

Natural Processes and the Wilderness Approach versus Species and Habitat Conservation in National Parks



Oostvaardersplassen



Mueritz



Lower Oder Valley



Biebrza

Alfred Töpfer Natural Heritage Scholarship Project Report

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Contents

Thanks and Acknowledgements.....	3
Background and Aims	4
Project Proposal.....	5
Oostvaardersplassen, The Netherlands	6
Background	6
Today	7
Management approach.....	8
Conflicts	9
Successes.....	10
Lessons learnt.....	10
Müritz National Park, Germany	12
Background	12
Management plan and implementation	13
Successes.....	14
Moorland restoration.....	14
Woodland management.....	16
Conflicts	16
Species conservation	16
Invasive species	17
Hunting.....	17
Lessons learnt.....	18
Lower Oder Valley National Park, Germany	20
Background	20
Management plan and monitoring	21
Successes.....	22
Conflicts and challenges.....	23
Lessons learnt.....	25
Biebrza National Park, Poland.....	26
Background	26
Management plan.....	27
Olsy Laskowieckie: Alder carr.....	27
Bagno Lawki: Aquatic Warbler citadel	28
Lessons learnt.....	30
Summary and Conclusions.....	32
References and Sources of Further Information	34
Oostvaardersplassen.....	34
Müritz National Park	34
Lower Oder Valley National Park.....	34
Biebrza National Park.....	34
Appendix 1: Species mentioned in this document	35
Plants	35
Birds.....	35
Mammals.....	36
Invertebrates	36
Reptiles	36

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Finally I am very grateful to my husband for his support, for proofreading this report and for supplying a number of the photographs used in this report.

Background and Aims

Traditionally, nature conservation in the UK has relied heavily on managing a given site for the benefit of a particular species or habitat. This can involve stopping natural succession at a particular stage through human intervention, or actively mimicking natural occurrences such as fire or storm events. However, this approach is very labour-intensive and expensive. In many cases, the management practices, which initially led to the creation of these habitats are no longer extant, and are now artificially repeated to maintain a particular landscape, habitat or species.

The species and habitats which occur in these managed areas existed before the intervention of mankind, and, given a large enough area, both physical and biological natural processes should provide sufficient space for the full suite of biodiversity to persist. However, here in the UK, no wildernesses, no truly natural areas remain. We have a cultural landscape, one that has been shaped by human hands for millennia, and the biodiversity that is present is now closely associated with these management practices. Given the lack of space and the fragmented nature of Britain's wildlife today, if one stopped managing these habitats a number of rare species and habitats would be lost; especially those associated with early successional stages.

Despite concern about possible extinctions, there has been a movement to provide natural areas in the UK with more freedom and to relax human intervention. This has been done partly in recognition that the traditional approach has only worked to a limited degree, and partly due to the financial and labour costs involved. Landscape-scale management and natural processes are the new buzzwords in the British conservation world: enlarging, reconnecting and "rewilding" habitats have become the new approaches.

My training is that of an ecologist, and my motivation has always been to 'conserve nature'. It has not always been clear to me what that actually means in detail, nor how best to achieve it. Like many others, I delight in seeing rare or charismatic species and have done my fair share of habitat management to help maintain habitats for a given interest. However, I have also felt that we should take a step back from a system that is so large and complex that we cannot possibly understand or manage it, and that did very well without humans in the first place.

I took the opportunity offered through the Alfred Töpfer natural heritage scholarship to visit protected areas where the approaches of non-intervention and allowing nature to develop freely are part of the ethos of the site staff. I looked at areas where this concept has been put into practice many years ago and at areas where the approach is more recent and there are constraints to full implementation. My main focus was to investigate the impact of this approach on biodiversity: what actually happens to species and communities in these settings? I wanted to see if species conservation and natural processes can live side-by-side, or whether there are conflicts, and if so, how these are resolved.

Project Proposal

My main aims were:

- To see what an area with no human intervention actually looks like.
- To understand the philosophy of the approach, as seen by the people who work on site.
- To gain an insight into the constraints against implementing the wilderness approach.
- To see what the consequence is for the building blocks of biodiversity: the species.

To this end, I visited four protected areas: 3 national parks and one nature reserve. The sites visited were:

- The Dutch reserve of **Oostvaardersplassen**. The reserve has been a leading force in integrating naturalistic systems into conservation management. I met the site manager, who showed me the site, focussing particularly on the natural grazing regime. We also discussed the “Green Corridors” approach currently being implemented in Holland, whereby one is moving away from site-based conservation to providing non-intervention green spaces and links throughout the country for wildlife to move within.
- **Müritz National Park** in Germany. My visit focussed on the large-scale restoration of wet woodland and moorland. I also looked at an area that had been damaged by military activity, which turned woodland into bare sand, and is now, through the process of natural succession, returning to woodland. The successional habitats at any one stage in this process are very valuable in their species composition, and the conflict of natural process versus rare species is prevalent here.
- **Lower Oder Valley National Park** in Germany. This National Park has also addressed the matter of large-scale naturalisation and wilderness areas, and incorporates these by zoning the park. Water management is an important tool, the habitats concerned being polder and open water. Unfortunately I did not get the opportunity to spend time with the National Park hydrologist, or obtain much detailed information on the approach, but I did see the different zones and briefly investigated the various botanical community differences.
- **Biebrza National Park** in Poland. Overall, the park has taken the approach of zoning, so there are some areas where natural processes prevail, and others where management takes place. This National Park offered the opportunity to see the ‘end game’ of what protected areas in Western Europe are trying to achieve, as areas of pristine habitat still exist. I saw the largest connected area of Alder carr in Western Europe – adjacent to large-scale management taking place in benefit of the Aquatic Warbler. This offered the opportunity of exploring the possibility of a juxtaposition of wilderness areas and species conservation.

Oostvaardersplassen, The Netherlands

1 March – 3 March 2010

Background

The reserve of Oostvaardersplassen is situated on the Flevoland Polder in Holland, about an hour east of Amsterdam. The polder was reclaimed from the IJssel See in 1968.

Most of this polder is now agricultural land. However, the northern part of the polder turned out to be too wet, as it was set in the deepest part of the IJssel See, and could not easily be drained. This happened at a time of economic recession, and therefore for a while the site was simply abandoned. It was thought that, through the planting of reed, the site would eventually dry out of its own accord and could then be brought into agricultural production. Oostvaardersplassen was never intended to be a site for nature conservation purposes.

However, the site never did dry out, as the areas of reedbed and marsh attracted 30,000 Greylag Geese, as well as Barnacle Geese and Wigeon, which, through their grazing activity, kept succession at bay. The drier part of Oostvaardersplassen meanwhile was scrubbing over. It was at this point, in the early 1980's, that nature conservationists started taking an interest. It was recognised that the importance of the geese as grazers, in their capacity to shape and maintain a landscape, had been overlooked. Furthermore, the surrounding farmers were worried that the increasing numbers of geese would start having negative impacts upon their crops. Optimally, geese like to forage on short grassland. The thought followed that, in Neolithic times, before man started to settle and significantly alter the landscape with agricultural practices, the landscape would have been dominated with large herbivores as well as the smaller grazers such as geese.



Figure 1: The wet part of Oostvaardersplassen – reedbed, willow scrub and open water

Therefore an experiment began to study the development of a site that was free from human interference and where herbivores were allowed to fashion the landscape. In 1985, 30 cattle, 35 horses and 45 Red Deer were introduced into a fenced-off area of 6,000 hectares. This would stop succession of scrub and create short turf suitable for geese to graze. What else would happen, nobody knew. No annual culls, or any other population control measures, were to be taken.



Figure 2: Red Deer

Today

The numbers of large herbivores have increased substantially since 1985 and are now 800 cattle, 900 horses and 1,500 deer.



Figure 3: Oostvaardersplassen, with its herds of herbivores

The numbers of animals are controlled by food availability. In years of drought or after a hard winter the numbers of herbivores are reduced; they then recover in times of plenty. At the time of the visit, the death rate was quite high, as the winter had been cold and prolonged.



Figure 4: Dead animals are part of the experience

The site has increased in importance for a large number of wetland birds. The geese continue to use the site in their thousands, especially in winter. They have been joined by large numbers of wintering and breeding waders and wildfowl, such as Lapwing, Golden Plover, and Shelduck. Spoonbill and White-tailed Eagle now breed on site, and Bearded Tit and Willow Tit are present in the reedbed fringes. The northern part of the site remains wet, with open lakes, reedbed and marsh; whereas the southern area is a drier grazing marsh with areas of scrub and wet woodland. Due to the movements and population fluctuations of the large herbivores, some areas of new woodland and scrub have developed whilst other areas are now very short turf, with areas of rough grassland present in yet other areas.



Figure 5: Horse 'managing' the wet woodland, and signs of tree damage from grazing

Unfortunately it was not possible to obtain information on the botanical or invertebrate interest of the site. Late winter is not a good time to get an idea of either; certainly there is little mention of botanical or invertebrate interest from site staff.

Management approach

There is no management plan in the sense that there are certain desired outcomes, or certain species or communities that are supposed to be encouraged or removed. The site is owned by the government, is fenced in and has been an experimental site

since its inception in 1985. The staff primarily monitor site development, including the populations of some bird species. The reserve also has links with nearby universities, which undertake research and monitoring projects on site, including studies of physical geography as well as the ecology of the site.

There are a few restrictions where human intervention is necessary: there is an obligation to manage the water levels on site, as the entire polder is below sea level.

There has been large-scale criticism from an animal rights movement regarding the fate of the large herbivores. As the numbers of animals are regulated naturally, a substantial proportion dies every winter of starvation. The animals might go through a prolonged period of weakness before finally dying. In response to this criticism the staff now operate a reactive cull policy whereby animals that look like they will not survive are shot to reduce their suffering.

Conflicts

The needs and requirements of some species of waterbird invariably conflict with those of others. For example, an area that used to be open shallow water where Avocets bred has since scrubbed over and become unsuitable for Avocets and other wading birds. However, it is in this new patch of wet woodland that the White-tailed Eagle has built its eyrie and successfully bred. There is currently a possibility that, with relatively high numbers and low food resources, the herbivores will eat and therefore damage the trees, potentially destroying the White-tailed Eagle's nesting site. This is the only site in Holland where White-tailed Eagles breed, and having created - even accidentally - this suitable habitat there is now arguably a responsibility to maintain it. There is a chance that if this patch of woodland is lost, White-tailed Eagle will again become extinct as a breeding bird in Holland.

However, this is not the point of the site. Nature is in a constant state of flux and habitats come and go over time, as weather and grazing and predation pressures shape the landscape. Therefore, the Avocets came and went and might return, and the White-tailed Eagle has arrived and might leave again. Oostvaardersplassen itself is not large enough to have sufficient niches and habitats to cater for all bird species at any one time. Area is the issue, not managed intervention. The naturalistic approach does, however, bring with it an element of uncertainty that can lead to local extinctions.

There are areas where high concentrations of animals have led to poaching of the land, and the overall botanical interest of the site is not high. For a site intended to be a showcase for a certain approach, offering answers to many a conservation quandary and generating outcomes for species conservation, it is very heavily focussed on avifauna, and little on other groups of animals or plants.

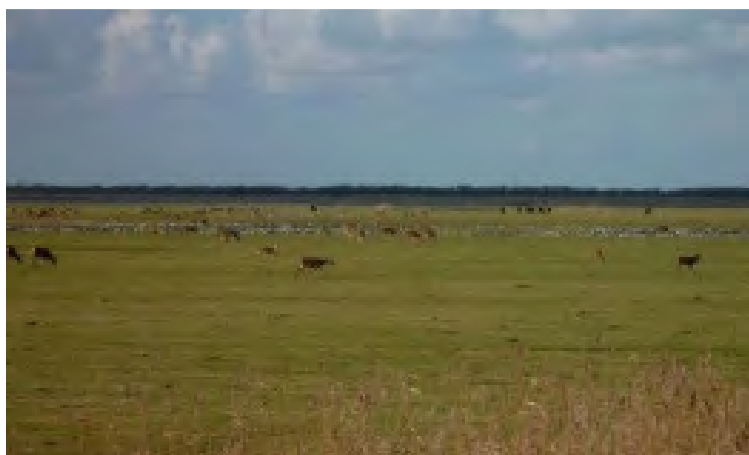


Figure 6: Dry part of site, at present with very short turf

Successes

The site has certainly developed a very important interest for waterbirds, which has exceeded any original expectations that were had in the 1980's. Oostvaardersplassen is home to rare breeding birds in higher numbers than other comparable reserves in Western Europe. Great White Egret, and White-tailed Eagle breed on site; they do so nowhere else in Holland. Furthermore, it provides an important home to a large number of wintering wildfowl and waders.

The other main success is the way the approach of non-intervention, but also that of using herbivores to manage a habitat has been taken up, certainly in the UK. The thinking and philosophy underpinning the Oostvaardersplassen approach has been promoted in British nature conservation journals. Whilst many British nature conservation organisations are not as free or as brave as to be able to carry out complete non-intervention, the idea of using a more natural approach to site management has become a popular conservation tool.

I think the fact that this approach has persisted despite a number of criticisms and conflicts is a large success. In fact, expansion is planned: the Dutch nature conservation department is looking to buy up more land to the south of the site, to extend the area. There will be no predetermined habitat conditions. The animals that presently live on Oostvaardersplassen will be allowed to roam a larger area, and the experiment will continue on a larger scale.

Through all the conflicts and criticisms the basic principle has not been compromised and, as such, generates inspiration for nature conservation organisations throughout Europe. Even if one does not agree with all that is done on site, it does provoke thought and debate and it confronts traditional approaches to species and site conservation.

Lessons learnt

Context is an important part of the non-intervention approach. In Oostvaardersplassen there had been no pre-conceived ideas about how the site should look; it had more or less sprung from nowhere, being reclaimed land, and was not associated with any given biodiversity or species interest. This is a very different setting to that of a British protected area, which almost invariably has existing biodiversity interests associated.

I find the concept of potentially losing a rare species, such as Avocet or White-tailed Eagle, difficult to grapple with. Whilst it is true that, given a large enough area, there should be space for all species, we do live in a world where we are being faced with huge declines and arguably have a duty to look after rare species. This is of course the core of the process versus species conservation dilemma: I had just not realised how deeply the concept of stewardship is ingrained.

I am heartened that, in ornithological terms, this has been such a huge success and I would like to see how larger and more 'natural' site would appear.

Courage is certainly essential to persist in the face of public and political opposition. Courage is also needed as results can come slowly and might not always be as expected: the importance of having a long-term perspective and to expect the unexpected was brought home to me. I learnt that it is possible not to worry too much about local extinctions, but to look at things at a larger national, even European, scale.

Lastly, I found the concept of going back to Neolithic times, and using herbivores to shape the landscape to this degree very interesting. In no other site that I visited during my scholarship travels was such importance granted to grazing animals, nor was it questioned what a climax community might have been in former times.

Müritz National Park, Germany

4 March – 10 March 2010

Background

German nature conservation law stipulates that national parks should be areas where nature has free reign and is allowed to develop without human intervention. Process conservation is a higher priority in national parks than either species or habitat conservation. National parks were thus designated in areas where large tracts of natural or semi-natural habitats were still intact. The idea is that national parks are to be places where one can experience and learn about natural processes and self-regulation.

Müritz National Park is situated in Eastern Germany, about two hours north of Berlin. The national park was established in 1990. It consists of two geographically distinct areas: the northern – called the Müritz part – is the larger, bordering the eastern shore of Lake Müritz itself. The soil is generally sandy, and there are numerous lakes situated within woodland, mainly pine. The southern part - called the Serrahn part - is on loamy soil and, has fewer lakes, but contains some of Germany's oldest Beech woodland. The two areas have a combined size of 322km².

Before it was a national park, the majority of the Müritz part was used either for forestry, as a Russian army training area, or as a state-owned hunting area. The Serrahn part was used partly for forestry but mainly as a state-owned hunting area.

The basic premise is that had the land within the national park not been managed by man for agriculture and forestry, the majority of the area would consist of Beech woodland on the dry soils and moorland on the wet soils. However, human impacts have been substantial. The Beech woodland was felled to make way for commercial forestry and agriculture. The majority of the woodland in the Müritz part today is pine plantation. The Serrahn part has been far less cultivated: there are large tracts of ancient Beech woodland where no management has taken place and near-natural conditions exist.



Figure 7: Woodland types in Müritz National Park: beech woodland and pine forest

The wetter areas, normally those that are lower-lying or surrounding the lakes, are lowland moors. The majority were drained in the past to improve the areas for agricultural use, and are now degraded dehydrated moors, where the peat is degenerating and eroding.



Figure 8: Moorland and lake in Müritz National Park

Management plan and implementation

Müritz National Park has been zoned into three different categories:

- The 'process protection zone' where natural processes are to prevail and human intervention is minimised: 84% of the national park.
- The 'cultivation zone' where some human intervention and sympathetic management is permitted to preserve a particular form of land management: 13% of the national park.
- The 'development zone' around the visitor centres and villages: 3% of the national park

The designation of both terrestrial and aquatic areas was mapped out in the early years of the national park's existence and now forms the backbone of the management plan.

Within the process protection zone the following decisions were made:

The woodlands were divided into zones A, B, and C.

- Zone A was allocated to those areas where the woodland was natural or near-natural, and where no further woodland management was to take place. This included the ancient beech woodland and those areas of pine plantation over 80 years old. It also included the former Russian army training areas.
- Zone B was allocated to woodland areas where there were existing plantations; these were of medium age, and after one thinning operation, all woodland management was to cease.
- Zone C was allocated to areas of young plantation where it was considered necessary to carry out more forestry works to speed up the process of getting the woodland closer to a near-natural stand.

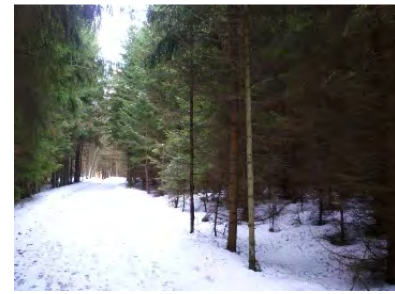
All woodland management is to cease in 2015.



Woodland zone A



Woodland zone B



Woodland zone C

Figure 9: Different woodland zoning

The moorlands are all in the process protection areas. However, it was recognised that the water regime of these areas had been significantly affected and that the moorlands were unlikely to recover on their own. Large-scale rewetting projects were established to restore the water regime of the moors. Once this had occurred, the moors were left to continue without human intervention. The moorland rewetting projects have now been completed.

The lakes have been separated into different categories. In some areas the lakes are supposed to be left as near-natural as possible and no recreation such as boating or fishing is permitted. In other lakes, fishing or boating is allowed. The same goes for the woodland: some areas have been designated as core zones where tourist infrastructure is minimised and picking mushrooms or Bilberries is not allowed; and other areas that are earmarked for more intense recreational pressure. The management of tourist infrastructure and access is carried out by the national park authority and forms a large part of their work.

Successes

Moorland restoration

In the late 1990's €1 million was obtained from the EU LIFE fund to restore over 1,000 hectares of degraded moorland and lakes within the Müritz part. To this end, large areas of farmland in private ownership were bought up or exchanged; the drainage pumps were switched off and the drainage ditches blocked. Since then, the lakes have become bigger and moorland has established. Moorland plants, invertebrates and birds have recolonised the area or increased in numbers.

Following on from this success, further, smaller areas of degraded moor and marsh were rewetted using the same techniques. By now a total of 127 moors and 31 lakes have been restored, covering some 3,330 hectares. Five pumping stations have been shut down and 140 dams put into drainage ditches. In all cases the moorland has begun to re-establish and moorland species diversity has increased.



Figure 10: Examples of blocked ditches

In some of the degraded moors, woodland had become established or been planted. These woods were left standing; many trees died off following the increase in water level.

The numbers of breeding Cranes has increased to in excess of 100 pairs, and the numbers of Bittern and other waterfowl have increased. Dragonflies are monitored in rewetted areas annually, and some new species have colonised the rewetted areas, such as the Yellow-spotted Whiteface dragonfly.

In some ways, public acceptance of the rewetting project is the biggest success. Public opposition was strong in the early years. In part, the local population was concerned that rewetting would result in uncontrolled flooding. There were fears that there would be plagues of mosquitoes. Opposition existed at times simply because the local population did not trust a government body. When the landscape changed and the trees died off there was widespread upset amongst locals and visitors alike. However, now that no property has been flooded and no agricultural land has suffered, the population is coming to terms with what was done. There is now an annual event in Blankenförde, a community in the midst of the largest rewetting scheme, which celebrates nature, biodiversity, and the moors.



Figure 11: Rewetted moorland and dead trees - the 'Everglades of Blankenförde'

Woodland management

It was difficult to terminate woodland management within the national park, both internally and externally. Internally it was difficult as 80% of the staff base originates from the former forestry commission and the ethos had always been to manage the woodlands. However, the national park principle of non-intervention eventually persisted. This was also difficult from a social point of view, as the forestry workers had less and less to do as woodland management decreased, so needing new work. Some are now retired and some have found work in other areas.

Woodland monitoring is carried out in all types of woodland to study the process of woodland re-naturalisation. Two members of staff are responsible for woodland monitoring, assisted by the rangers, and often in conjunction with German universities.



Figure 12: Woodland monitoring

Large amounts of data are gathered from fourteen fixed plot sites. These sites are situated in a variety of woodlands, ranging from ancient untouched beech woodland to relatively recent intensively managed plantation. Data such as tree species, shrub and ground layer species, tree width, height, and twiginess are gathered. These are compared with research data gathered from the Carpathian Mountains, where corresponding untouched habitat – in effect a control site – is thought to exist. The aim is to understand what natural woodland attributes are, and if, and how quickly, the Müritz woodlands are moving in that direction. To date no analysis has been carried out to indicate what the Müritz woodlands are doing.

Conflicts

Species conservation

The areas used for military training by the Russians in GDR times provided a poignant example of the conflict between process and species conservation. When the Russians left in 1993 these areas were more or less sandy deserts; the army exercises having removed all vegetation. Succession began rapidly: at first lichens and mosses, followed by grasses and small herbs. At present the community

consists of heathy scrub with pine and birch. From the point of view of biodiversity, a number of very rare plants and animals now live in this semi-open area, many of which are IUCN-red listed, such as Sand Lizard or Nightjar.

There is an argument for maintaining this type of habitat for its biodiversity value, especially as the surrounding habitat is all wooded. It could be argued that this area could have been put into the national park's cultivation zone. However, the authority maintains that there is no cultural value associated with this site. The value of the national park, the aim of the park, is to regain a large-scale natural system. They see this area as future primeval woodland: it started from a blank sheet (the sandy waste left behind by the Russians), where no human management has since taken place. It is acknowledged that the rare species found on site at present will not persist and will become locally go extinct.

Monitoring plots are situated on these areas of succession. The rate of plant growth, the plant species, the extent of bare ground, and populations of invertebrates, such as crickets, are studied. This is very exciting for the national park as it is a testbed where the processes of succession from a blank sheet can be investigated. No analysis of all the data is available yet.

Invasive species

There are two invasive species present in the woodland areas of the national park: Black Cherry and Silver Fir. Both are able to persist under a dense Beech canopy. Beech is the climax tree species in this area as it can grow in shady areas, which the other resident tree species cannot, and then, once it is established, few other trees can prevail. However, both Black Cherry and Silver Fir can persist and they are spreading. The National Park Authority has taken the decision to leave them, rather than to try and eliminate them.



Figure 13: Invasive species: Black Cherry (left) and Silver Fir (right)

Hunting

Hunting is still carried out in the national park. Red, Fallow and Roe Deer, live in the park, as well as Wild Boar, and a certain quota is hunted and shot each year. During my stay at the national park there were large debates as to whether this should continue. It goes against the idea of non-intervention, as well as causing significant disturbance to wildlife whilst the hunts occur. On the other hand, it is recognised that

the national park has a duty to neighbouring landowners, mainly farmers, whose crops would suffer should deer numbers increase. Deer also reduce natural regeneration in the woodland by browsing saplings, which is a further reason for controlling numbers.

There are areas within the core zones where hunting is prohibited, and there are now increased restrictions to creating new infrastructure such as raised hides and viewing rides. Whilst it is recognised that some element of hunting will always remain due to responsibilities to neighbouring farmers, in the long term the authority is seeking to minimise the amount of hunting.

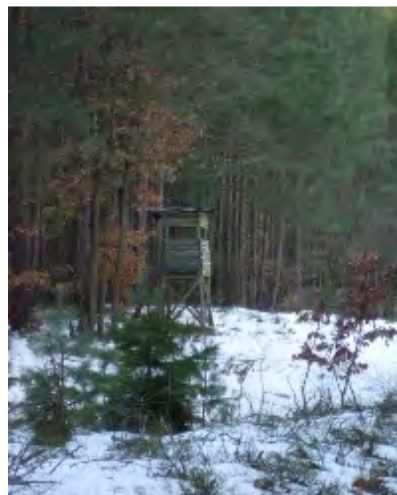


Figure 14: Raised hide

Lessons learnt

Müritz National Park is in many ways more constrained than the Oostvaardersplassen, as there is no fence around the national park, so the authority has to consider neighbouring landowners. Furthermore, Müritz has to cater for large numbers of visitors, so from the start, some aspects of non-intervention are impossible to implement.

It was very inspiring to see the areas of moorland restoration. It was also very interesting to see the difference between restored and degraded habitats, and to appreciate the speed with which recovery can happen. Courage again seems to be of the essence: the project officer needed great courage and determination to make the project succeed in the face of intense local opposition. The local acceptance of the project, and the habitats it has resulted in, is a hopeful sign.

As in Oostvaardersplassen, the restoration techniques employed were not very difficult. The difficulty lay in realising a concept and seeing it through. It appears, though there is currently no analysed data to confirm this, that nature has responded well and biodiversity is increasing in the restored areas. As an experience I found it awe-inspiring to see such a large area of non-intervention moorland: no cattle, no fences, nothing.



Figure 15: Restored moorland

I found the approach to hunting interesting, especially compared with Oostvaardersplassen, where large herbivores are used to shape the landscape and the premise that closed canopy forest is the natural climax vegetation is contested. I think that the case for hunting in Müritz is much more a cultural argument than a biological one. If one really wanted to let natural processes prevail, deer would be part of that, especially given that the range of a key predator, the Wolf, is moving closer. A compensation scheme for neighbouring farmers who have been affected could easily be arranged. I found this an interesting discrepancy.

Overall, I was very impressed with how focussed the staff generally were in fulfilling their aims and the management plan, and how clearly this pervaded all the work that they did.

Lower Oder Valley National Park, Germany

21 August – 27 August 2010

Background

The Lower Oder Valley National Park is Germany's only floodplain national park. It is situated on the border with Poland, about an hour northeast of Berlin. Broadly speaking the Oder flows from south to north in this area, and the national park is a long thin strip along the floodplains of the western border of the Oder: the national park is sixty kilometres long and between one and three kilometres wide. The national park also encompasses areas of woodland and dry grassland along the higher ground of the western edge of the national park. The national park has a total area of 10,500 hectares.



Figure 16: View over middle part of Lower Oder Valley National Park

The floodplain was polderised in the early 20th century in order to create agricultural land and to protect the nearby settlements from flooding. The river was straightened and a new canal – the Hohensaaten-Friedrichsthaler-Wasserstrasse - built to the west of the main river. Dykes were built along the bank of the Oder and along the western edge of the floodplain, adjacent to the new Wasserstrasse. Sluices were built into these dykes and thus the water level in the area between the two dykes – now a polderised floodplain - became controllable. In winter the sluices are opened and the polders are flooded, in summer the water is pumped out and the land used for agriculture. A number of canals run between the Oder and the Wasserstrasse, creating separate polders where water levels can be individually managed. The agricultural land is used for cattle and sheep grazing, and for hay and silage production.

The Lower Oder Valley is a relatively young national park, formally designated in 1995. Like Müritz National Park, the primary aim of the site is to restore and protect natural processes. My investigation was focussed on the floodplain habitats of the

national park. The main habitats within the wet polder are seasonally flooded grasslands, carr woodland and open water in the form of old oxbows, canals and pools. The main species focus of the area appears to be the avifauna. The national park boasts breeding White-tailed Eagle, Osprey, Crane, Aquatic Warbler, Corncrake, Black Tern and White-winged Tern, as well as being a very important migration stop-over point for Cranes, and an important wintering area for wildfowl. Far less information was available on other species groups, including aquatic species, or the botanical communities.

The polderisation was also carried out to the north of the existing national park boundary. This area is now within Poland and is a protected area, though not a national park. It is of particular interest because the sluices were destroyed in World War II and have not been repaired, meaning that this land has now been an area of non-intervention for 65 years.

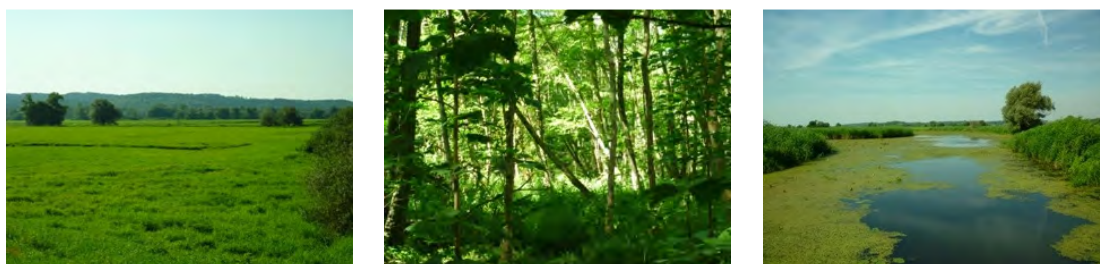


Figure 17: Seasonally flooded grassland, carr and open water habitats

Management plan and monitoring

A management plan does not yet exist, but the aims of the national park have been published, along with a mapping exercise determining which polders are to be returned to wilderness areas and which are to remain in human management. Together, these are what the national park authority is meant to be working towards. The end point is for 50% of the national park area to become a non-intervention zone. This is to be achieved by decommissioning the sluices to allow a natural water regime, and by removing agricultural practices. In practice this means it is necessary for the authority to gain control over one or more entire polders, within which the water regime can be naturalised.

Only 15% of the area within the Oder Valley is state-owned: the rest is in private ownership or belongs to the Friends of the Lower Oder Valley. Given the aim of restoring a natural water regime and removing agricultural practices, it is essential that the land be owned by the state, or by a sympathetic landowner, as the land becomes unusable for other purposes. Buying up land, or setting up land-exchanges with the local landowners, has taken up a lot of resources in terms of time and money.

Along the northern border of the national park, adjacent to Poland, is Polder 10, which has been set aside to be completely free from human management. Polder 10 covers 1,773 hectares, of which just over half (690 hectares) is still in active agricultural management. Therefore, the only step towards re-naturalisation that has taken place is the removal of agricultural management (grazing and hay-cut), as the water regime is still controlled.



Figure 18: Polder 10: in active agricultural management (left) and non-intervention zone (right)

The national park does not have a habitat-monitoring programme, and also appears not to have any baseline data about which habitats and species (other than birds) were present prior to removing human management. Therefore it was not possible to obtain data on how, and to what extent, the unmanaged areas differ from managed areas, nor the rate at which change is occurring.

Due to the lack of scientific staff within the national park authority it was also difficult to obtain anecdotal data; a ranger informed me that in the non-intervention zones there had been an increase in Reed and Reed Canary-grass, which were reaching heights of over 2 metres, due to the eutrophic floodwaters. There had been less scrubbing over by Willow than was expected.

An ideal comparison could be run against the abandoned polder in Poland which had been destroyed in the 1940's, where there has been no human intervention for 65 years. No such comparison has been carried out formally, and sadly, there was no opportunity to visit the Polish part of the Oder floodplain.

From my observations, there appeared to be a shift from Reed Canary-grass and Reed Sweet-grass in managed areas, to a tall sedge fen and Reed community in unmanaged areas. Sward height was obviously higher in the unmanaged areas, and the vegetation structure was determined by water levels, rather than by grazing or cutting activity.

Successes

Management in the polder, even now that it is a national park, has been for flood defence and agriculture. There is a ruling dating from 1931, which stipulates that on 15 November each year the sluice gates are opened and the polder flooded, and on 15 April the sluice gates are shut and water pumped out. This ruling remained in place even with the inception of the national park. It is detrimental to the wildlife in the area: it leads to drowned animals in winter, and to failed nests of waterbirds in summer, as the areas where they breed dry out and expose them to predators. The national park authority is keen to move back the date at which the polder are pumped dry, to maintain favourable conditions for the breeding birds. The control of the sluice gates is in the hands of the national park's chief executive. In 2009, it was decided that the opening and closing of the sluice gates in Polder 10 could deviate from the stipulated dates, given landowner approval and suitable weather. Pumping started in late May, giving many birds the chance to bring off a brood for the first time.

This is the only conservation success I was made aware of during my stay in the national park. There have been other successes regarding acceptance by the local population and the integration of the national park into the regional infrastructure.

Conflicts and challenges

The Lower Oder Valley National Park is the western-most breeding site for the globally threatened Aquatic Warbler, as well as having an internationally important breeding population of Corncrake. Both species are associated with the cultural landscape created by extensive grazing and haymaking on wetlands. The removal of these practices and the subsequent habitat change has resulted in the extinction of both species in the unmanaged areas of Polder 10, and a population shift to managed areas further south in the national park. In 2009, not a single Aquatic Warbler was recorded; in 2010 three singing males were recorded, but due to the severe floods in May and June it is not known if there was any breeding success at all. Therefore there is a chance that the only German population of Aquatic Warblers is now extinct, possibly due in part to the management approach taken in Polder 10.

A challenge to the implementation of the non-intervention approach is the issue of landownership. It is costing the national park authority a lot of time, money and effort to arrange and organise land purchase or land swapping with local landowners. The approach is also somewhat *ad-hoc*, as it depends upon the availability of money from the regional government, and upon which parcels of land come up for sale. Whilst this will presumably become less of an issue in the long-term, it was interesting to note this process in action. A further problem the authority faces is that after the inception of the national park, a charitable body called the Friends of the Lower Oder Valley was formed. This body bought up large tracts of land to help implement the national park purposes. I gather that relations between the authority and the Friends of the Lower Oder Valley are not at their best, and that the land bought by the Friends is no longer being used to achieve the national park purposes.

A conflict the national park faces in both managed and non-intervention zones is the issue of flood control. It is clearly stated in the Lower Oder Valley National Park plan that flood defence has precedence over nature conservation interests. Following intense rainfall in May and June 2010, the sluice gates were opened, the polder inundated, and countless nests were flooded. Had the water regime been natural, this would also have occurred to a similar extent: the point is that the polders are pumped dry in summer for human benefit and to the detriment of wildlife, and then re-flooded should the need arise, again for human benefit and to the detriment of wildlife: wildlife loses every time, even in the most protected landscape designation Germany has.



Figure 19: Flooded polder, May 2010 (© Heike Flemming, LOVNP)

There appears not to be a clear view as to what the national park authority means when they say 'let natural processes prevail'. For example, there was a project to restore Black Poplar floodplain woodland by planting saplings and fencing them to protect them from herbivores. This was started, but later apparently abandoned, as it was seen to constitute habitat management.



Figure 20: Poplar protection zone

Protecting natural processes seems to end with the removal of agricultural practices and establishment of a natural water regime. No restoration of degraded habitats is carried out (apart from the abandoned Black Poplar project), and drainage ditches have been left *in situ*. The significance of large herbivores as a part of the landscape does not appear to have been addressed, although hunting is now very restricted within the national park. Whilst the approaches taken by the national park authority are all valid, it appears that there is simply a lack of a coherent rationale guiding their decision processes and their long-term ambitions.

Lessons learnt

Of all the protected areas I visited, the Lower Oder Valley is the one that appears to face the biggest challenges. Constraints imposed upon the national park in delivering its purpose of natural process conservation; such as flood protection and lack of funds to purchase land, coupled with a lack of in-house technical expertise, mean the authority is struggling to clearly define its goals as well as implement them.

It emphasises the importance of context – implementation is hampered by conflicting priorities, in this case flooding – as well as sufficient funding and political will to implement the national park purposes.

It also made clear to me the importance of having a robust base of scientific staff present within a national park authority, who are able to shape, inform, implement and monitor the natural objectives of a national park, and who can also contribute to other national park objectives such as visitor infrastructure, regional development, and education - unfortunately I was unable to learn much about the technical aspects, or about the species and habitats on the Oder Valley.

The experience in the Lower Oder Valley has made clear to me the importance of a national park authority being clear about both what is to be achieved, and how it is to be done.

Biebrza National Park, Poland

28 August to 3 September 2010

Background

Biebrza National Park is situated in northeast Poland along the valley of the River Biebrza. It covers an area of 600km², 60% of which is state-owned. The main habitats within the national park are open water, swamps, bogs, flood meadows, sedge fens and wet woodlands, as well as some dry grasslands and woodlands. It is also a relatively young national park, designated in 1993.



Figure 21: Typical habitats of Biebrza National Park – sedge fen (top) and wet woodland (bottom)

The whole national park is covered by Natura 2000 designations. As part of the designation process a great deal of information about habitats and species was

gathered and mapped by the authority. The national park authority has a number of specialists, including ornithologists, botanists, entomologists, aquatic ecologists and mammalogists, all of whom have been involved in gathering data and monitoring important species and habitats.

Management plan

The national park authority does not yet have a management plan, though it has broadly outlined its objectives and created zones within which different conservation approaches are taken:

- A zone of strictest protection, where no management is to take place. There are two such areas in the national park: an area of pristine raised bog known as the 'red bog', and a 1,000 hectare complex of uninterrupted alder carr.
- A conservation management zone, *i.e.* cultural landscapes where management for a given habitat or species takes place.
- A zone of human habitation and infrastructure.

A number of areas that are not formally within the strictly protected zones are *de facto* areas of non-intervention, as they have not been managed by humans for decades.

Olsy Laskowieckie: Alder carr

This part of Europe still has areas that really are near-natural and, as such, are examples of habitats that might be considered the end game for habitat restoration and wilderness creation projects currently occurring in Western and Central Europe.

I was shown one of the two areas of strictest protection: Olsy Laskowieckie, a 1,000 hectare complex of Alder carr. It has never been drained (apart from some ineffective small-scale attempts on the fringes), never been managed for forestry, and has no paths or roads leading through it.



Figure 22: Olsy Laskowieckie Alder carr

The carr provides an important habitat for nesting White-tailed and Lesser-spotted Eagles as well as the rare White-backed Woodpecker. No formal monitoring is undertaken within this area, due to the inaccessibility of the habitat, but whilst walking through I noted great variation within the ground flora, depending on the water table, or where clearings had been created by fallen trees. I was astonished by the richness of the scrub layer and understorey, which included Yellow Flag, Reed, large sedge species and bog-mosses in the wetter areas, as well as Herb-paris, Enchanter's Nightshade, Spiked Speedwell and Pendulous Sedge in the drier areas.



Figure 23: Understorey in the Alder carr

It was a truly humbling experience seeing such a habitat, and very interesting to see what wilderness can look like, and how rich in biodiversity it was.

The other area of formal non-intervention, the 'red bog' is an area of c. 2,000 hectares of pristine raised bog. Again, it is regarded as the end game for bog restoration projects, and an international science project is monitoring everything in the bog, from hydrology through emissions to mammals. Unfortunately, time and staff constraints meant it was not possible to see this area.

Bagno Lawki: Aquatic Warbler citadel

Next to the Alder carr is a 5,000 hectare sedge fen, which is home to the world's largest breeding population of the globally threatened Aquatic Warbler. Three thousand pairs of Aquatic Warblers breed here, along with numerous other wetland birds such as Corncrake, Spotted Crake, Hen Harrier and Common Snipe.



Figure 24: Bagno Lawki Aquatic Warbler habitat

In the past the area was used for agriculture, involving extensive cattle grazing and a manual hay-cut in late summer to provide fodder for the cattle during winter.



Figure 25: Picture taken from Biebrza National Park information board of people manually cutting sedge in the traditional manner

This regime, which resulted in a mosaic of different sward heights, but generally favoured a shorter sward, provided the ideal conditions for Aquatic Warblers. As economic conditions changed, however, the area was abandoned. Changes in cattle breeds and management practices meant that grazing no longer took place, and it became uneconomic to cut the fields manually, in part because the new breeds of cattle needed richer food. The habitat started scrubbing over and the population of Aquatic Warblers began to decline.

As a result, the Polish partner of BirdLife International bought the land, and, with advice from the RSPB (the British BirdLife partner), started to implement a management regime designed to suit the Aquatic Warbler. The project is funded with EU agri-environment money. The management involves cutting the vegetation to a certain height in late summer, using special tracked vehicles. A proportion of the

vegetation remains uncut each year to maintain variation in the fen. The emerging wet woodland has been cut down.



Figure 26: Machinery used to cut vegetation on sedge fen

Monitoring occurs as part of the project. It was established that the year immediately after a cut is not ideal for Aquatic Warblers, but that the second and third years are optimal, after which conditions decline again. Hence, a three-year rotational cut is optimal. The situation is not ideal: no grazing is carried out because no appropriate stock has yet been found. There is no market for the biomass removed from the area, so it is currently considered waste. Furthermore there are fears that the machines may not be ideal for the land, not least because they suck the vegetation off the ground after cutting, and presumably also remove the invertebrate biomass with it.

It was a stark contrast to the adjacent Alder carr. I presume that, left to its own devices, this area would eventually return to wet woodland and become as rich as the one we had just visited – but at the cost of losing a globally threatened species, as well as other species of conservation concern. I visited the site when the breeding birds had already left, so I did not see it in its glory, and I presume I would have been awe-struck had I seen the site in May. However, there was also no conservation of cultural practices: this was industrial-scale management for one particular suite of species.

Lessons learnt

Simply seeing such a large extent of pristine habitat was for me one of the single most inspiring and memorable moments of my scholarship. Seeing the richness and the diversity in this area of wilderness, as well as experiencing an area without human infrastructure, was truly humbling.

When this was juxtaposed with the large-scale management for Aquatic Warblers, I realised that one has to be clear what is to be achieved where, and why. The national park authority are clear about why they have chosen the particular path of large-scale management; and they are aware of and honest about the problems associated with this approach.

Interestingly, whilst Biebrza National Park has areas of wilderness and areas of cultural landscape, there are currently no projects to restore habitats to wilderness zones, where this might be appropriate. This appeared to be an interesting gap in the approach of the authority, and it emphasised for me the importance of having a management plan with a clear overall strategy.

Summary and Conclusions

The first aim of my scholarship project was to see what an area with no human intervention actually looks like. This I certainly achieved, particularly in Oostvaardersplassen, Müritz, and most notably in Biebrza with its near-pristine habitats.

My second aim was to understand the philosophy of the approach as seen by the people who work on site. During my travels I saw a range of approaches to landscape-scale process conservation and large-scale habitat restoration. Interestingly, the approaches, in terms of ethos, were as varied as the protected areas I visited. Whilst the technicalities were relatively straightforward in all cases – e.g. block the ditch, stop felling trees, stop pumping water, stop controlling animal numbers – it appeared more difficult to set a strategy and to decide what was appropriate within a given context.

Context, I learnt, was very important. Both the biogeographical and political contexts of a protected area determine not only what is feasible, but also what is desired. So for example, it was relatively easy for Oostvaardersplassen to carry out their non-intervention approach, as there were no pre-conceived ideas about the site and its development. In Müritz, whilst there were problems with local opposition, it was relatively clear from an ecological context what to do in order to achieve natural moorlands and woodlands, and the authority seemed to have carefully considered different approaches for habitats within the park and which would be most appropriate. The political context presents the Lower Oder Valley with problems in realising their wilderness objective; whilst the established presence of pristine habitats in Biebrza meant that the decision to leave them was straightforward.

Courage was also essential. Opposition to re-naturalisation projects from various factions of the population was fierce in all protected areas, and internal opposition was sometimes an added difficulty. In Oostvaardersplassen and Müritz in particular, I think it is the courage of the staff in standing up for their convictions and following a project through which has enabled the project to become the reality and the success they have become.

Courage and context both need to be communicated. In successful projects, the officer was able to communicate why they were doing this, and were very clear as to why this was the appropriate thing to do, and what the benefits and disadvantages of this approach were. It is critical to honestly and clearly communicate aims and possible challenges to both internal and external audiences.

Thirdly, I wanted to gain an insight into the constraints that are imposed when implementing the wilderness approach. The constraints were different in every protected area, though there were some common threads:

Fears of neighbouring farmers that having a wilderness area on their doorsteps would have a detrimental impact on their productivity, be it through flooding or damage by wild animals, were common. These could be alleviated either by showing that the fears were unfounded, offering compensation or land in exchange, or by entering a compromise, such as controlling game animals.

Every protected area I visited faced criticism from naturalists because they were allowing certain species become locally extinct, as natural processes resulted in a gradual change in habitats. This change in habitats and thus of a familiar landscape upset both the local population and visitors in all of the protected areas I visited.

Financial constraints: *i.e.* not having the funds to implement the strategy, were a strong factor in the Lower Oder Valley. In Oostvaardersplassen, there were conflicts with the animal welfare lobby.

Political constraints, both internal and external, simply because 'X' did not like what 'Y' was doing, were common and appeared to be the most frustrating of all.

Lastly I wanted to understand what the consequences are for the building blocks of biodiversity: the species. In some ways I did not learn anything I did not know beforehand: some species profit from non-intervention habitats and others benefit from a cultural landscape. I learnt that assigning which approach, habitat, or species takes priority is the most difficult decision. It is relatively straightforward to make a decision in areas that are ecologically degraded, such as a drained moor or plantation forestry; but becomes more difficult when there is considerable species or habitat interest already present, as in the current state of Oostvaardersplassen, the army training areas in Müritz, or the breeding Aquatic Warbler population in the Lower Oder Valley. It is certainly not a straightforward decision to take and it comes back to context: in any given location the conservation professionals need to make an honest decision as to why one approach is deemed more suitable than any other: and they must then have the courage to follow that approach through.

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Appendix 1: Species mentioned in this document

Plants

Alder	<i>Alnus glutinosa</i>
Beech	<i>Fagus sylvatica</i>
Bilberry	<i>Vaccinium myrtillus</i>
Birch	<i>Betula</i> sp.
Black Cherry	<i>Prunus serotina</i>
Black Poplar	<i>Populus nigra</i>
Bog-moss	<i>Sphagnum</i> spp
Enchanter's Nightshade	<i>Circaea lutetiana</i>
Herb Paris	<i>Paris quadrifolia</i>
Pendulous Sedge	<i>Carex pendula</i>
Pine	<i>Pinus</i> sp.
Reed	<i>Phragmites australis</i>
Reed Canary-grass	<i>Phalaris arundinacea</i>
Reed Sweet-grass	<i>Glyceria maxima</i>
Sedge	<i>Carex</i> sp.
Silver Fir	<i>Abies alba</i>
Spiked Speedwell	<i>Veronica spicata</i>
Willow	<i>Salix</i> sp.
Yellow Flag	<i>Iris pseudacorus</i>

Birds

Aquatic Warbler	<i>Acrocephalus paludicola</i>
Avocet	<i>Recurvirostra avosetta</i>
Barnacle Goose	<i>Branta leucopsis</i>
Bearded Tit	<i>Panurus biarmicus</i>
Bittern	<i>Botaurus stellaris</i>
Black Tern	<i>Chlidonias niger</i>
Crane	<i>Grus grus</i>
Golden Plover	<i>Pluvialis apricaria</i>
Great White Egret	<i>Ardea alba</i>
Greylag Goose	<i>Anser anser</i>
Hen Harrier	<i>Circus cyaneus</i>
Lapwing	<i>Vanellus vanellus</i>
Lesser Spotted Eagle	<i>Aquila pomarina</i>
Nightjar	<i>Caprimulgus europaeus</i>
Osprey	<i>Pandion haliaetus</i>
Shelduck	<i>Tadorna tadorna</i>
Snipe	<i>Gallinago gallinago</i>
Spoonbill	<i>Platalea leucorodia</i>
Spotted Crake	<i>Porzana porzana</i>
White-tailed Eagle	<i>Haliaeetus albicilla</i>
Wigeon	<i>Anas penelope</i>
Willow Tit	<i>Poecile montanus</i>
White-winged Tern	<i>Chlidonias leucopterus</i>
White-backed Woodpecker	<i>Dendrocopos leucotis</i>

Mammals

Fallow Deer
Roe Deer
Wild Boar
Wolf
Red Deer

Dama dama
Capreolus capreolus
Sus scrofa
Canis lupus
Cervus elaphus

Invertebrates

Crickets
Yellow-spotted Whiteface

Gryllidae
Leucorrhinia pectoralis

Reptiles

Sand Lizard

Lacerta agilis