

**Resolution CM/ResDip(2008)1
on the revised regulations for the European Diploma for Protected Areas**

*(Adopted by the Committee of Ministers on 20 February 2008
at the 1018th meeting of the Ministers' Deputies)¹*

Appendix 5: Model plan for annual reports

Annual report for the year 2018

Annual reports should describe the changes that have taken place since the previous year in dynamic terms of management and function and not be limited to basic data. Any new text or map introducing a change in the situation of the area should be attached to the annual report.

State:

Name of the area: Oostvaardersplassen

Year and number of years since the award or renewal of the European Diploma for Protected Areas: 2009

Central authority concerned:

Name: Staatsbosbeheer

Address:

Tel:

Fax:

e-mail:

www:

Authority responsible for its management:

Name: Staatsbosbeheer

Address:

Tel:

Fax:

e-mail:

www:

¹ As amended by Resolution CM/ResDip(2014)2 on 2 July 2014 at the 1204th meeting of the Ministers' Deputies.
Internet : <http://www.coe.int/cm>

1. **Conditions:** List here all conditions which were attached to the award or the renewal of the European Diploma. Explain either how the conditions have been totally complied with or detail the progress in complying with the conditions. Please also indicate any unresolved difficulties that you have encountered.

With regard to new information received concerning the development of the Lelystad Regional Airport, despite the condition attached to the award in 1999, any development of the Airport must not have any negative impact on the reserve; this is to be confirmed once the full Environmental Impact Assessment (EIA) procedure, including public consultation, has been finalised, and this should examine in particular:

- **all alternative locations with the least disturbing effects on the De Oostvaardersplassen Nature Reserve and its surroundings;**
- **all flight routes and heights and their risk of disturbing the fauna making use of the reserve and its surroundings as well as the risk of collision of birds with airplanes;**

As reported in last year's up-date the flying-routes have been established respecting the Natura 2000 requirements. This means that airplanes fly only at high altitudes over the Oostvaardersplassen and that the upward and downward movements occur outside the nature reserve. Last year, it was decided to postpone the opening of the Airport until 2020. On 4 December, the European Commission lodged legal objections to the traffic division scheme required for airline companies to move from Schiphol to Lelystad. At the moment, a debate is being held in Parliament (the Second Chamber) about the Minister's new proposal to offer companies cargo flights as well as charter flights at Lelystad Airport as overflow from Schiphol Airport. This could mean that a new postponement will be requested for the opening of the Airport after 2020.

2. **Recommendations:** List here all recommendations which were attached to the award or the renewal of the European Diploma. Explain either how the recommendations have been totally complied with or detail the progress in complying with the recommendations. Please also indicate any unresolved difficulties that you have encountered.

- A. the annual reports must include a specific paragraph on all developments in relation with Lelystad Regional Airport;
- B. the authorities of the surrounding municipalities and the Province must be persuaded to decrease external impacts on the reserve by reviewing urbanisation and zoning plans where appropriate;
- C. the optimal functioning of the two Visitor's Centres (Almere and Lelystad) should be ensured by increasing the budget for personnel, particularly with regard to the recruitment of communication experts;
- D. the further integration of adjacent green areas such as Hollandse Hout into the reserve management should be completed; priority should be given to rebuilding the railway along a new route to the south of this zone and opening a new railway station at Lelystad-Zuid;
- E. the visual impact of the urbanisation in Almere should be further minimised with the aim of a better gradual integration of the city into the open landscape by fully respecting the border and buffer zones of the reserve and by still further lowering the agreed building heights and volumes;
- F. the recommendations of the ICMO (International Committee on the Management of large herbivores in the De Oostvaardersplassen) report related to the management of the reserve and the further extension of the reserve should be implemented by building a corridor to Horsterwold; all efforts should be concentrated on establishing the De Oostvaarderswold as a multifunctional corridor with combined importance for nature conservation, recreation and water management; the existing windfarms along the future Oostvaarderswold corridor should be reviewed to reduce the risks of bird collisions and make it appear as 'wild' as possible; new developments, infrastructures and investments in the future corridor zone other than those related to its specific ecological functions should be avoided; future ecological interconnection potential should be maximised by constructing wildlife crossings and tunnels where necessary.

- A. Around Lelystad Airport, developments are in full swing. An exit from the Larserweg is laid out towards the Airport. Staatsbosbeheer is involved in the construction of the exit and provides sand for the construction of the road. There are no new developments in this area compared to last year. Last year, the plans for the gate area developments on the Almere side were finalised and preparatory work has begun. This concerns the previously-initiated woodland changes in the Oostvaardersbos and the improvement of the roads and paths in the gate area. For the gate area on the Lelystad side

(Hollandse Hout), the plans are still in an exploratory phase. The planning includes the improvement of the recreational infrastructure (bicycle paths, footpaths and parking spaces) and the construction of a water feature (Slenk) between Buizerdweg and Torenavalktocht. It is expected that in 2019 a start can be made with the first phase of the implementation.

- B. In 2018, as part of the gate development on the Almere side, investments were made in personnel expansion for the Oostvaarders Visitor's Centre. From the summer onwards, two new staff members were recruited to shape the activities programme. The Municipality of Almere, Stichting Stad en Natuur and Staatsbosbeheer are working together on this project. This mainly concerns activities in the domain of nature education and experience. A complete activity programme for 2019 is currently being finalised with excursions, nature activities and events.
- C. In addition, a manager has been appointed for the gate area who will be responsible for improving the quality and expanding the recreational infrastructure in the Oostvaardersbos and Kotterbos woodlands. Last year, extra efforts were made in the domain of communication and environmental management with regard to the preparations and implementation of the new policy framework for the Oostvaardersplassen. Last winter, the discussion of the former management and the policy for the large grazers in the Oostvaardersplassen became harsher and the new policy framework, which has been in force since July 2018, has not yet reduced this tension. From March 2018 onwards, extra efforts were made to communicate the policy and the new policy framework and, in the course of last year, we were able to take the first steps in the implementation of the new policy.
- D. The gully in Hollandse Hout is still being developed. This is expected to be completed in 2021. As part of these activities, it is not yet desirable to start introducing red deer in Hollandse Hout. Any possible policy adjustments for the peripheral zones (Hollandse Hout, Oostvaardersveld, Kotterbos and Oostvaardersbos) will be worked out next year. This also includes how to deal with the grazing and management of the large grazers (more specifically Red deer) in the peripheral zones. In the Master Plan for the Nieuwland National Park (completion January 2019), the development of an 'Oostvaardersplassen' station near the Kitsweg-Knardijk intersection is being discussed. This is to increase public accessibility to the National Park. The idea for a station is on the agenda again.
- E. In the Oostvaardersplassen Almere gate area (new name for the gate area), a start was made last year with the planting of individual trees and shrubs. This is to create a more attractive landscape in an area dominated by poplars and open space, on the one hand, and to restore the woodland area after removal of standing crop of ash and poplars, on the other. This version takes into account a clearer separation between the town and the open nature of the Oostvaardersplassen, by creating a denser plant population along the edges (greenhouse area and outer ring) and a more open plant population in the transition from the peripheral zone to the Natura2000 area.
- F. As indicated in previous reports, the development of the Oostvaarderswold is no longer a topic on the political agenda and will no longer be reported. In order to achieve provincial nature objectives, the Province of Flevoland has been developing the New Nature programme since 2014. A broad initiative in which the nature objectives in other areas within the province are being realised. For the Oostvaardersplassen area, this means that investments were made last year and will continue in the coming years for the development of Marsh harrier compensation areas (Trekweg and Hollandse Hout Zuid). The recommendations of the Van Geel Committee do include a section on the Oostvaarderswold zone. There must be no irreversible developments in this area which could impede a possible future connection. This leaves the option open in order to be able to realise the connection between De Oostvaardersplassen and the Horsterwold in due course.

3. Site Management: List here any changes to the European Diploma holding site management, in relation to both terrestrial and aquatic environments (as appropriate), and in relation to staff and finances, since the last annual report was submitted to the Council of Europe. Please also indicate any unresolved difficulties that you have encountered.

On 18 July 2018, the Province of Flevoland approved a new policy framework for the Oostvaardersplassen.

This policy framework comprises 5 global themes:

1. A reduction in the Large grazers. In the short term, reducing the numbers to 1,100 animals. In the longer term, the numbers may increase to 1,500 again, after which, based on the monitoring of the vegetation, it will be determined whether the numbers may increase or decrease. The most important change here is that the numbers are regulated.

2. Measures in the context of Natura 2000 objectives must be implemented. In October, a start was made with the marshland reset of the western part of the marsh. Over the next 2 years, the water level will be lowered successively in order to allow the marsh vegetation to be restored and expanded. In the following three years, the water level can be raised again and a dynamic water level will be maintained.

3. In the grassy part of the Oostvaardersplassen, 500 hectares of wet nature will be created. This means that in addition to the already existing 300 ha of floodplain grasslands, 200 hectares of water areas and floodplain grasslands will be added to the area. This in order to be able to achieve an optimal foraging area for birds.

4. The construction of fish ladders in and around the core area will support the migration of sticklebacks, which in turn will serve as food for herons and spoonbills.

5. The construction of 300 ha of shelter area for the large grazers in the core area (and hence, in the long term, the disconnection of the peripheral areas from the core area as winter shelters). This winter, the planting of 150 ha of shrubs and trees in fenced areas on the Stort and in De Driehoek will begin. We are now working on a new management plan in which these tasks will be given shape together with the corresponding management. For the implementation of the various projects, the staff has been increased by two project leaders, and an environmental manager has been appointed to further strengthen public support. In addition, a great deal of attention was given to the communication surrounding these interventions through the extra efforts of staff in the domain of social media.

In order to enable the implementation of the new policy framework, at short notice, approximately EUR 3 million was made available (construction of shelters, construction of paddocks, reset of Large grazers). The full report of the Van Geel Committee is attached:

<https://www.flevoland.nl/getmedia/a134c459-ad83-4cb4-a924-7fe65b03aaa4/Advies-beheer-Oostvaardersplassen-dvo.pdf>

4. Boundaries: Give details of any changes to the boundaries of the European Diploma holding site since the last annual report was submitted to the Council of Europe. If there are any changes, please attach an appropriate map to this report. Please also indicate any unresolved difficulties that you have encountered.

On 1 October 2018, the Minister of Agriculture, Nature and Food Quality granted the National Park status to the Nieuw Land National Park, of which the Oostvaardersplassen (together with the Markerwadden, the Markermeer and the Lepelaarsplassen) forms a part. This makes the Oostvaardersplassen part of a nature reserve of almost 30,000 hectares with large Natura 2000 areas in which bird life takes priority.

In the Nieuw Land National Park, the Province of Flevoland, the Municipality of Almere, the Municipality of Lelystad, the Flevolandschap, Natuurmonumenten, Rijkswaterstaat and Staatsbosbeheer all work together in the domains of nature development, recreation and education. <https://www.flevoland.nl/actueel/nederland-is-een-nationaal-park-rijker-nieuw-land>

The boundaries for the Oostvaardersplassen will not change as a result of this status. However, there is more intensive collaboration in the border areas between Oostvaardersdijk and Markermeer, for example, to strengthen natural values by constructing foreshores. These foreshores soften the transition from the 'hard' dike boundary to the open water of the Markermeer and serve as a spawning place for fish and foraging and breeding grounds for birds that are bound to wetland habitats.

The application for the granting of National Park status is attached as a separate appendix to this report.

The collaborating partners are currently in the process of drawing up a Master Plan in which the cooperation within and the ambitions for the National Park are laid down. This sets out agreements on nature development, recreation and tourism, education and research and communication. The Master Plan will be adopted at the beginning of 2019.

5. Other information: List here any other information about the European Diploma holding site which you consider should be provided to the Council of Europe.

Last winter, there was considerable disquiet about the Park and the policy for the Oostvaardersplassen. Due to a relatively harsh, wet winter, the numbers of Large grazers were reduced by more than half (through early reactive management). In March 2018, the Province of Flevoland decided to supplement the feed of the animals, which we, as Staatsbosbeheer, have complied with. This has not diminished the strong feelings, however, and, since the winter, also in the context of the application of the new policy framework, there has been social unrest about the policy and its implementation. On 10 December, a start was made with reducing the number of Red deer to 490 animals (1,830 animals culled), which led again to new demonstrations and unrest. This requires a concerted effort in the area of implementation (management) but also in the area of communication and environmental management. In this context, meetings will be started next month in which the Province and Staatsbosbeheer will enter into discussions with stakeholders about the policy and its implementation.

The following sections of the form should only be filled in if your area is in the year before a renewal of its European Diploma for Protected Areas, i.e. year 4 after the award of the European Diploma or year 9 after its renewal.

6. Natural heritage (general abiotic description: geomorphology, geology and hydrogeology, habitats, flora, fauna, landscape) – State of conservation

De Oostvaardersplassen is a man-made wetland located in the South Flevoland polder (430 km²), which was created in 1969 and is part of the Province of Flevoland. This polder is one of four large polders that were created in Lake IJsselmeer between 1920 and 1970. In 1932, this former salt water lake was separated from the sea by a dike and turned into a fresh water lake within 10 years. In 1975, the IJsselmeer was divided by a dike into two different fresh water lakes: Markermeer and IJsselmeer. The Oostvaardersplassen is adjacent to the Markermeer.

The main goal of the polders in the IJsselmeer was agriculture. As soon as the water in Southern Flevoland was pumped out in 1968, reed was sown by airplane all over the polder. The purpose for this measure was to dry the top soil as fast as possible to start cultivating the land for agriculture, industry and housing. During the first years, reed vegetation dominated the landscape except for areas where the water levels were too high for germination of reed. One of these areas was De Oostvaardersplassen. Next to reed vegetation, shallow lakes and ponds, bare soil, pioneer vegetation, tall herbs and shrubs were present. As future planning for this area was hampered by a discussion about the need for industry on this location, the area was temporarily spared from further reclamation activities. At that time, in 1972, the spontaneously developed marshland had already evolved into an acclaimed bird sanctuary. By the end of 1974, the area was designated as a "temporary nature area", a status which provisionally saved it from further development. As the polder was cultivated for agriculture, the ground water level in the polder dropped, and as a result of that the ground of the drained surroundings of the marsh settled. As the marsh of De Oostvaardersplassen was not drained, the marsh came to lie higher than the drained surrounding, and the water in the marsh started to flow out of the marsh. In 1975, an embankment and a pump were constructed around the marshland (36 km²) to keep the water in the marsh. In 1982, an additional drier area (20 km²) outside the embankment was added to the marsh as it had become clear that some wetland-related bird species could not function well without foraging areas nearby the marsh, such as grasslands or shallow ponds. For this purpose, the planned railway line between the cities of Almere and Lelystad was moved 1.5 km to the east. In 1986, De Oostvaardersplassen became a National Natural Site ('*Staatsnatuurmonument*'), which ensured its future as a nature reserve. In 1989, it was designated as a RAMSAR wetland, confirming the international importance of the wetland. In 2009, the Oostvaardersplassen was designated as a Natura2000 area for 14 breeding bird species and 19 non-breeding bird species. In 2015, the Natura 2000 Management Plan became final.

The marsh consists of shallow and turbid lakes, bare soils, pioneer vegetation, reed vegetation and shrubs and trees of different willow species. The drier area around the marsh consists of shallow ponds, inundated grasslands, non-inundated grasslands, tall herb and reed vegetation and shrubs and trees. De Oostvaardersplassen is of great importance to all birdlife. Both, breeding birds, migratory birds and wintering birds are being observed. Grey-lag geese have a special role in this system. During moult, tens of thousands visit the marsh creating a diverse reed vegetation suitable for many different breeding bird species.

To manage vegetation development, room is given to two important processes: water level dynamics and grazing by large herbivores. To manage water level dynamics, the area is divided into several hydrological units to create a gradient from dry to wet. This provides the different wetland habitats needed for the designated bird species. To manage the vegetation in the drier part of the area, cattle, horses and Red deer were introduced already in the 1980s. The populations were not culled and their numbers were regulated by food supply, winter severity and competition and facilitation among herbivores. To prevent unnecessary suffering of large herbivores, animals are shot according to the 'early reactive culling' protocol. The large herbivores should create a diverse landscape consisting of open and vegetated ponds, large-scale short-grazed grasslands, tall herb and reed vegetation and shrubs and trees.

Special facilities for the public have been developed in the area, for example, bird observation huts, signposted walking trails, observation sites and two Visitor's Centres.

6.1. Environment: changes or deterioration in the environment, of natural or anthropic origin, accidental or permanent, actual or anticipated.

From 2009 on, no major changes have taken place in De Oostvaardersplassen. Some minor changes have been made with respect to the facilities for the public (better roads for disabled people, replacement of old observation huts, etc.). These were all situated at the border of the area. In 2010, two adjacent woodlands were opened for the large herbivores during winter, to provide shelter for the animals.

In 2019, the Natura 2000 measures will be implemented. These are:

- A temporary lowering of the water level in the western part of the marsh to regenerate the reed vegetation. Due to insufficient water level dynamics and high numbers of moulting Grey-lag geese, the reed vegetation in the marsh decreased, resulting in less breeding habitat for reed birds. By lowering the water level, Grey-lag geese cannot graze the reed anymore, reed can rejuvenate and the cover of reed can increase.
- A permanent increase of the water level in some parts of the non-inundated grasslands to increase the area of inundated grasslands. As inundated grasslands have a higher value for water birds, an increase of this habitat will be beneficial for the wetland birds.
- Connecting the water bodies of De Oostvaardersplassen with its surroundings by means of fish-passages, in order to get a more diverse fish population, which is beneficial for fish eating wetland birds.

In 2019, the new management policy of the Province of Flevoland will be implemented. The following measures will be carried out:

- Planting of shrubs and trees (a contiguous area of about 3 km²) within the Natura 2000 area to provide shelter for the large herbivores.
- A reset of the large herbivore population to a maximum of 1,500 animals in order to achieve the Natura2000 goals and create a diverse landscape to increase biodiversity in general.
- More facilities (observation huts, board walks, excursions, etc.) for the public to experience the area. Facilities will be carried out at the border of the area.

6.2. Flora and vegetation: changes in the plant population and in the vegetation cover; presumed causes

After 1996, the vegetation changed in the marsh as well as in the drier surroundings of the marsh. Within the marsh, the reed vegetation decreased as a result of insufficient water level dynamics and high numbers of moulting Grey-lag geese. During moult, Grey-lag geese eat the leaves of reed. To swallow the thick reed leaves, they need water. As long as the water is high enough, the geese will graze the reed vegetation. By doing so, Grey-lag geese create a diverse vegetation structure within reed vegetation, suitable for many different breeding bird species. Because the water level dynamics were insufficient in the past 25 years, the geese could graze the reed vegetation every year. This led to a decrease of the reed vegetation and a decrease in variation of vegetation structure. Furthermore, from 2005 on, the reed vegetation in the marsh was also influenced by Red deer. Especially during winter, many Red deer choose to stay in the marsh. When walking through the reed vegetation, they create paths and the contiguous reed vegetation becomes fragmented.

In the drier part, the vegetation changed from a mosaic of grasslands, tall herb and reed vegetation, shrubs and trees into a vegetation dominated by short grazed grasslands. This was a result of the increasing numbers of the large herbivores combined with increasing numbers of geese. After their introduction in the 1980s, the large herbivore numbers increased exponentially. In 2010-2012, animal numbers reached their maximum and from that moment on, the numbers started to fluctuate around this maximum of about 5,000 animals. As the large herbivores prefer grasses, the amount of grasses per animal decreased as the total number of herbivores increased. To fulfil their demands, the large herbivores started to eat the lesser preferred plants such as tall herbs, reed, shrubs and trees. When the number of geese increased at the same time, they became an important competitor for the grasses, forcing the large herbivores even more to forage on alternative plants. This caused the transition of the mosaic vegetation into the grassland dominated vegetation. Apart from this transition, the dominant grasslands got a homogeneous vegetation structure: they all became short grazed with almost no variation in height.

6.3. Fauna: changes in the sedentary or migratory populations; congregating, egg-laying and breeding grounds.

As a result of the changes in vegetation structure and types, the bird populations also changed. In the marsh, many of the Natura 2000 breeding birds decreased in numbers and some of them even left the area as the reed vegetation slowly disappeared. The effect of Red deer became also visible. In the areas with high densities of paths in the reed vegetation, some breeding bird numbers decreased or they moved their nesting grounds to areas with a lower density of paths. On the other hand, some bird species benefitted from these paths as it created habitat for insects or plants that are eaten by these bird species. Another cause of a decrease in bird numbers was the water quality and fish population. Because of insufficient water level dynamics and the clay soils, the fish population is dominated by large carp. First of all, these large carp are not eaten by many of the fish eating Natura2000 bird species who need small fish. Secondly, large carp make the water turbid which makes it difficult for some fish-eating bird species to catch fish, but also prevent the development of water plants that are necessary for a healthy and diverse fish population.

In the drier part, bird diversity decreased as a result of the major changes in vegetation caused by the large herbivores. Because the tall herb and reed vegetation, shrubs and trees are gone, birds that are dependent on these habitats also disappeared. In the homogeneous grasslands, the vole population decreased as they prefer grassland with more variation in structure. These short grazed and homogeneous grasslands became less suitable for raptors or egrets, such as the Natura2000 species. Besides, these decreasing effects, the change in vegetation created suitable habitat for herbivorous water birds such as geese and ducks or meadow birds such as lapwings and plovers. In the past 10 years their numbers increased strongly.

7. Cultural heritage and socio-economic context

7.1. Cultural heritage

7.1.1. Changes concerning cultural heritage Not applicable

7.2. Socio-economic context

7.2.1. Changes concerning the socio-economic context Not applicable

8. Education and scientific interest

8.1. Visitors – Information policy

In 2013, the 'The New Wilderness' film about De Oostvaardersplassen was released. The nature film was watched by 800,000 people in the Netherlands and generated a huge increase in the number of visitors to the area. The communication strategy and the information have been adapted to this increased attention. This resulted in a new Visitor's Centre on the Lelystad side, the development and opening up of the Oostvaardersveld (with Konik horses and, since 2017, Red deer) and an education programme for primary schools. In recent years, communication via social media and websites has increased significantly and a wide public comprising visitors and other interested parties has been reached.

In 2017, the policy responsibility for De Oostvaardersplassen was transferred from the National to the Provincial Government and far-reaching proposals were made to make the area more attractive to recreational users and to reduce the number of Large grazers. This has resulted in the appointment of an advisory committee (Van Geel Committee) that advised the province to adjust the policy. This policy framework was adopted in July 2018 and is now in force for De Oostvaardersplassen area. From October 1 2018, Nieuw Land National Park has become a reality. De Oostvaardersplassen is part of this. Together with the other partners, we are now working on a Master Plan in which various topics are being worked out. One of the topics is the communication and marketing strategy. In this context, communication takes place from the larger entity of the National Park and international visitors will also be better served.

8.1.1. Arrangements for receiving and informing the public (building, booklets, maps, cards, etc.).

In addition to 'The New Wilderness' film, over the years, many books and brochures (in several languages) have been published. Last year, Nieuw Land National Park area flyers were added to this. Once or twice a year, new Falk plan maps are printed with updates for the area.

In addition to the new Visitor's Centre on Kitsweg (Lelystad), a great deal of hard work has been done in the past two years to enable the Visitor's Centre on the Almere side to play a greater role in welcoming visitors, and as the starting point for an increasing number of excursions through the area.

The gate development on both the Lelystad and the Almere side will now be developed from the Nieuw Land National Park.

8.1.2. Frequentation by visitors and behavior (number, distribution in time and space)

In 2014, a survey took place of visitor numbers in, among other places, De Oostvaardersplassen, De Oostvaardersplassen area on the Almere side and Hollandse Hout. There were respectively 650,000 visitors to De Oostvaardersplassen, 321,000 visitors in the Kotterbos and Oostvaardersbos and 40,000 visitors in Hollandse Hout. We have no data available about the distribution (patterns) in the various areas. For several years now, however, the number of visitors to the Visitor's Centre on the Lelystad side have been monitored. This is approximately 160,000 visitors per year. A monitoring methodology is being prepared to examine visitor numbers and qualitative data about the visitors. (Nieuw Land National Park Monitoring).

8.1.3. Special visits (distinguished persons, groups, etc.).

Every year, in May, a report is published on recreation and communication in and around De Oostvaardersplassen.

<https://www.staatsbosbeheer.nl/over-staatsbosbeheer/dossiers/oostvaardersplassen-beheer/links-en-downloads>

The report also describes the particular groups we have received that particular year. A distinction is made between press and media, science and research, and administrative and official groups. The Annual Reports are attached to this report as a separate appendix.

- <https://www.staatsbosbeheer.nl/-/media/08-dossiers/oostvaardersplassen/2017-2018-jaarrapportage-monitoring-oostvaardersplassen.pdf?la=nl-nl&hash=C454F335BE6782D140D36B2550C1DF97FB678970>
- <https://www.staatsbosbeheer.nl/-/media/08-dossiers/oostvaardersplassen/2016-2017-jaarrapportage-monitoring-oostvaardersplassen.pdf?la=nl-nl&hash=205D3501AACED87ECE41290E2BA4EB5A00D98512>
- <https://www.staatsbosbeheer.nl/-/media/08-dossiers/oostvaardersplassen/2015-2016-jaarrapportage-monitoring-oostvaardersplassen.pdf?la=nl-nl&hash=D9565F019345511A038ECE91C418AC6F60D5D72C>
- <https://www.staatsbosbeheer.nl/-/media/08-dossiers/oostvaardersplassen/2014-2015-jaarrapportage-monitoring-oostvaardersplassen.pdf?la=nl-nl&hash=A45D02CE67CD989BCDB101F469F0586842981C3A>
- <https://www.staatsbosbeheer.nl/-/media/08-dossiers/oostvaardersplassen/2013-2014-jaarrapportage-monitoring-oostvaardersplassen.pdf?la=nl-nl&hash=E5F5474739AA6A5118979D0728979D536CB6C6D0>
- <https://www.staatsbosbeheer.nl/-/media/08-dossiers/oostvaardersplassen/2012-2013-jaarrapportage-monitoring-oostvaardersplassen.pdf?la=nl-nl&hash=16780DD09F07B183EC8D1CD5D799270F6F15F7CC>
- <https://www.staatsbosbeheer.nl/-/media/08-dossiers/oostvaardersplassen/2011-2012-jaarrapportage-monitoring-oostvaardersplassen.pdf?la=nl-nl&hash=AC1F2CC4B1963A8BD4C1BC0BA188D3DCD797C10A>
- <https://www.staatsbosbeheer.nl/-/media/08-dossiers/oostvaardersplassen/2010-2011-jaarrapportage-monitoring-oostvaardersplassen.pdf?la=nl-nl&hash=8C462D0836FED86FEE94ED8F476A18108354676B>
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8.2. Scientific research

8.2.1. Current or completed research (observation, experimentation, etc.; identification or inventory of the species listed in the appendices to the Bern Convention, etc.)

The management of De Oostvaardersplassen has always been accompanied with monitoring and research. In the past 50 years, many reports and scientific papers have been written on different subjects such as water quantity and quality, soil properties, vegetation development, bird populations, grazing management and ecosystem management. In 2018, together with some universities and applied universities, a new agenda for scientific research for De Oostvaardersplassen was made. This agenda will be the starting point for new research to get more understanding of the ecosystem, which can be used in decision making (so called Science-based Management).

In the past ten years, some research was completed such as the effects of large herbivores on vegetation development. Special attention was paid to the development of shrubs and trees with regard to the wood-pasture hypothesis. According to the hypothesis, large herbivores play a major role in the development of wood-pasture landscapes. Currently research was started on the following subjects:

- The effects of water draw down in the marsh on the development of reed vegetation and shrubs, and on bird and fish populations;
- The effects of Red deer on the development of reed vegetation in the marsh;
- The effects of large herbivores on bird diversity;
- The use of satellite images and cameras to describe vegetation development in relation to habitat use of large herbivores;
- The use of GPS, combined with temperature and heart beat measurements of cattle to understand the energy budget of large herbivores. This research is also a pilot study for use of this device in Africa for the protection of endangered species such as elephant and rhinoceros.

Most of these studies are carried out in cooperation with universities or universities of applied sciences. In 2019, a new management building will be built, in which there will be room for students to carry out research.

Monitoring of vegetation and birds is carried out by consultancy agencies and volunteers.

8.2.2. Scientific publications

The Oostvaardersplassen as a key moulting site for Grey-lag Geese *Anser anser* in Western Europe
Menno Zijlstra, Maarten J. J. E. Loonen, Mennobart R. van Eerden, Wouter Dubbeldam. Wildfowl; 1991

Nutritional characteristics of cattle forage plants in the eutrophic nature reserve Oostvaardersplassen, Netherlands

Vulink, J.T. , Drost, H.J. Neth. J. for Agric. Science; 1991

A causal analysis of diet composition in free ranging cattle in reed-dominated vegetation

J. T. Vulink, H.J. Drost. Oecologia; 1991

Timing of wing moult in Grey-lag geese *Anser anser* in relation to the availability of their food plants

M.J.J.E. Loonen, M. Zijlstra, M.R. van Eerden. Ardea; 1991

Potential for the development of marsh vegetation from seed bank after drawdown

G.N.J. ter Heerdt, H.J. Drost. Biological Conservation, 1994

Solitary foraging in sand pits by breeding cormorants *Phalacrocorax carbo sinensis*: does specialised knowledge about fishing sites and fish behaviour pay off?

B.Voslamber, M. Platteeuw, M.R. Van Eerden. Ardea; 1995

Reproduction of the Marsh harrier *Circus aeruginosus* in recent land reclamations in the Netherlands

C. Dijkstra; M. Zijlstra. Ardea, 1997

Hydrological conditions and herbivory as key operators for ecosystem development in Dutch artificial wetlands

J.T. Vulink, M.R. Van Eerden. Chapter in book: Grazing and Conservation Management, 1998

Plant herbivore interaction and its consequences for succession in wetland ecosystems: a modelling approach

H. van Oene, E.J.M. van Deursen, F. Berendse. Ecosystems, 1999

Heck cattle in nature reserve 'De Oostvaardersplassen': a risk for infectious diseases or not?

Hessels, A.L.D.; Poel, W.H.M. van der; Nielen, M.; Emmerzaal, A.; Schukken, Y.H. Tijdschrift voor Diergeneeskunde; 2000

Observations on the colonisation of a young polder area in the Netherlands with special reference to the clonal expansion of *Phragmites australis*

O.A. Clevering; Toorn, van der, J. Folia Geobotanica 2000.

Hungry herds: management of temperate lowland wetlands by grazing

J. T. Vulink. PhD Thesis. University of Groningen; 2001

Effects of cattle and horses on vegetation structure. Are cattle and horses browsers enough to stop development of shrubs and trees?

P. Cornelissen; J.T. Vulink. Chapter in proceedings Landscape Development with large herbivores. New models and practical experiences. 2001

Long term NH₃ flux measurements above grasslands in the Netherlands

J. Mosquera, A. Hensen, W.C.M. van den Bulk, A.T. Vermeulen, J.W. Erisman. Water, Air and Soil Pollution, 2001.

Soziale Organisation und Ernährungszustand der Konik-Pferdeherde des Naturreservates Oostvaardersplassen im Winter. Eine Lehrstunde durch wild lebende Pferde

R. Wernicke, M.C. VanDierendonck. KTBL-schrift; 2003

Long term effects of yearly grazing by moulting Grey-lag geese *Anser anser* on reed *Phragmites australis* growth and nutrient dynamics

I.J.J. van de Wyngaert, L.D. Wienk, S. Sollie, R. Bobbink, J.T.A. Verhoeven. Aquatic Botany, 2003

Impressive enjoyment in the Oostvaardersplassen and its surroundings

M. Veer, G. Stoker. Vakblad Natuur, Bos en Landschap; 2006

Viability of meta populations of wetland birds in a fragmented landscape: testing the key-patch approach

J.E. Vermaat, N. Vigneau, N. Omtzigt. Biodiversity Conservation, 2008

The influence of different grazing regimes on *Phragmites*- and shrub vegetation in the well-drained zone of a eutrophic wetland

J.T. Vulink, H. J. Drost, L. Jans . Applied Vegetation Science; 2009

A study of the circulation of West Nile virus in mosquitoes in a potential high-risk area for arbovirus circulation in the Netherlands, "De Oostvaardersplassen"

C.Reusken, A.De Vries, W. Den Hartog, M. Braks, E-J. Scholte. European Mosquito Bulletin; 2010

Early successional stages of Reed *Phragmites australis* vegetations and its importance for the Bearded Reedling *Panurus biarmicus* in Oostvaardersplassen, The Netherlands

N.Beamster, E.Troost, M.Platteeuw. Ardea; 2010

Wintering White tailed eagles *Haliaeetus albicilla* in the Netherlands: aspects of habitat scale and quality

S. van Rijn, M. Zijlstra, R.G. Bijlsma. Ardea, 2010.

Long term population developments in typical marshland birds in the Netherlands

C.A.M. van Turnhout, E.J.M. Hagemeyer, R.P.B. Foppen. Ardea 2010

Individual differences in feeding habits in a newly established great egret *Casmerodius albus* population: key factors for recolonization.

B. Voslamber, M. Platteeuw, M.R. van Eerden. Ardea, 2010

Experimental manipulation of water table and grazing pressure as a tool for developing and maintaining habitat diversity for waterbirds.

B. Voslamber, J.T. Vulink. Ardea, 2010

The long-term influence of grazing by livestock on common vole and raptors in man-made wetlands in the Netherlands

N. Beamster, J. T. Vulink. Lutra; 2013

Transition of a *Sambucus nigra* L. dominated woody vegetation into grassland by a multi-species herbivore assemblage

P. Cornelissen, M.C. Gresnigt, R.A. Vermeulen, J. Bokdam, R. Smit. Journal for Nature Conservation; 2014

Wild experiments at the Oostvaardersplassen: rethinking environmentalism in the Anthropocene

J. Lorimer, C. Driessen. Transactions of the Institute of British Geographers, 2014.

Effects of large herbivores on wood pasture dynamics in a European wetland system

P. Cornelissen, J. Bokdam, K. Sykora, F. Berendse. Basic and Applied Ecology 2014

Density dependent diet selection and body condition of cattle and horses in heterogeneous landscapes

P. Cornelissen, J.T. Vulink. Applied Animal Behaviour Science, 2015

Rewilding with large herbivores: Direct effects and edge effects of grazing refuges on plant and invertebrate communities

R. van Klink; J.L. Ruifrok, C. Smit. Agriculture, Ecosystems and Environment, 2015

Rewilding with large herbivores: the importance of grazing refuges for sapling establishment and wood pasture formation

C. Smit, J.L. Ruifrok, R. van Klink, H. Olff. Biological Conservation, 2015

Quantification of population sizes of large herbivores and their long term functional role in ecosystems using dung fungal spores

A.G. Baker, P. Cornelissen, S.A. Bhagwat, F.W.M. Vera, K. J. Willis. Methods in Ecology and Evolution 2016.

Establishment of different riparian plant communities from the same soil seed bank

G.N.J. ter Heerdt. PhD thesis, Groningen University, 2016.

The social organisation of natural herds of koniks *Equus caballus*: subordinate stallions, rule or exception?

L. Linnartz, E. Linnartz-Nieuwdorp. Lutra, 2017

Impact of water drawdown and rewetting on sediment nutrient-dynamics in a constructed delta-lake system (Oostvaardersplassen, the Netherlands): a mesocosm study

J.A. Vonk, T. Rombouts, J.C. Schoorl, P. Serne, J.W. Westerveld, P. Cornelissen. H.G. van der Geest. Ecological Engineering, 2017.

Large herbivores as a driving force of woodland-grassland cycles. The mutual interactions between the population dynamics of large herbivores and vegetation development in a eutrophic wetland

P. Cornelissen. PhD thesis Wageningen University, 2017.

9. Site description (vulnerability, protection status, ownership, documentation)

9.1. Changes in legislation or regulations
Not applicable

9.2. Changes in ownership title (conversion to public property, rentals, etc.)
Not applicable

9.3. Extension or transfer, new uses (for example, conversion into total reserve)
Not applicable

10. Site management (management plans, budget and personnel)

10.1. Improvements made

In July 2018, the Province of Flevoland decided to start a new policy for De Oostvaardersplassen area. The new policy is based on the fact that Natura 2000 has the highest priority. Besides urging to take all the necessary measurement that are already stated in the N2000 Management Plan, it was stated to add more value to the 'dry grazed area' of De Oostvaardersplassen by adding more inundating water plains. Also the management of the large herbivores has to be in service of the N2000 goals. This means that a new population management is being implemented with a maximum of 1,500 herbivores. Active population management started in December 2018. Red deer are culled, Konik horses are going to be transported to other nature areas.

10.1.1. Ecological action affecting the flora and biotopes; controls of fauna
Natura 2000 measures and measures ensuing from the Van Geel Committee and the Provincial policy framework.

The dry summer of 2018 has helped to start the reset of the wetland. In October the official start of this reset was a fact by the first lowering of the water level in the Western part of the wetland.

10.1.2. Protection against the elements (fire, water regime)
Not applicable, except reinforcement of quays to handle different water levels.

10.1.3. Approaches and thoroughfares (paths, roads, car parks, signposting, fencing, etc.)
In recent years, investments were made in parking spaces at the Visitor's Centre and footpaths have now been laid out in the Oostvaardersveld area. The access roads to De Oostvaardersplassen area have remained more or less the same. Within the framework of the Nieuw Land National Park and the

development of gate areas, plans are being made to improve accessibility. Better signposting and safer entry lanes, for example.

10.1.4. Field equipment (hides and study facilities)

A new management building is currently being constructed. The building has space for a field station for practical and scientific research. In addition, the monitoring huts along the edges of the marsh area, which are now outdated, will be renovated and improved.

10.1.5. Waste management

For both the new management building and the Visitor's Centre on Kitsweg, individual waste water treatment systems have been installed in the form of hylophyte filters.

10.1.6. Use of renewable energy systems

At the Visitor's Centre on Kitsweg and also at the management building under construction, energy is generated by means of solar panels. All south-facing roofs are equipped with these panels. The new management building meets the highest standards of sustainability.

10.2. Management

The year 2018, is a year of transition from the old to the new policy. Separate assignments and protocols will be drawn up for this transition (including the management of large grazers). A new Management Plan will be drawn up in 2019.

The Nieuw Land National Park has been a fact since October 2018. We are now working on a Master Plan in which collaboration and ambitions for the area are laid down.

In addition, the N2000 Management Plan is in force. In October 2018, the first steps were taken with the start of the marshland reset.

10.2.1 Administrative department: changes made

In recent years, no structural changes have taken place in the area of directing and managing De Oostvaardersplassen. There have been personnel changes in both management and administration. In recent years, the staff has also been increased with a number of advisors in the area of communication and policy. In addition, two project leaders have specifically been recruited for De Oostvaardersplassen to implement the projects resulting from the new policy framework.

10.2.2. Wardens' department: changes made

There were only personnel changes in the past few years. No structural changes, except for the appointment of a warden specifically for the management of De Oostvaardersplassen gate area in Almere.

10.2.3. Internal policing measures

At the moment, we are working hard on the implementation of the measures in the context of Natura2000 and the policy frameworks from the Province of Flevoland. The measures and policies have been described earlier in this report.

10.2.4. Infringement of regulations and damage; legal action

Last year, we followed a few legal actions in the context of the new policy frameworks of the Province of Flevoland. Staatsbosbeheer has not taken any legal action itself.

11. Influence of the award of the European Diploma of Protected Areas