agency for Nature and Forest

Interreg IIIB North Sea Region, FRaME, Flood Risk Management in Estuaries

University of Antwerp, Biology Department, Belgium

Research Institute for Nature and Forest, INBO, Belgium

National Institute for Coastal and Marine Management, RIKZ, The Netherlands.

Further reading

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Integrated management of the West Polesie Biosphere Reserve, Poland

A miniature tundra in Poland

In the Eastern part of Poland, near the border with Belorussia and Ukraine, partly extending in these two countries, lies the West Polesie Biosphere Reserve. With an area of nearly 140,000ha, it covers all major ecosystems of the lowlands of this part of central Europe. The Polish and Ukraine parts of the Biosphere Reserve were founded in 2002, the Belorussia part in 2004. Today, efforts are made to obtain the title of International Biosphere Reserve, reflecting the enormous importance of this trans-boundary area for biodiversity preservation.

This flat region has abundant lakes, bogs and moors, dispersed in a landscape with a mixture of agricultural land and forests. Peatbogs, meadows and forest predominate in among the vegetation. Karstic lakes and the surrounding plant communities developed relatively undisturbed for several thousand of years. All this results in a wide variety of moor and peatland, with fens as well as raised bogs, carbonate rich moors and transitions. Its geographical position leads to a strange composition of the flora. Plant species with a distinct northern distribution grow together with species of the Atlantic and the Continental zone, so the area has high biodiversity. The presence of dwarf shrubs dominated by specific birch (*Betula humilis*) and willow species (*Salix lapponum* and *S. myrtilloides*), with postglacial relicts and typical moorland plants of the north, makes it a miniature tundra at this extreme southwest European location.

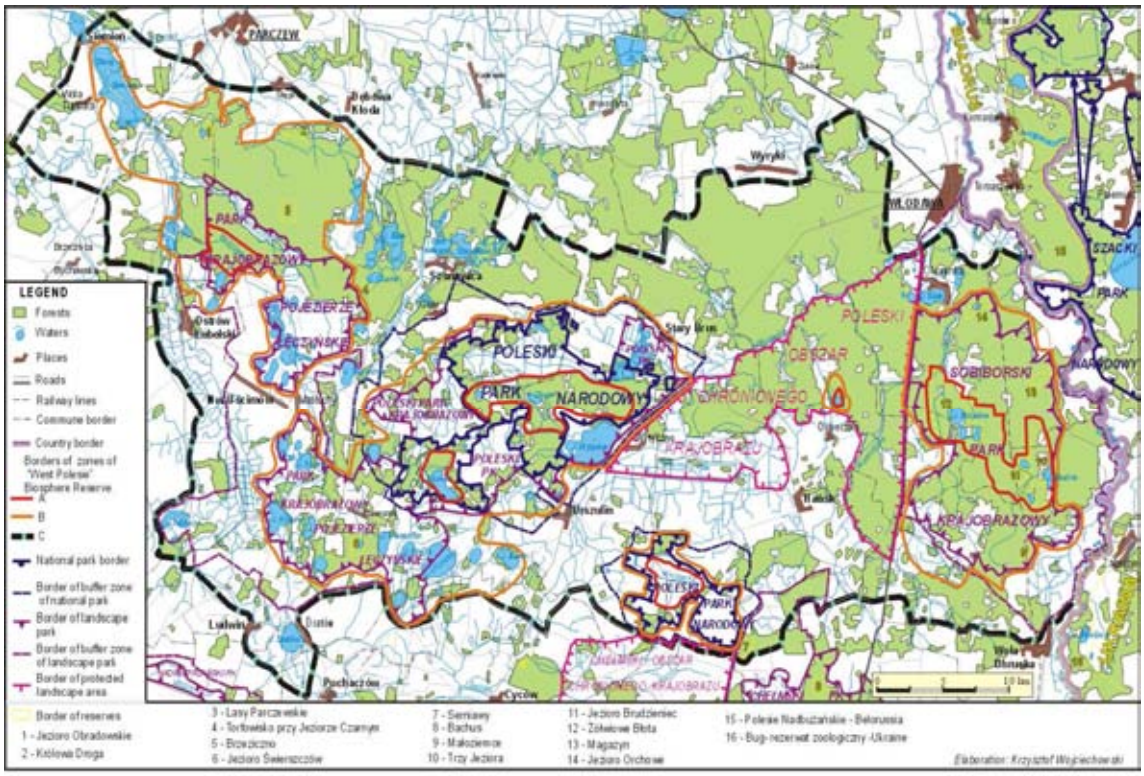
Apart from plants, the area is also of great importance for some threatened and endangered animals. Well known are the big flocks of Crane (*Grus grus*) that use the area during migration as well as for breeding. Another important bird is the Aquatic Warbler (*Acrocephalus paludicola*) that has a major breeding site here, which makes the area essential for the

Eggs European pond turtle

survival of this warbler in Europe. For the European pond turtle (*Emys orbicularis*), a special protection and breeding programme is set up. This reptile has an important relict population in the reserve. Although officially protected for a long time in Poland as in the few other places in Europe where it can still be found, its range keeps shrinking. So keeping optimal conditions for the animal is of the upmost importance.

The West polesie Biosphere Reserve

The West Polesie Biosphere Reserve consists of core areas, buffer zones and transitional zones, according the UNESCO-principles. In the core areas nature conservation prevails. They are uninhabited and have almost no activities taking place. Core areas are under the highest level of protection. In the buffer zones, commercial forests and productive agricultural land, as well as small villages can be found. In this zone, the focus is on ecologically-sound development and improvement of the technical infrastructure. Special attention is given to the water-related infrastructure because this is of major importance for the wetland ecosystems in the core areas and the remaining nature sites in the buffer zones. Avoiding any negative influence is the objective. A more extensive agriculture, supported by agri-environmental management schemes and the development of an infrastructure for eco-tourism, are other objectives for these zones. Finally, the settlements in the transition zones have the greatest opportunity for development as service centres for the whole Biodiversity Reserve.



"West Polesie Biosphere Reserve" - protected areas network

With respect to official protection categories, the central part of the recent Biosphere Reserve consists of the Polesie National Park (1990). That is surrounded by three landscape parks. Further, strict reserves according Polish legislation, 6 EU Habitats Directive site and 9 Bird Directive sites, are scattered in these parks.

Restoring the hydrology

Preservation of the habitats of the park and the reserves depends critically on the water balance. While hydrology was quite undisturbed for centuries, increased human activities since the middle of last century, especially agriculture and coal mining, led to a dramatic drainage of the area. After drainage, large parts were reclaimed and turned into productive fields or commercial forests. On the sites that were not transformed but were nonetheless dry, natural succession accelerated and century old bogs were overgrown by shrub and woodland. At that point, many of the wetland species were under threat. It is the objective that through proper management such undesirable drainage should not re-occur and that maintenance of undisturbed sites is assured, while elsewhere restoration of the natural conditions can be achieved. The management and restoration thus includes progressively raising the water table in lakes and marshes through the reconstruction of drainage devices and the amelioration of their water retention capacity by damming up outlets, through the re-meandering of watercourses and through decreasing the evapotranspiration by means of deforestation. The latter also means that bog and mire vegetation become detached from the substrate and can float again.

Stakeholder involvement

The starting point for the preparation of the nature conservation management plan for the individual sites as well as for the National Park and the Biosphere Reserve starts from the premise that the protected areas are part of a broader coherent and interactive ecological system, including interactions with the natural and cultural surrounding landscapes. Thus a systems approach is the basis for the crucial hydrological restructuring plan for the wider area. As a consequence, it can be expected that regular land use outside the protected sites is also affected by the measures taken. Involvement of different stakeholders is therefore a prerequisite for an effective and successful execution of the management plan.

The tradition to involve local people in nature conservation actions is not new in the region. When the idea of establishing a UNESCO Biosphere Reserve was launched by scientists and conservation bodies in 1991, local NGOs immediately adopted

the initiative. Their first activity then was to promote the initiative to the local community, seeking for support and commitments. The bottom-up approach was achieved through the organisation, together with the local communities, including Ukrainian inhabitants, of workshops, popular science seminars, excursions, etc. After some years, these local communities considered themselves integral partners of the project and saw it as a chance for trans-boundary collaboration and international promotion of their region. As a result, the need to establish a Biosphere Reserve was included in the Western Polesie communes development strategy.

This original commitment, however, did not lead automatically to municipal developments conforming with the requirements of the reserves. Indeed, communes drew up their strategies for sustainable development by themselves, which then tended not to be fully compatible with the management plans of the parks or the Natura2000 sites. After all, there was some mistrust amongst local people regarding the increase of protected sites. They feared this might prevent them from expanding their businesses, or lead to other restrictions connected with the introduction of various forms of nature protection.

Thus, when the Polesie National Park was created, a majority of the locals, especially farmers, expressed their disapproval. Local authorities however were convinced of the positive effects of the National Park for their communes. Managers of the sites, together with local authorities and scientists had to go on developing suitable methods for the integrated management of the sites in harmony with the sustainable development of the region. Group and individual discussions were organized to explore fields and issues of common interest and mutual benefit. The result was an elaborated agreement concerning environmental protection in the villages of the region of the park, the 'Polesia National Park Commune Agreement'. Goals and priority tasks included, amongst others, a better conservation of green areas, soil protection, the improvement of water quality and water supply by building treatment plants and a supply system.

Because of the practical and integrative approach that was established with the Commune Agreement and that resulted in an effective combination of commune responsibilities with the National Park objectives, applications to national or provincial authorities for subsidies and funding of local projects, were much more successful. Financial means to construct water supply systems and purification infrastructure were quite easily obtained. This experience that nature conservation and local development shared the same interests and gained more when working together, stimulated further ecologically-sound investments, not only by the municipalities, but also by its inhabitants. Small scale and individual techniques for environmental management are applied, pollution is kept under control, eco-tourism and agro-tourism are starting to flourish in the region and the related infrastructure is built and maintained by the inhabitants.

In the West Polesie Biosphere Reserve, local bottom-up nature conservation initiatives proved to be good solutions for building an effective sustainable development system. The evolving and lasting good cooperation, from the very beginning of the project, of parties responsible for nature conservation, researchers, local communities and NGOs was crucial for achieving success.

Partners

Poleski Park Narodowy

Agricultural University Lublin

Local nature conservation NGO

Local communities and municipalities

Further reading

Polenski National Park: www2.poleskipn.pl

West Polesie Biosphere Reserve:
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Integrated management of marshland in De Weerribben and De Wieden, The Netherlands

Amazing nature in a man made landscape

In the vast and flat agricultural region of the province of Overijssel in The Netherlands, 80 km north-east of Amsterdam and 80 km east of the North Sea, extents the 12,600 ha of 'De Weerribben', 'De Wieden' and surrounding land, that shortly will be designated as one big National Park (De Weerribben was founded as a National Park in 1992, De Wieden will follow soon). Together, the two areas are considered as the most important marshlands of north-west Europe. Although flora and fauna are plentiful, and visitors get an intense experience of being surrounded by nature, the whole area is in essence a man made landscape. Indeed, peat cutting during the past centuries shaped the landscape and turned it into the current mosaic of open water, various marsh and bog communities, reed land, thickets and carr woodland. Originally, the peat was dug out in long stretches along which narrow strips of land, used to dry the peat, were left standing. Cutting peat to the limit, these strips were so narrow that they could easily be destroyed in heavy storms, creating large pools and shallow lakes, such as that in De Wieden. In De Weerribben however, such a destruction never took place. There, peat cutting started later and was done more carefully. So today, the pattern of long turf ponds alternating with three metres wide strips of land, characterise the landscape. It is in this diverse landscape full of remnants and reminiscences of former land use, that the whole

successional sequence from open water to peat-bog is maintained and must be preserved. And thus, according the Natura2000 obligations, favourable conservation status has to be achieved for 9 habitats and 11 Annex 2 species of the Habitats Directive and 12 breeding bird and 12 non-breeding bird species according the Bird Directive. A real challenge, given the other functions of this national park.

Biodiversity preservation is by far the most important function. Besides that, cultural, recreational and economic purposes also have to be considered. To ensure that these can evolve in a mutual and harmonious way, an adapted and integrated management plan has to be implemented.

It's all about water

Hydrology is most crucial in the National Park and the Natura2000 sites. Indeed, water dominates in this area, and all its functions depend on it in one way or another. The preservation and further development of the most valuable wetland communities and species is only possible when the water regime is not negatively influenced by pollution or eutrophication and by a lowering of the ground water level. But also economic activities such as reed cutting and fisheries can only be maintained when the quality and quantity of water are appropriate. The hiring out of boats is another profitable economic activity, canoeing being one of the major recreational activities in the area. Finally, unpolluted water is important for the production of drinking water in the direct vicinity of the area.

The manipulation of the water level is such that, as far as possible, optimal conditions are met for the different functions. Thus, for biodiversity purposes, water is kept in the area. However, maximal water levels are higher in summer than during winter. This ensures better conditions for reed cultivation and for agriculture just outside the park, and makes the functioning of parts of the area as a retention lake achievable. With the help of characteristic small mills, the " tjaskers " working as Archimedean screws, water levels can be controlled on the level of individual parcels. Finally, clear arrangements are made with land users outside the park to guarantee suitable water conditions for all functions concerned.

Combining nature conservation with tourism and recreation

The area of De Weerribben and De Wieden is famous for its recreational potential. Every year approximately 1.000.000 visitors come to the area for canoeing, cycling and hiking. Tens of thousands of them make trips by boat. And during cold winters with enough ice, 60.000 to 70.000 skaters participate in skating marathons. Several local businesses let out bicycles and boats and some 100 camping sites provide more than 6000 places. So, tourism is a major source of income for the inhabitants of the area. To avoid negative impacts of recreational activities and tourism on biodiversity and landscape values, a network of signposted walking and cycling tracks and sailing routes is carefully laid out. In accordance with the Visitors Management Plan, strict inaccessible zones for visitors are designated, 1000 ha in total.

Combining nature conservation with reed cutting

Reed cutting for the production of roofing material is another economically valuable activity. Some 300 leaseholders harvest around 2000 ha of reed beds during the winter season. Only a smaller part of the area has a monoculture of cultivated reed, the majority consists of reed with herbs or sphagnum mosses. Harvesting is done with mechanical reed cutters. To assure the compatibility between economic interests and biodiversity preservation, the frequency of reed cutting can be agreed upon on a voluntary basis. After all, achieving clear and feasible agreements between the reed sector and nature conservation is a constant concern. Leaseholders also execute, on a contractual basis, some of the nature management during the summer. Today, reed cutters are confronted with a decrease of income as a result of lower management compensations and less profitable prices for reed because of the import of reed from central and eastern Europe. Thus, the sector, having a rather bad economic prospect, is not very attractive any more and successors who want to invest in the business are becoming rare. Therefore, in the integrated management plan for the Weerribben-Wieden area, special attention is paid to the maintenance of reed cutting activities.

Nature management

Nature management of De Weerribben and De Wieden focuses on achieving the favourable conservation status for the Natura2000 objectives qualified for the area. Reed is cut at various frequencies, yielding a mosaic of young and old reed beds with associated species. Grasslands on less productive agricultural land and especially on the dry strips of land between the turf ponds are mown yearly. Carr woodland that

spreads rapidly over the area is cut in order to restore the open landscapes and to create conditions suitable for the development of marshes. To maintain open water, ponds and water stretches are dredged. But also new water bodies are created by excavating land. By doing so, ecological succession can start again and rare pioneer communities may develop.

However, despite all measures taken, some significant problems still remain to be solved in order to assure the required environmental conditions are achieved. Thus, the water quality has to be improved further, the atmospheric deposition of nitrogen has to decrease considerably, disturbance of submerged soils and vegetation by boats has to be avoided and more natural water level fluctuations with, in general, a higher winter and summer level, have to be re-established. Achieving these objectives will only be possible in close cooperation with all stakeholders and users of the area and the surrounding region. Consequently, stakeholders are involved in the management of these Natura2000 sites.

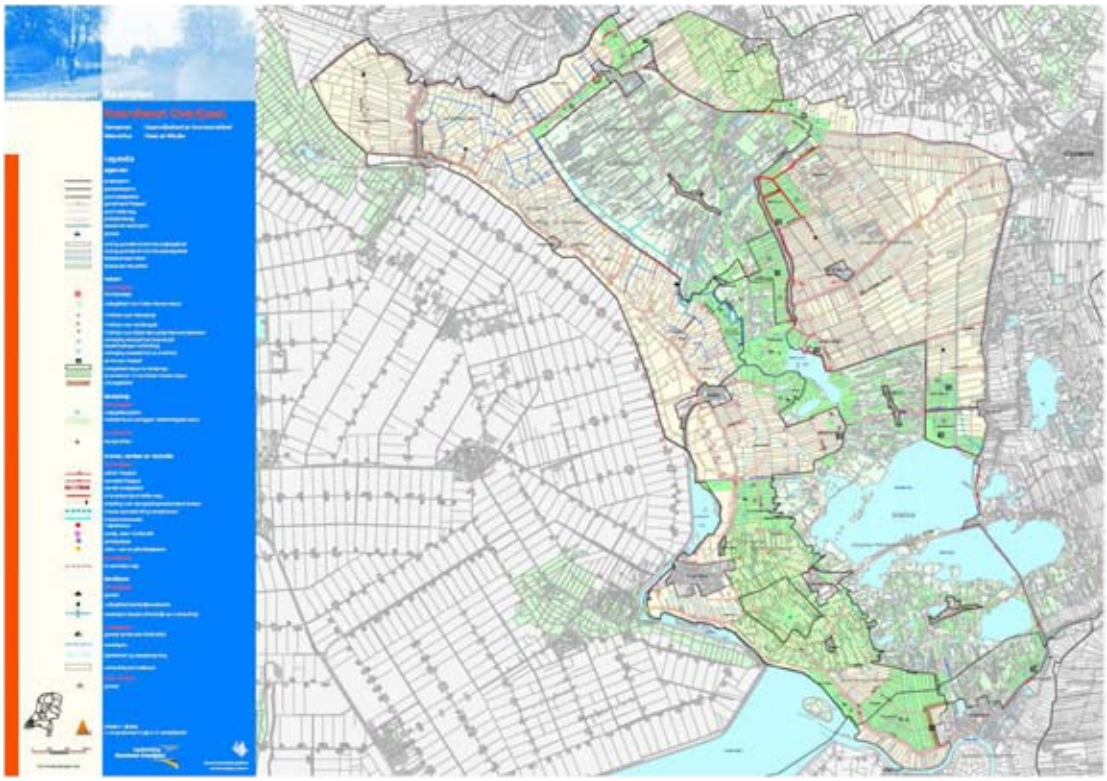
Integrated planning

The planning of the development and the management of the area of De Weerribben - De Wieden, starts from a comprehensive perspective. The 'pure' biodiversity and Natura2000 objectives and measures are defined in the specific Nature Management plans for the core areas. These plans combine with a Global Structure Plan and Vision for the wider region of the National Park.

The general goals defined here are:

- enlargement of the natural and semi-natural habitats, including 250 ha extra for reed cutting
- development of ecological corridors between core areas inside the park and between the park and other nature areas
- development and strengthening of a sustainable and viable agriculture, in balance with the ecological functions of the area
- increase of attractive and high-quality recreation facilities

The province of Overijssel took the initiative to prepare the nature management plan. In the first instance this was done in a working group with the land owners of the protected areas (the NGO Natuurmonumenten and the State Forestry Service), the different competent authorities and representatives of the agricultural sector.



A steering committee with more or less the same composition as the working group and completed with representatives of the tourism and reed cutting sectors, finally drew up the plan. Individual inhabitants, entrepreneurs and land users were only informed about the planning. Active involvement was restricted to reacting to the proposals and tentative decisions.

Partners

Province of Overijssel

Natuurmonumenten

State Forestry Service

Several sectoral interest organisations

Further reading

www.npweerribben-wieden.nl

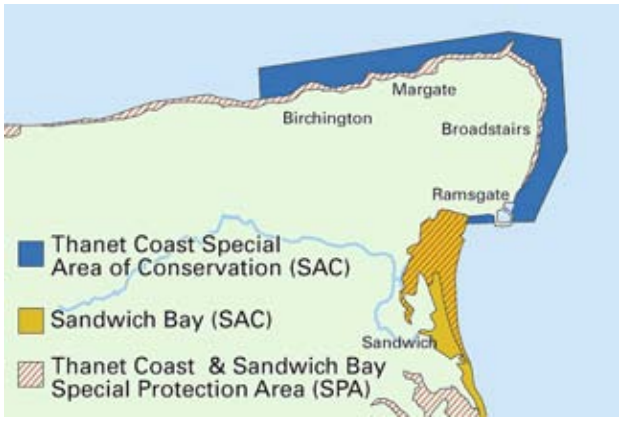
www.provincie.overijssel.nl/natura2000

Werkdocument Natura 2000 De Wieden & De Weerribben, versie 13 augustus 2008

Integrated management of the marine sites of the Thanet coast, UK

A unique maritime and coastal site

At the north-eastern tip of Kent in southern England, one may find the Thanet Coast and Sandwich Bay Natura2000 sites: two Special Areas of Conservation and one Special Protection Area. Together they form a coastal site, consisting of a long stretch of rocky shore, adjoining areas of estuary, sand dune, maritime grassland, saltmarsh and grazing marsh. The area is most well known for the chalk reefs, sea caves and the high number of migratory and wintering birds (with internationally important numbers of turnstone, *Arenaria interpres*). Additional to these are the cliff top chalk grasslands, the sandbanks and the seals. The designated sites extend out to sea up to 2km around Thanet. They are of importance for 7 Annex 1 habitats of the Habitats Directive and 3 Annex 1 species of the Birds Directive.



However, to conserve these sites that are internationally important for their bird and marine life, and that are appreciated for the beauty of their landscapes, it is not enough simply to give them even the highest level of protection. For that the pressures from human activities and development in general are too high. Indeed, the region is highly urbanised and together with the inhabitants (127,000), a huge number of people use the coast for sports and leisure (2 million day visitors and 600,000 long stay visitors). Bait and shellfish are harvested, and shore angling and fixed netting are popular. In the vicinity and the area there is a port and several harbours. The cliffs and shore are managed for sea defence. Only 25% of the length of the cliffs around the Thanet peninsula remains in a natural state. The rest is covered by man-made sea defences. So an undisturbed natural gradient from the reef under the sea, up on the shore, to the splash zone on the natural chalk cliffs is becoming rare, and hence the full sequence of natural marine chalk habitats. Finally, new urbanisation and tourist resort projects along the coast bring about new pressures. Thus, to maintain optimal conditions for nature and wildlife, appropriate management measures and actions should be available.

Active management needed

Natural England took the initiative for the development of the North East Kent European Marine Sites Management Scheme. For the development of that plan, as well as for its implementation, a broad collaboration with responsible authorities, economic sectors and stakeholders was established. The aims of the scheme are "*to maintain the habitats and species found in the North East Kent European marine sites (NEKEMS) as a national and internationally important asset, whilst ensuring that its diverse*

human use is undertaken in ways which do not threaten the nature conservation interest, and wherever possible in ways which support it".

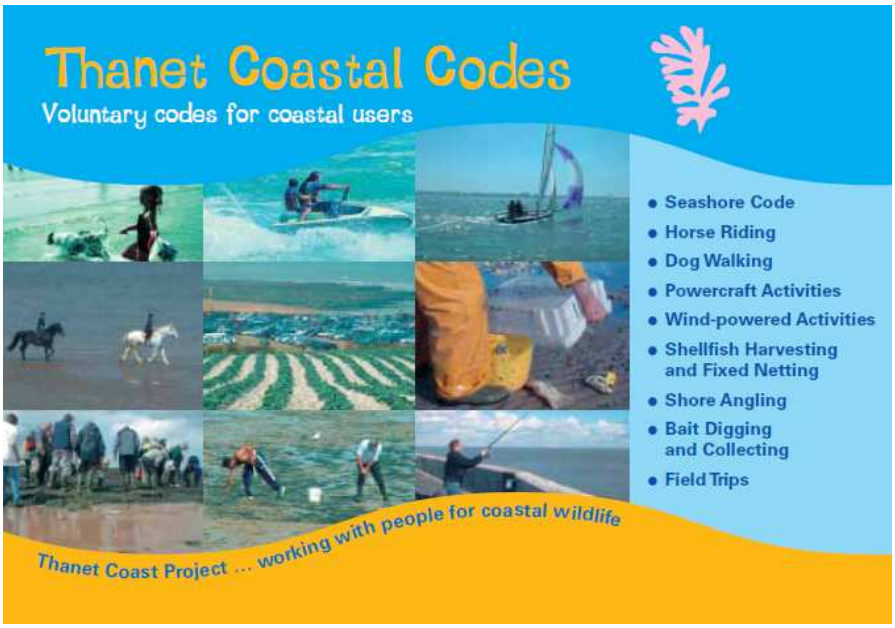
The first management scheme was launched in 2001 and was in force till 2007. In that scheme, the focus, and so the starting point, was almost exclusively on the designated features of the coast. That brought the plan perfectly into line with the objectives of the European directives. However, the exclusive attention for the biodiversity aspects partly neglected the societal context, the other functions that made the region important, and hence the determining interrelations between the designated features and people living in or visiting the area. Thus, although this first management plan was prepared in collaboration with the stakeholders, it was decided that for the second scheme its integrative character should be extended, allowing the full recognition of different interests in relation to the features of the coast. This involved the use of ecosystem approach principles to go beyond the designated site features and include other wildlife and habitats, ecosystem functions and human interactions from the area. The revised scheme and action plan were put into operation in 2007 and will run till 2012. Three points were essential to achieve the desired ecosystem approach: an extensive stakeholder dialogue, subject assessment tables and an action plan.

Getting everybody involved

Through stakeholder dialogue, based around three stakeholder workshops, local and specialist knowledge was contributed to the process. The focus of the dialogue was to find the actions that were achievable over the period of the management scheme and that would continue to foster the sustainable use of coast and sea. To achieve this, 'Subject Assessment Tables' were used to organize the discussions. These tables include details about all activities occurring in the area that might have an impact on the ecosystems, their current management and the future management needs. Because of the ecosystem approach, also the possible impact on wider ecosystems is considered. Information provided by the stakeholders was directly fed into the tables. Thus, the elaboration of the management scheme evolved together with the stakeholder process, rather than being written separately afterwards. All actions identified to be necessary to achieve effective management of marine sites and surrounding areas, are listed in the 'Action Plan'. The actions concern traditional nature management topics –in fact the continuation of the first

management scheme, as well as actions that focus on the management structure and stakeholder involvement. These latter as a result of the concern expressed to continually improve the collaborative way of working. Many actions refer to the monitoring of the designated features of the sites, while the Action Plan as a whole is a means to monitor the implementation of the Management Scheme itself. Discussions during the stakeholder workshops also revealed that many issues still remain uncertain or need more research. The role of fisheries within the natural system encompassing the marine protection sites was, for instance, largely unknown. During the term of the first management scheme, fishing practices within the European marine sites were largely considered to be beyond the remit of the management scheme. But now that an ecosystem approach is adopted, a better understanding of the role of fishing in the whole system is self-evident. The same holds for off-shore wind farm development in the area. Better understanding possible impacts was also recognized as a priority area for action.

In general, the 2007-2012 Management Scheme can build to a very high degree on the first scheme. Nature management measures required no or only minimal changes. Particularly successful measures, such as the implementation of the Thanet Coastal Codes, the awareness-raising work carried out by the Thanet Coast Project and the established and effective working relations between all the relevant authorities are continued. Evaluating the results of the previous scheme, stakeholders agreed that the best way forward to integrate recreation activities and the harvesting of bait or shellfish, was to make them more responsible, having their own codes of conduct. Then people could avoid unintentional harm to birds and marine life. The codes were written together with representatives from the activities. It was agreed that only if the codes fail and bird or marine life is affected that other measures, such as new nature conservation orders, may have to be considered. The following codes are available now: *Seashore code*; *Horse riding*; *Dog walking*; *Power craft activities*; *Wind-powered activities*; *Shellfish harvesting and fixed netting*; *Shore angling*; *Bait digging and collecting*; *Field trips*; *Research*; *Marine Wildlife Watching*; *Fossils*.

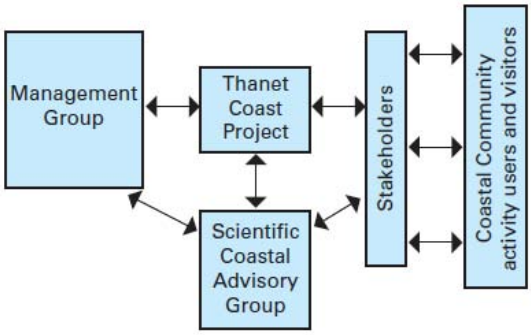


The management structure

To achieve a generally accepted and adopted integrated management plan, the overall management system for the North East Kent European marine sites strives to include everyone. Therefore, a management group, the Thanet Coast Project, the North East the Kent Scientific Coastal Advisory Group and local stakeholders all work together in a structured way. Ten relevant authorities with legal responsibilities around the coast, form the Management Group. They are committed to implement the actions agreed in the Management Scheme and meet twice a year to review the action plan progress. The scientific coastal advisory board meets more regularly and provides scientific input for current and future management decisions. The stakeholders meet twice a year to discuss progress and relevant issues, and to identify new actions. The Thanet Coast Project, a 'not-for-profit' initiative with 2 staff members and volunteers, is the umbrella initiative. Their aims are to raise awareness of the important marine and bird life, to work with local people to safeguard coastal wildlife, to be the focal point for information and to keep everybody informed with progress of the management scheme. The Thanet Council is the employing authority.

Partners

Canterbury City Council
Dover District Council
Environment Agency
Kent County Council
Kent and Essex Sea Fisheries Committee
Natural England
Sandwich Port and Haven Commission
Southern Water Services
Thanet District Council as Harbour Authority
Thanet District Council



Further reading

The Thanet Coast project: www.thanetcoast.org.uk

Managing the North East Kent Coast. A summary of the North East Kent European Marine Sites Management Scheme: www.thanetcoast.org.uk/pdf/ManagingtheNEKentCoast_NEKEMS_2009.pdf

North East Kent European Marine Sites Management Scheme 2007 to 2012: http://www.thanetcoast.org.uk/stakeholders.aspx

Management Scheme 2001-6: http://www.thanetcoast.org.uk/factfile/ne_kent_management_scheme/management_scheme.aspx

Joint nature Conservation Committee. SAC selection; Thanet Coast: http://www.jncc.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0013107

Integrated management of the steppe landscape of El Planerón, Spain

Fauna and flora of the steppe landscape

In the steppe landscape of Aragon, 15 km from Belchite, in the Ebro Valley, lies El Planerón Bird Reserve. This sanctuary, created and managed by SEO/Birdlife, was the first reserve created to protect steppe birds in Europe. It sustains a rich variety of steppe fauna and flora in the centre of a vast loamy depression with small hills and ridges and criss-crossed by gullies that carry seasonal water. During summer, the only surface water can be found in the small lake 'El Planerón'. Because of its outstanding botanical and ornithological importance, El Planerón Bird Reserve and surrounding areas have been proposed by the Government of Aragon to be included in the Natura2000 network.

Vegetation composition differs according the soil and the availability of water. The very dry outcrops and limestone cliffs are sparsely vegetated and have a patchy open low shrub and natural steppe. On abandoned cereal fields a temporary vegetation with grasses and plants of more fertile soils can be found. The soils of part of the gullies and depressions have a rather high salinity, and are then covered by salt marsh species. The birds, that make the place a hotspot for nature conservation in Spain, depend on the natural vegetation of the steppe and the colonized abandoned fields, as well as on the cultivated fields themselves. Great and Little Bustard, species of Lark and of Grouse, are amongst the most famous. Equally important are the many reptiles and invertebrates that add to the biodiversity of this steppe landscape.

Maintaining suitable conditions for birdlife

However dry and unfertile the region may appear, its is cultivated over several centuries. Here, to a large extent, biodiversity and especially birdlife depend on a type of extensive agriculture. Indeed, in these landscapes, crops provide shelter and nesting places, and abundant food. Maintaining the typical biodiversity automatically also means that traditional agricultural practices should be continued: cultivation of cereals, left fallow in alternate years. Currently, inside the reserve there is no cultivation on land owned by SEO/Birdlife. In the neighbouring areas however, agricultural fields extend in between the natural vegetation, giving rise to a mosaic of

different habitats. This is an optimal situation for the birds, at least when cultivation remains extensive. Today however, extensive agriculture is seldom profitable. So, many farmers turned to more mechanised, large-scale and intensive forms of cultivation, even ploughing up marginal lands which traditionally were left for grazing. Some of these new fields remained, but others were left abandoned after a couple of years.

Finding profitable ways to continue extensive agriculture is thus a prerequisite for the preservation of the steppe and arable land birds. This objective was achieved when durum wheat, of high quality in this dry region, was found to be an appropriate alternative crop for zones of high ecological value that were threatened by intensive agriculture or abandonment. For this purpose SEO/Birdlife started in 2001 to promote the production and sale of the products of this wheat; pasta. Agreements were made with local farmers to buy their wheat that is milled, processed and packed locally. In he mean time, RIET VELL s.a. was set up, the new company responsible for the whole production, sale and marketing of the eco-labelled pasta. So, in this project, arising from the need to find new ways to manage habitats for the sake of threatened bird species, a successful liaison between ecology and economy was established. In the steppe landscapes of Aragon, it is proven that landscape and biodiversity preservation, increasing environmental awareness, strengthening of local economy and rural development, and promotion of regional products, can go hand-in-hand. Implementing the Natura 2000 network does not have to conflicy with regional development.

Further reading

El Planerón Bird Reserve: www.elplaneron.org

RIET VELL s.a.: www.rietvell.com

Partners

SEO/Birdlife

RIET VELL s.a.

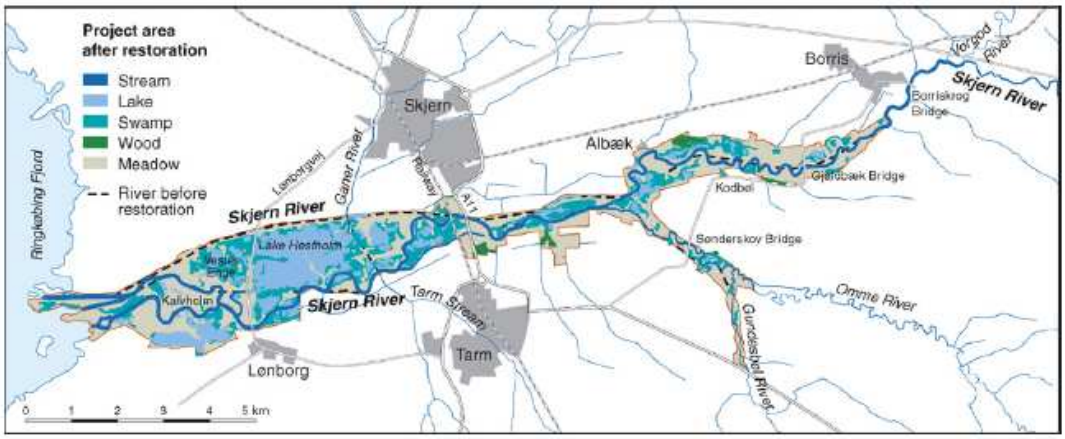
Individual local farmers

Integrating biodiversity preservation and recreation in the restoration of the River Skjern, Denmark

Changing views

Ideas regarding our management of nature and natural processes evolve and may change dramatically in the course of time. This is well illustrated by the evolution of the River Skjern during the last decades. From its source in central Jutland, the river flows in a westerly direction towards Ringkøbing Fjord, a distance of about 90 km. At the mouth of the river, a large floodplain and delta are formed.

Before 1962, the river valley was a complex and vast wetland. Farmers used parts of it in an extensive way. Hay was cut in the meadows which were grazed afterwards by livestock. But then, between 1962 and 1968, the delta area was reclaimed and 4000 ha of land were converted into intensive farmland. For that purpose, a 20 km river stretch was channelled, pumping stations were built to drain the area and dikes protected the newly cultivated land against flooding. The environment was totally controlled. While agriculture profited for some time from the reclamation project, biodiversity declined, and also the water quality worsened, affecting the fish and waterfowl populations in Ringkøbing Fjord. Ochre and nutrients were no longer deposited in the floodplain during successive inundations; on the contrary, they were washed to the sea together with a substantial part of the fertilizers from the new arable land. Eutrophication became worse. When finally the revenues from agriculture declined and thus, in a few decades, the optimized agricultural land turned into marginal land of poor production quality and high maintenance requirements, it was decided that another strategy should be followed. The area would be restored and given back to nature.



The Skjern River project area, including main landscape/vegetation types, after restoration was finalized in 2002

(from *Ecological Engineering* 30: 131-144)

Restoring the river

In 1987 the Danish Parliament decided to restore the River Skjern to its original flow. Intensive technical and scientific studies were executed, public debate and stakeholder involvement organized, land purchased. Then, in 1998, the "Skjern River

Restoration Project" was adopted. The following year the reconstruction started. The main objective was to recreate a river valley wetland of international importance, that at the same time may perform as a major area for leisure activities and tourism.

Besides that, a target was to increase nutrient retention. For that purpose, more than half of the reclaimed land was used in a new way: open water and water courses, reed beds, dry and wet meadows and pastures. More than 40 km of restored river was established, and the once intensively-farmed valley was transformed into an open valley with a meandering river and a permanent shallow lake (formed due to the shrinking and degradation of the peat soil). The objectives regarding the species under the Birds Directive and the Habitats Directive were quickly met. Habitat conditions for migratory birds and breeding waders improved considerably, floodplain and wetland vegetation developed and survival of salmonoid fish increased. Hence the site could be designated officially as a Natura2000 site.

Though the restoration project has been successful from a biodiversity perspective, this is less the case for the retention of nitrogen and phosphorus. Indeed, it turned out that less than 10% of the total riverine input of nitrogen and phosphorus to the project area is actually retained. This is the consequence of diverting the restored River Skjern beside, instead of allowing it to flow through a lake (Lake Hestholm). In the latter, a much higher retention could have been expected. The diversion was decided upon to avoid high mortality amongst migrating salmon and trout by pike predation in the lake. This case illustrates conflicting interests and the need to prioritise objectives.

Traditional management

Once the fluvial landscape was restored, regular management was implemented. Maintaining the open landscape, dominated by meadows, a meandering river, marshes and shallow pools, was the objective. Dominance of reed, alder and willow should be avoided. Therefore cattle grazing was (re-)introduced. Grazing started in 2001. By 2005, 800 cattle

grazed 1200 ha, and now about 1000 animals are in the area each summer. Additionally, mechanical cutting of the vegetation takes place on another 300 ha. Grazing agreements for specified periods are made with local farmers. In contrast with the vegetation of the floodplain, the river itself is not managed at all. Hydrodynamics, the variations in discharge and stream velocity, should shape the river morphology and hence the habitat conditions for the species.

People's involvement

The Skjern River Restoration project was prepared in a very open way. A project proposal and an Environmental Impact Assessment were published by the competent agency. These formed the basis for an extensive public consultation. Ideas and proposals from public hearings were incorporated in the Parliament Act concerning the project. Furthermore, local authorities and organisations have participated in the entire decision-making process. This was achieved through a stakeholder advisory committee, especially focussing on leisure activities, that could express and explore the needs and expectations of local people and tourists. Representatives of the local authorities, trade organisations, farmers, hunters, nature conservation and outdoor recreation interest groups, took part in this committee. The proposal for access and leisure activities in the project area, prepared by this committee, formed the basis for the departmental order and the Agency's recreation plan for the Skjern River area: a plan that gives local people and tourists the best possibilities for nature experiences and recreational activities in balance with nature development and preservation. Today, an advisory and contact group with stakeholders, serves as the platform for permanent communication and exchange of ideas and experiences between the project management and the local communities.

In 1987, local people were against the restoration process. That attitude changed, thanks to the participation, the incentives and compensations given, the revenues from new recreation related activities and last but not least, the successful re-establishment of nature and wildlife.

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Partners

Danish Forest and Nature Agency: www.skovognatur.dk

Preserving biodiversity while managing tourism on the island of Gozo, Malta

The spectacular landscape of Dwejra

On the Western coast of the island of Gozo, Malta, lies Qawra/Dwejra. It is a landscape characterized by an 'inland sea', steep limestone cliffs, terraces and plateaus, dry valleys, some temporary freshwater pools, seepage from the cliffs, a small waterfall and a spectacularly eroded shoreline. So, a unique landscape that is of interest for its scenic beauty, the archaeological and historical features, and its remarkable ecology. No wonder that it is of major importance for the tourist sector of the island, the more so as the sea is relatively easily accessible. Thousands of people (the last estimate states 750,000) visit the site yearly and go fishing, swimming, scuba diving, making boat trips. Construction of boathouses –frequently used as summerhouses, quarrying, agriculture, hunting and trapping, are other activities that take place at the site or its immediate surrounding. Together with the expansion of mass tourism, all these developments put pressure on the site, threatening its special features. In order to counteract this, the Maltese authorities started initiatives to better protect the area and establish means for active management and sustainable development.

Towards integrated management

The Structure Plan for the Maltese Islands (1992) indentifies the area as having the potential for designation as a World Heritage Site. However it was only 10 years later that the first management actions started: the project of Malta Environment and Planning Authority (MEPA) for limited restoration works on the area, through the 'Environmental Initiatives Private Partnership' programme. Then, in 2004, the ongoing degradation of the area was reversed with the help of a LIFE Third Countries project, initiated by Nature Trust Malta, together with MEPA and WWF Italy. This project is crucial for the future of the area as it mobilizes all parties involved on one comprehensive and targeted strategy, and generates the resources needed for the successful implementation and execution of actions needed to maintain the different values of the area. A main result of this LIFE project was the preparation

and approval of the 'Qawra/Dwejra Heritage Park Management Plan' (2005), including the Action Plan. This should be finalized with the creation of a Natural / Heritage Park. This plan serves until now, as the standard for the area's management.

In the meantime, parts of Dwejra were designated as Natuar2000 site. Priority habitats include Mediterranean temporary ponds, coastal lagoons and *Posidonia* seegrass beds. The site is also home to a wide range of species, including many endemics. Several species are protected both by national and international legal instruments (Annex II of the Habitats Directive, the Bern Convention). The Action Plan of the Qawre/Dwejra Heritage Park Management Plan, with 23 management measures, is the instrument that describes in detail the management and protection requirements for the area. Actions include, for instance, the construction and operation of an interpretation centre, the use of appropriate material for surfacing roads and car parks, the restoration of degraded sites, the management of alien and invasive species, the management of diving activities and the control (sanctioning) and management of boathouses. This integrated plan has as an objective to stop the degradation process and to organise the site for the benefit of the environment and the local community and to achieve a better tourist product. So the management considers, in equal measure, nature and coast management and protection, marine protected area management, as well as ecotourism, visitors and traffic flow management. Apart from the execution of an effective management, management zones are defined. These include core areas, the most valuable and vulnerable sites: the Natura2000 sites, the valley systems, the Fungus Rock, freshwater pools. These areas enjoy legal protection and detailed analysis of the activities taking place in order to assess compatibility with the values of concern. In general, activities are very restricted in the core areas and management will focus in the first place on the site's priorities, the ecological features. Buffer zones surround the core areas. They comprise mainly agricultural fields and abandoned areas. In the buffer zones, conflicts between existing practices and conservation objectives within the core areas need to be addressed. Then there are the transition zones, where quarrying is the main land use. This zoning is also implemented in the marine part of the Qawre/Dwejra Heritage Park.

Intensive stakeholder involvement

Authorities, stakeholders from different sectors and representatives of a variety of user groups were involved in the preparation of the management plan and its subsequent execution. They included amongst others the Ministry for Gozo, San Lawrenz Local Council, the Tourism Authorities of Gozo and Malta, Din L-Art Helwa (the National Trust of Malta), the tour operators, the boat ride operators, the Diving associations, fishermen, hunters and trappers, boat house owners, landowners, quarry owners and church authorities. Apart from analysing the management needs and defining the appropriate measures to achieve the required ecological conditions for the different ecological communities, the main purpose of organizing such a broad stakeholder participation was to increase awareness of the need and importance to conserve such a site, to stimulate cooperation between the stakeholders, to find solutions for existing and emerging conflicts, and to show that such integrated management will result in long-term economic benefits for all. To achieve this, individual and separate meetings with stakeholders were also set up in order to facilitate the collaboration process. As a result, not only the ecological, archaeological, historic and landscape values of the site were better understood, but also the general implementation of the plan got wider acceptance and support. The plan was increasingly owned by the stakeholders. Most importantly, there is a growing awareness of personal responsibility and contribution to maintain the site's values. So, the local community participated to clean-up the area, to organize a warning system within the fishery community in order to avoid threatening marine resources, and so on.

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Nature Trust Malta: http://www.naturetrustmalta.org

Malta Environment and Planning Authority (MEPA): www.mepa.org.mt

Partners

Malta Environment and Planning Authority (MEPA)
Nature Trust Malta
LIFE Third Countries
WWF Italy
Ministry for Gozo
San Lawrenz Local Council
The Tourism Authorities of Gozo and Malta
Residents of the local community, local tourism entrepreneurs, fishermen, etc.

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