



Boschplaat - Annual report for the year 2018 / Period 2011 – 2018



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State: The Netherlands

Name of the area: De Boschplaat

Year of award 1970

Last renewal 2010

48 years since the award of the European Diploma for Protected Areas:

Central authority concerned:

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1. Conditions:

The renewal of the diploma in 2010 is not subject to any conditions.

2. Recommendations:

1. sufficient financial resources need to be available on an ongoing basis in order to safeguard the interests of the Boschplaat's natural environment, especially monitoring, staff, public relations and communication;
2. measures should be taken to restore the original dynamics in the eastern part of the reserve. The present function of the "Stuifdijk" (artificial sand dyke) should be taken into consideration. New insights based on recent scientific research on restoring natural dynamics should be included in the management plan, including the consequences of the current rise in sea levels;
3. communication with all those involved in the measures to be taken (which are still being contested locally) requires maximum attention and the deployment of the necessary resources;
4. annual shipping incidents in the North Sea to the north of the Boschplaat are a real concern for both people and the natural environment. Better guarantees of safety with regard to the transport of hazardous substances and oil should be instituted;
5. the number of motorised vehicles on the beach should be reduced.

The above recommendations were attached to the renewal of the diploma. During the past year, the following progress was made.

Recommendation 1: Finances: In 2018, the financial resources available were sufficient. For the year 2019, we have to take into account a slight drop in the available budget.

The capacity available for monitoring and surveillance by legally authorised officers during the autumn and winter periods is particularly insufficient, as the organisation and capacity of sufficiently expert personnel for monitoring is.

Recommendation 2: Natural dynamics: The "Boschplaat 2050" future vision (see Paragraph 5) includes proposals for drastic measures in order to allow more space for the natural dynamics of wind, sand and water.

Recommendation 3: Communication: Communication and dialogue have been the central pillars in the process of preparing the new "Boschplaat 2050" vision from the start. A lot of attention was devoted to this during the final stages too (see Paragraph 5) and it was also elaborated in the "On the spot appraisal" programme.

Recommendation 4: Shipping incidents: In addition to the extensive oil disaster practice drill in 2017 (see the previous annual report), Rijkswaterstaat (the Directorate-General for Public Works and Water Management) has now issued a "Terschelling Deployment Plan". This plan describes the potential measures to be taken in the event of oil pollution. It also includes specific ecological points of interest, logistics, the contractors and site managers involved and the process & administrative arrangements. An updated list with 24/7 contact details is also available.

This, and also the talks with Rijkswaterstaat during the on-the-Spot appraisal, have led to a planned field visit to Boschplaat in December 2018 in order to explore the specific site circumstances (tidal channels, accessibility, tides) and any measures to be taken.

Recommendation 5: Motorised traffic on the beach: Following the application of the Crisis and Recovery Act on the Nature Conservation Act, the number of beach traffic permits was set at 932 in 2012. Since then, the local authorities have been using that figure as a maximum. In practice, this figure is not quite achieved; in 2015/2016 and in 2016/2017, 819 permits were issued and in 2017/2018, that figure was 794. One remarkable aspect is that 30% of permit holders are "non-islanders".

Motorised vehicles can access the beach from 01 October until 01 March, while the beach on Boschplaat east of Marker 25 is still closed off to motorised traffic in October. The south-eastern-most tip of Boschplaat is closed throughout the year because of the birds that rest there.

Every year, a new permit application must be submitted. An updated map is added every year, outlining the routes and areas and periods during which traffic is not permitted, as well as the “Nature on the beach” leaflet.

Site Management

Drought - mowing: Due to the extreme and prolonged drought, island farmers suffered an acute shortage of roughage last summer. In order to cope with these shortages, Staatsbosbeheer (the National Forest Service in the Netherlands) responded positively to the request to be able to mow part of the high salt marsh once. Along Stuifdijk near Markers 21 and 22, approximately 20 ha were mowed. This also happened in 1990/1991, when circumstances were similar.

Supervision and the provision of information.

Spring and the summer period.

Between 2011 and 2013, we faced structural budget restrictions and this impacted on the deployment of personnel, especially during the breeding season (April to August). In 2013, we have started deploying volunteers, supported by dedicated authorised Staatsbosbeheer staff, for supervision, monitoring, analyses and information. The weekly transport to and from both sites was also undertaken by an enthusiastic volunteer.

A group of more than 80 enthusiastic volunteers is active, almost all of them originating from “the mainland”. The two information centres are manned almost 24/7 between April and August, with teams that alternate every week. This way, the hosting aspect is covered properly.

The outcome is less rosy in terms of analyses, monitoring and systematic data collection (visitors, violations, site developments, etc.). The completeness, quality and unambiguous interpretation and reporting vary. They are sometimes incomplete and strongly depend on personal expertise and interests.

A reliable final report with unambiguous data that can be properly compared each year is, therefore, no longer feasible.

As a consequence of the Boschplaat vision, the aim is to deploy more volunteers from the island. A provincial grant was received for setting up a training programme. Recruitment, selection and training are scheduled to commence at the start of 2019.

Autumn and winter period.

Due to internal personnel issues during the past 2 to 3 years, supervision and enforcement have been minimal and, at times, they were lacking completely. During this period, it mainly concerns the use of the beach and enforcing tranquillity in the most important high tide resting site for birds and seals on Koffieboonplaat.

3. Boundaries

After acquiring the ownership of approximately 24 ha of salt marsh and a decoy at Grië, which lies adjacent to Boschplaat, in 2016, the plots in the south-eastern-most corner of this transaction were added to Groede, the grazed section of Boschplaat. Old grids were removed and everything was reorganised, as a result of which it now forms an integrated part of the grazing unit.

4. Other information

Management plan N 2000 - Boschplaat vision 2050

In December 2016, the Minister of Economic Affairs and the Minister of Infrastructure and the Environment officially adopted the “Natura 2000 Terschelling Management Plan”. The Province of Friesland is responsible for the realisation of the conservation objectives and actions set out in the plan.

The action included for Boschplaat is the “Preparation and elaboration of a future vision for the entire Boschplaat and Koggegronden”. In February 2017, the province instructed Staatsbosbeheer to prepare this vision for Boschplaat in close consultation with the island population and the organisations involved.

New vision for Boschplaat finalised

On 09 November, the future vision “Boschplaat 2050: a formidable natural island tail” was officially presented to the member of the Friesland Provincial Executive with administrative responsibility, Mr Johannes Kramer. This took place at a public meeting to which all islanders and organisations and authorities involved had been invited.

The general response to the new vision was positive. The member of the Provincial Executive indicated that a follow-up is needed in the shape of an action plan that will specifically work out the proposed measures together with the islanders and other parties involved.

The vision consists of two sub-products:

- A digital version that contains the substantive core as well as links to all substantiated documents. See www.boschplaatvisie.nl. The entire process can be followed on tijdlijn.boschplaatvisie.nl.
- A full-colour magazine. This magazine was delivered to all residences on the island in the week after the official presentation (a print run of 3,000 copies).

Process

The vision realisation process was a long and intensive one, with plenty of communication efforts.

The key elements of the mission:

- Describe the developments of the past few years in terms of coastline development (coastal erosion), habitat quality (ageing and encroachment of the vegetation due to continued succession), birds and natural dynamics (fixation of and by *Stuifdijk*).
- What happens when the policy and management remain unchanged?
- How does this relate to the envisaged N2000 objectives?
- What is the influence of the imminent sea level rise?
- What is the envisaged situation and what measures are needed in order to achieve this?

Project plan

A project plan was drawn up for the preparation of this vision. The implementation process was started in March 2017. Communication and involvement were the main pillars in that respect.

The principal elements/activities were:

- An excursion with island interest groups, officers, residents and experts (35 participants) to the neighbouring island of Ameland to visit fellow site managers and view a number of practical examples such as wash-over systems and a fully naturally developed island salt marsh without a sand-drift dyke.
- Themed meetings and excursions to Boschplaat with residents. A total of 11 excursions with more than 350 participants. One element of this activity was to prepare an analysis of weak and strong points and an analysis of opportunities and threats.
- Boschplaat exhibition in the “Natuurschuur” nature information centre. Ipen Mienskipfûns Frieslân made a financial contribution to this exhibition. One element of the exhibition is a programme for island schools. The exhibition has been open to the public between June 2017 to date and so far, it has attracted approximately 33,000 visitors.
- Boschplaat symposium with scientists and islanders, followed by a meeting of experts. The symposium was attended by approximately 100 participants. At the meeting of experts, the contents of the scientific presentations and the islanders’ contributions were combined to form an initial, broad impetus for the vision.
- Internet survey, 590 responses.

The draft vision was presented to the municipal authorities and to the group who attended the initial excursion. After processing a number of comments, the vision was first presented to the islanders.

Key elements of the “Boschplaat 2050: a formidable natural island tail” future vision

A number of core values and leading principles were drawn up as a basic principle. They were, in part, based on the contributions from participants in the excursions with islanders, lectures and workshops. Tranquillity, sweeping vistas and an unspoilt landscape and nature were, by far, the most important core values mentioned.

The leading principles are:

The Location

- Boschplaat forms a part of the international Wadden Sea area.
- Boschplaat is a large-scale, sweeping, open coastal landscape.

Nature

- Boschplaat remains a gradient-rich, complete and resilient island tail.
- On Boschplaat, natural processes are the guiding principle.

Man and culture

- Boschplaat remains accessible, perceptible and safe to and for man.
- Boschplaat offers space for cultural history and future heritage.
- Boschplaat users and islanders support any intervention that is required.

Following on from this, a number of potential measures were identified that should result in the recovery of natural dynamics and the characteristic biodiversity as well as an improvement of accessibility and use value for visitors.

The potential measures are (see appendices 5-6):

- To encourage the dynamics of sand and wind: To dust part of Stuifdijk
- To develop wash-overs through the dynamics of the sea, sand and wind.
- To create shellfish reefs on the mud flat: To reduce the effects of wave action and to promote sedimentation
- Extending Griëdam: To stop coastal erosion of the cultural and historical landscape and to promote the development of salt marsh pioneer vegetation.
- To extend grazing: In line with Groede, to expand cultural and historical use in order to preserve younger-stage salt marsh vegetation.
- To conduct morphological research into Amelander Zeegat; To gain a better insight into large-scale morphological processes, also for the eastern tip of Boschplaat.
- Sand replenishment if the basic coastline is exceeded: Certainty about the implementation of the existing coastal policy up to Marker 26.
- The continued development of old vegetation stages: The uninterrupted succession for the continued development of natural forest and the vegetation on Duintjes.
- To set up a Boschplaat knowledge base. A group of committed islanders, scientists and experts in order to work out and investigate measures.

Preconditions:

Some measures first require further advice and other may require a feasibility study first.

A number of preconditions have been agreed on for the possible implementation of the measures. They are:

- Preservation of the one-island principle. No permanent channels are allowed to appear between the North Sea and the Wadden Sea.
- Agreements are made to prevent any further coastal erosion past Marker 26.
- Considerable preservation of Stuifdijk as a cultural and historical phenomenon. Until 2021, at least 80% will be preserved.
- The effects of interventions will be monitored and corrections will be made or interventions are halted, if necessary.
- Agreements are made about routes and accessibility. In normal circumstances, Amelandergat remains accessible.

5. Natural heritage - State of conservation

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

Geomorphology:

The foredunes between Markers 19 and 20 were the setting of active measures in the 1990s in order to improve the dynamics. This has created large-scale shifting sands and a dynamic dune landscape. The dune area is now considerably wider and a lot of sand ended up in the hinterland. The ground level behind this area was raised by several decimetres.

The eastern-most tip is subject to considerable erosion. The coastline has been retreating in this area since 1980. This process has continued between 2010 and the present at an average of 40 to 50 m per year. This development is linked to large-scale and long-term morphological processes around Amelander Zeegat. These processes also cause erosion on the south-eastern side and salt marshes are already disappearing in that location.

It is hard to predict the long-term effects. Based on a model study conducted in the late 1990s, expectations were for a turnaround to take place and for the eastern tip to regrow during a cyclic process. To date, this has not happened and it is not expected to happen in the short term either.

Short-term effects:

During two storms in 2014 and 2016, two large wash-overs were created, shifting large amounts of sand towards the mainland. The ground was raised by up to 60 cm in this location and as a result of that, it will be able to cope better with high spring tides and sea level rises. Combined with high tides and hard winds, the sand shifted further inwards, creating new pioneer habitats.

Exactly how dynamic this part of Boschplaat is was illustrated very recently by the sudden occurrence of a considerable elevation on the mud flats on the south-eastern, side, whereas until recently, the impression was that the mud flats had sunk during the past few years. A better insight into these developments is needed. See also Paragraph 8.2.

Just across the border of the reserve, the edge of the salt marsh at Grië was also subject to erosion for decades. In 1991, a rock dam was successfully erected in order to halt this process. Young salt marsh vegetations have developed between this dam and the edge of the salt marsh.

At the moment, this erosion is moving eastwards. Approximately 2 kilometres of coastline have eroded at Groede.

5.2. Flora and vegetation

5.2.1. Vegetation development

In connection with the drafting of the Boschplaat vision, an analysis was made of the development of vegetation on Boschplaat between 1976 and 2012 on the basis of four basic vegetation mappings. As the analysis did not always cover exactly the same area and the classification into vegetation typology was not always the same, a translation was made. As a result, Vaste Duinen, Groede and the area north of Stuifdijk were kept out of the comparisons. Ultimately, the area east of Eerste Slenk and south of Stuifdijk remained; a total of 1,260 ha (between 1976 and 1999) and 1,981 ha (between 1999 and 2012). No vegetation mapping was conducted after 2012. The surface area of the entire Boschplaat, including beach and mud flats, is approximately 4,000 ha.

A summary:

Shortly after the creation of Stuifdijk (1931-1937), there was a large-scale and rapid development of pioneer vegetations of salt marshes and young dunes. Around 1975/76, the Boschplaat vegetation entered an interim stage, with the area probably reaching maximum diversity with highly varied vegetation gradients. Characteristic of that period was the large surface areas with sea lavender and sea plantain. During the next decades, continued succession caused a considerable deterioration of vegetations on low salt marshes and older stages with sea couch, among others, started to increase. This ageing pattern continued after 2000, the most significant trends being:

- A considerable expansion of climax stages with a lot of sea couch.
- The establishment of highly nutritious brackish reed vegetations and a growing dominance of creeping bent, red fescue and sea rush.
- A strong local increase of blackberry shrubs.
- A decrease of pioneer salt marshes and medium-high salt marsh vegetations.

Future expectations are for these processes to continue in the case of autonomous growth, i.e. without landscaping and/or additional measures.

Dynamics:

Exceptions to these ageing processes are the developments in the dynamic coastal dune area between Markers 18 and 20. The white dunes habitat type has experienced a strong rejuvenation of vegetation. Thanks to two recent large wash-overs on the eastern-most side, young types of vegetation have started to develop as well, perhaps temporarily.

5.2.2 Special species.

Fen Orchid: This Habitats Directive species was found in three locations; more than 100 specimens in the western area of Cupido's Polder and some in the turfed sections near Markers 19 and 21.

One-flowered Glasswort (*Salicornia pusilla*): In 2011, this species (returning to the Netherlands for the first time since 1986) was found in large numbers in the pioneer salt marsh vegetation on the south side of the reserve, spread out across several 1 x1-kilometre areas.

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

5.3.1 Nesting birds

Currently, there is no recent and complete overview of nesting birds of the entire Boschplaat. The Vierde Duintjes monitoring area (215 ha) has been analysed in its entirety each year for several years now. See Appendix 1.

The main conclusions are:

Since the closure of this area during the breeding season, a colony of Common Spoonbills has settled and it is showing a steady growth. The arrival of the Red-breasted Merganser and Common Buzzard is also new. The rare Short-eared Owl graced us with its presence for several years.

Typical mud flat and salt marsh species such as the Common Shelduck, Oyster Catcher and Common Redshank are showing a strong decline. The Common Tern, Arctic Tern, Black-headed Gull, Common Ringed Plover and Kentish Plover have now disappeared from this area of Boschplaat. Possible causes could be the erosion of the edge of the salt marsh on the south side and the ageing/encroachment of salt marsh vegetations. Perhaps the Meadow Pipit, currently the most widespread songbird in this area, has benefited from the older and rougher salt marsh vegetations. In that light, the sharp increase of the Eurasian Skylark, a species that prefers short and open vegetations, is hard to explain.

We notice an increase of shrub birds such as the Icterine Warbler, Common Whitethroat, Garden Warbler, Blackcap, Northern Chiffchaff, Willow Warbler, Lesser Whitethroat and Linnet. This points to a continued succession of, particularly, the vegetation on the higher dunes in this area. The developments in this area are probably representative for Derde Duintjes and, in part, for Cupido's Polder.

Due to a lack of good data, no developments have been identified for Tweede and Eerste Duintjes, the Groede grazed salt marsh (approximately 400 ha) and the western dune area of Vaste Duinen and Berkenvallei.

The overview of special and characteristic nesting birds (Appendix 2) is incomplete for the past few years (2013-2018) with the exception of the beach-nesting birds. The numbers quoted are probably minimum numbers. We have no insight whatsoever into the population development of the large colonies of the Herring Gull and Lesser Black-headed Gull.

Beach-nesting birds:

Koffieboonplaat is the most important area for beach-nesting birds. See Table 1.

In addition, three or four pairs of the Common Ringed Plover are nesting on wide section of the North Sea beach.

Species	2017	2018
Common Ringed Plover	2-3	3
Kentish Plover	2	1
Little Tern	60-90	20
Arctic Tern	12	0

Table 1: The number of pairs of beach-nesting birds on Koffieboonplaat.

5.3.2 Non-nesting birds

Each year, SOVON organises four or five international wading and water bird counts. Boschplaats is also included in this in its entirety. This provides a good picture of the most important species and numbers and also of the importance of Boschplaat for these species in a wider context. Appendix 3 summarises the information about the 25 most important species for the period between 2010 and 2017.

The findings are as follows:

The RAMSAR 1% standard has been achieved for 14 species. Boschplaat is particularly important to the Pintail (8.3x), Common Spoonbill (4.3x), Common Redshank (3.5x), Red Knot (2.9x) and Herring Gull (2.1x). The largest species in terms of numbers are the Bar-tailed Godwit (25,300 specimens), Herring Gull (21,300 specimens), Wigeon (20,700 specimens), Dunlin (18,500 specimens), Oyster Catcher (15,500 specimens) and Red Knot (13,000 specimens).

The above numbers show that Boschplaat is still of major international importance to wading and water birds.

5.3.3 Mammals

Boschplaat is home to a small number of mammal species. Due to changes in channels and sandbanks in Amelandergat, Koffieboonplaat has become increasingly important to the common seal and the grey seal. For the common seal - approximately 90-95% of the numbers - the area serves as a breeding and resting place whereas it serves as a resting place for the grey seal.

Year	Maximum numbers
2005	6
2010	186
2012	325
2018	460

Table 2. Development of the number seals on Koffieboonplaat.

5.3.4 Other Fauna

Shellfish:

Cockles: Extensive cockle banks can be found along the entire south side of Boschplaat and in the mouths of the tidal channels. The cockle population is strongly dominated by permanent cockles that originate from the high levels of cockle larvae sinking to the bottom in 2011. Due to natural mortality and a lack of new cockle larvae sinking to the bottom, their numbers have been declining steadily.

Mussels and Pacific oysters: A large mixed shellfish bank measuring approximately 1 ha, inhabited by mussels and Pacific oysters, has formed about 1 kilometre south of Derde Duintjes (beyond the reserve boundary).

No data was collected about the other fauna.

6. Cultural heritage and socio-economic context

6.1. Cultural heritage.

Boschplaat is home to two cultural and historical structures, both of which are owned and managed by a foundation.

Zeekaap: Noordkaap, or Kleine Kaap, can be found on the sand-drift dyke near Marker 26.500. No changes have occurred in relation to this monument.

Drenkelingenhuisje: Due to continued erosion, the position of this structure, which used to offer shelter to shipwrecked persons and which can be found on the North Sea beach near Marker 25.600 comes under increasing pressure. After a severe storm damaged the foundations of the building in 2013, this structure was moved to a new location. In 2016, the repaired building was relocated to a more western location on the beach, near Marker 23.

Eendenkooi: This recently acquired decoy, Rimkeskooi or Vierde Kooi (dating back to 1891) was fully restored this year thanks to a grant from the so-called "Kongsi van de Kooi-eend" project. The main elements of this project were to strengthen the outer dyke, to conduct maintenance on the lake and to restore the decoy hut and annexe. The aim is to use the decoy to study migrating birds in the future. The costs of this work amounted to € 120,000.

6.1.1. Changes concerning cultural heritage

No changes occurred in this respect.

6.2. Socio-economic context

Recreation businesses: Three permit-holding recreation businesses are active on Boschplaat on a commercial basis. It concerns two businesses that tour around the area during the summer period using tilt-carts. There is also a beach bus that organises trips across (part of) the North Sea beach throughout the year. During the summer period, it stops at Tweede Keet, the guard post at Marker 22. Here, the bird wardens provide information about Boschplaat. See also Paragraph 8.1.

Grazing: As long as we can remember, 380 ha of the south-western dune and salt marsh area, Groede, has been grazed by young stock and horses from island farmers. Such use forms a part of the agricultural business plans of these businesses.

A new agreement was concluded in 2013. With regard to the density of livestock, more flexibility is created, always starting with a low number of animals for tranquillity purposes during the nesting season, a maximum number during the summer and a lower number at the end of the vegetation season. The grazing period starts early May and ends mid-October. Between 2013 and 2018, an average of 182 cattle and 15 horses were introduced.

The agreement allocates a large responsibility to the members of the Agrarisch Belang Terschelling association. The organisation and logistics of grazing and maintenance and supervision are the responsibility of this association. Staatsbosbeheer provides the basic investments in grids and drinking water supply.

In order to provide high-quality drinking water for the livestock, the windmill at Witduin was replaced with water pipes this year. The costs of extending the pipeline amounted to € 16.000.

6.2.1. Changes concerning the socio-economic context

7. Education and scientific interest

7.1. Visitors – Information policy and arrangements for receiving and informing the public

Excursions:

For some time, it was clear that interest in traditional activities and provision of information was waning. This manifests itself in the excursion programme, among other things. In 2000, there were 3,350 participants, in 2010 that figure was 785 and in 2014 it was as low as 40.

During the past five years, in collaboration with recreation businesses and the tourist information office that are active on Boschplaat, a flexible programme was developed, one that focuses more on adventure and the experience. It is reviewed every year.

Apart from this programme, the option for guided tours on request is still available.

Type	Number
Big five - seal trip	200
Beach trip with the forester	360
Dark Sky experience	500
A trip of Boschplaat and a walk across Oostpunt	730
Fat bike trip	100
Total	1890

Table 2: Average number of participants in the excursion programme 2014-2018 per year.

Boschplaat expedition 2018:

Overnight stays at Boschplaat with island youngsters.

Staatsbosbeheer has organised Boschplaat expeditions, the first time in 2010 and then in 2014 and 2018.

The Boschplaat expedition consists of a two-day educational programme about Boschplaat, including an exciting overnight stay in a tent. All children of year groups 5, 6, 7 and 8 of the five island primary schools joined in. A total of 170 children and 30 supervisors per trip, times three, giving you a total of 510 children and 90 supervisors.

This way, all children of the island will experience a special wilderness event right in the heart of Boschplaat at least once in their lives. Some of the required materials and transport are sponsored by businesses on the island.

Boschplaat exhibition:

In 2017 and 2018, as part of the drafting of the Boschplaat vision 2050, an exhibition was held at Natuurschuur Lies, which was entirely dedicated to Boschplaat. The theme was "the past, present and future of Boschplaat" and it was visited by more than 33,000 people.

Migratory Birds for People (MBP):

Staatsbosbeheer Terschelling participates in the MBP project, which consists of a network of 28 visitor centres in 16 countries along the East Atlantic Flyway, from St. Petersburg in Russia to Mauritania, Guinea Bissau and Senegal in West Africa. Foresters actively take part in the annual knowledge exchange conference and on Terschelling, the educational programme for the island's schools is linked to the Common Spoonbill and the annual Global Migrating Bird Day.

Other publicity:

During the past few years, we took part in a number of TV shows and nature films about Boschplaat and/or the Wadden Sea.

2015 - De vogelwachter. Documentary/cinematic film.

2016 - Binnenstebuiten. TV Lifestyle – nature magazine.
 2017 - Wad; Cinematic nature film, released in 2018,
 2018 - Silence of the tides. A film about the mud flats.
 Het Klokhuis. TV show for youngsters.

Audio Walk – Living Dune Landscape Terschelling:

During the Oerol Festival in 2016 and 2017, the Peer Group theatre company organised a listening and experience walk through the dynamic dune landscape at the start of Boschplaat, attracting a total of approximately 1,800 participants.

Beach-nesting birds leaflet:

A special leaflet about nature on the beach, particularly about beach-nesting birds, is available. This leaflet is added to, among other things, the beach traffic permits issued by the local authorities.

7.1.2. Frequentation by visitors and behaviour

We have no clear picture of the total number of daily visits to Boschplaat. We do see a number of main features.

- Cyclists and hikers on the path south of Stuifdijk during the spring and summer periods. For 2016, we have a good picture of the number of cyclists that visited the area via the main entrance at Marker 19; in 2016 around 33,500. See Figure 1. Many of these visitors go from the bike storage facility to the beach: the reasons for their visit are to enjoy the beach (sunbathing and hiking) and the landscape. A smaller number moves deeper into the area: the reasons for their visit are to enjoy nature, the landscape and to take exercise. Between April and August, the guards at the two guard's posts held a simple survey among these visitors in terms of origin and frequency. Approximately 5% of these visitors were residents of Terschelling and 6% were foreigners. The origin of the other 89% is shown in Appendix 4. For 40% of these visitors, this was their first visit to Boschplaat. 30% had visited the area more than ten times.
- During the autumn and winter periods, the picture is completely different. Then, the majority of visitors are beach riders who make a trip to Amelandergat. Some of them will take a walk across Koffieboonplaat too. By far, most of these visitors are islanders. The number of daily visits during the winter period is not known.
- The number of visitors who visit Boschplaat across a mud flat via the south side is small. Their numbers are estimated at a couple of hundreds during the summer period. The number of visitors who visit Boschplaat from vessels stuck on the mud flat is estimated at approximately 1,500 day visits.
- There are also visitors who are transported by tilt-cart or beach bus. In 2018, it concerns the following estimated numbers:

By tilt-cart	7500
By beach bus	7000

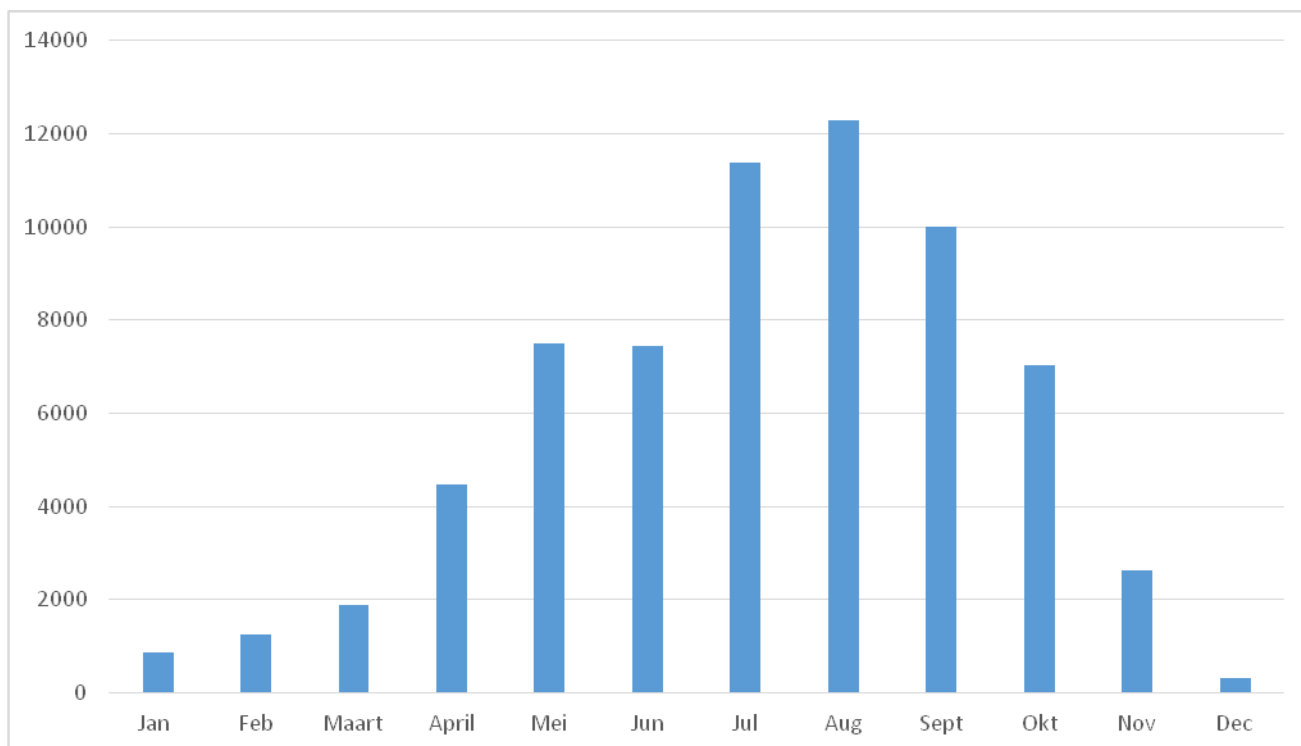


Figure 1. Cyclists passing 2016 Main entrance Bunkerduin.

Note: most cyclists arrive and return here. For the number of persons, divide the figures by 2. Total number of persons 67,000 : 2 = 33,500.

7.1.3. Special visits

No major particulars.

7.2. Scientific research

During this reporting period, no true scientific research was conducted on Boschplaat. There are a couple of long-term monitoring projects that are mentioned later.

One thing of interest is the research project in Amelander Zeegat, mentioned below.

Pilot project sand replenishment Amelander Zeegat

Climate change and land subsidence affect the maintenance and management of the sandy coasts of the Frisian Islands. The sand movements and sea currents in the so-called outer deltas in the coastal inlets between the islands have a big influence on this. Little is known about this yet. Amelander Zeegat between Boschplaat and Ameland is a Wadden Sea system that enjoys the least amount of human intervention. In order to get a better idea of the morphological system and ecology in the coastal inlet, a pilot replenishment was carried out in 2018, in the course of which five million m³ of sand were deposited in the north-western section of the outer delta. Extensive monitoring forms a part of the project. The results of this study will hopefully provide a better insight into the workings of these systems and will also make it possible to determine how much sand is needed and where in order to better protect the coast against erosion in the future. Although the project primarily focuses on protecting the west coast of Ameland, the results may also shed more light on the anticipated developments on the east side of Boschplaat. The project is conducted by Rijkswaterstaat, in collaboration with the SEAWAD scientific research programme, Wageningen Marine Research and Naturalis.

The progress schedule looks like this: baseline measurement 2017, sand replenishment 2018, presentation of research report 2019, recommendations for coastal policy ready 2020.

Coastal monitoring

Each year, Rijkswaterstaat measures the developments of the sandy coast. One important aspect is the so-called JARKUS survey lines that are used to measure the height and depth of the coastline in sections of 200 m each year. The entire seafloor position is measured every six and sometimes every three years.

7.2.1. Current or completed research

Spoonbill. For a long-term population-dynamic study, approximately 20 young Spoonbills are ringed with coloured rings every year, while a small blood sample is also taken for further research.

Barnacle Goose. The Barnacle Goose is a new nesting bird species and we know from other locations that its population can grow very fast. In order to follow these developments and the distribution of the Boschplaat population, a coloured ring programme was set up. In 2017, 77 animals were ringed, in 2018, that figure was 40. Currently there are no distribution data available yet.

7.2.2. (Scientific) publications

J. Ellens: (2017) Project Strandbroeders. Noordsvaarder, het Strand en de Koffieboonplaat: Rapportage broedseizoen 2017. Staatsbosbeheer Terschelling.

L. Krelaus: (2018) Dynamiek op de Boschplaat – Terschelling. Een onderzoek aan afslag en aangroei van de zuidwestelijke kwelderrand en bodemsedimentatie. Bochum University, final internship report.

A.P. Oost, T. v.d. Heide, P. Esselink and E.J. Lammerts: (2018) Natuurherstel door dynamisering op de Boschplaat. Kennisnetwerk OBN / VBNE. Advice OBN-16-DK. Driebergen.

R. Schuttenhelm: (2017) De toekomst van de Waddenzee: Een stijgende zeespiegel over een dalende bodem. De Waddenvereniging, Harlingen.

P. Zumkehr: (2016) Vegetatieontwikkeling op delen van de Boschplaat aan de hand van enkele permanente quadraten. Zumkehr Ecologisch Adviesbureau, Terschelling.

R. Zijlstra: (2018) Kustbeheer op de eilandstaart van Terschelling. Rijkswaterstaat Noord-Nederland. Leeuwarden.

8. Site description

8.1. Changes in legislation or regulations

N 2000 management plan - Objection proceedings.

Four organisations, Vereniging Land- en Tuinbouw Organisatie Noord, Stichting Ons Schellingerland, Platform Duurzaam Landschap Terschelling and Wildbeheereenheid Terschelling, sent the Council of State a notice of objection against the management plan. The subjects of this objection related to the insufficient protection against damage caused by geese to farmland, insufficient protection against coastal erosion and the lack of measures to preserve the area of protection-worthy habitat types on the east side of Boschplaat and the lack of hunt and damage control of rabbits on the list of existing use.

On 21 June, the Administrative Jurisdiction Directorate of the Council in State passed a ruling in these proceedings.

Summarising, the conclusions are that the appeals are either unfounded or do not fall under the jurisdiction of the Directorate.

Following this ruling, the proceedings were ended.

Wadden Sea management authority:

The current management of the Wadden Sea is extremely complex and fragmented across a wide range of organisations, as a result of which the coordination of interests (such as the economy, ecology, safety, recreation, water quality, etc.) and collaboration are not running smoothly. A single habitat manager for the area is lacking. Under the new coalition agreement, it was decided to set up coherent habitat management by appointing a management authority for the area that falls within the boundaries of the N 2000 area Wadden Sea. Boschplaat forms a part of this.

An exploratory study is conducted into a new management authority, with the aim of starting this early 2019.

8.2. Changes in ownership

Land acquisition

In 2016, full ownership of approximately 24 ha of salt marsh and old cultural landscape adjacent to the Boschplaat reserve was acquired, including a complete decoy with associated buildings. This decoy and the plots immediately adjacent to it formed a private enclave within the reserve. Thanks to this acquisition, habitat management in the area will become easier. Some of the acquired land was added to the Groede grazing unit. See also Paragraph 7.1.

8.3. Extension or transfer, new uses

See 9.2.

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

9.1. Improvements made

9.1.1. Ecological action affecting the flora and biotopes; control of fauna

Exotics control

The south-west side of the reserve was home to a long and narrow strip of land of approximately 10 ha where the black cherry (*Prunus serotina*), with bushes of five to six metres in height, dominated the dune vegetation. Through specific management, removing tall seed trees by machine, followed by five to seven years of seasonal grazing by a flock of Dutch Landrace goats (a century-old land breed), the black cherry has disappeared almost completely and the dune vegetation has largely recovered itself. The side effects of using goats to graze are small patches of bare sand and abrupt differences in height. This has a favourable effect on the populations of solitary digger bees and other insects that depend on open sand.

Chopping and mowing

Small sections of the vegetation and most of the organic top layer in four locations at the foot of Jan Thijssensduin in the key area of the small pearl-bordered fritillary (*Boloria selene*) were mechanically removed (chopped) in favour of the heath violet. This plant is the host for this rare butterfly species and also for the niobe fritillary and the dark green fritillary. The marsh grass of *Parnassus* has also returned in these areas.

West of Bunkerduin, a section of an encroached, wet dune valley is periodically mowed in favour of the *Carex hartmanii*. As far as we know, this is the only habitat of this species in the Netherlands. It responds well to this type of management and has expanded considerably, with a current presence of many thousands of specimens.

9.1.2. Protection against the elements (fire, water regime)

No changes.

9.1.3. Approaches and thoroughfares (paths, roads, car parks, signposting, fencing, etc.)

In order to allow for the uninterrupted progress of the processes in the dynamic coastal dune landscape in the north-western part of the reserve, the access path between Markers 19 and 20 was rerouted south in 2016. Access to the beach was adjusted at the same time. The total length of these reconstructions is approximately 1,500 m.

9.1.4. Field equipment (hides and study facilities)

Thanks to partial funding from the "Tranquillity for birds, Space for people" project, both guard posts are now fully kitted out with new equipment such as binoculars, telescopes, computer equipment, educational material, etc. Both posts also have an Internet connection.

9.1.5. Waste management

Each year, Stay Okay (a youth hostel), the voluntary Beach Clean Foundation and the Terschellinger Landroverclub organise one or more beach clean-ups. 20-25 m³ non-organic waste is cleared every year.

9.1.6. Use of renewable energy systems

Solar panels supply all power to the two guard posts and the electric grid (at approximately 9 km) on Groede.

9.2. Management

9.2.1. Management plan 2003 – 2013

During the evaluation of the State-Owned Land Management Plan 2003-2013, it was concluded that a management system of "doing nothing" did not result in spontaneous dynamics at Stuifdijk east of Marker 20. Stimulating the dynamics at Stuifdijk is now included as a potential measure in the "Boschplaat 2050" future vision.

9.2.2. Administrative department: changes made

No changes.

9.2.3. Wardens' department: changes made

The most important change, the transition from permanent Staatsbosbeheer bird wardens to volunteers in 2013, is described in Chapter 3.

9.2.4. Internal policing measures

In order to develop recreational activities, the aim is to realise a more active collaboration with businesses and organisations (see also Paragraph 7.2). As a consequence of this, the recreational zoning set out in the previous management plan was reconsidered. It will now be possible to undertake new small-scale activities in three locations on Boschplaat, including the associated catering, outside the nesting season. Appropriate procedures have been agreed on and a fee will be charged.

9.2.5. Infringement of regulations and damage; legal action

The table below shows the violations registered by the bird wardens in 2010, 2013 and 2018. They took corrective action on each occasion.

	2010	2013	2018
Loose dogs	19	41	49
Disruption of nesting birds			26
Accessing a prohibited area	107	174	290

Table 3: Registered violations during the monitoring period (April-August).

Hosting

In addition to supervision, the bird wardens also fulfil an important role as hosts and information providers for visitors. In 2018, a total of 3,750 guests were received at both posts.

10. Influence of the award of the European Diploma for Protected Areas

The European Diploma is of great significance to Boschplaat and Terschelling. This international recognition is regularly quoted in publications, promotions and in advertisements of businesses.

However, since the entire international Wadden Sea was awarded UNESCO World Heritage Status, the European Diploma may be slightly overshadowed by it.

However, as a specific part of the UNESCO area, Boschplaat is a glittering pearl in this crown, so to speak.

Appendices:

Species		2010	2011	2012	2013	2014	2015	2016	2017	2018
Common Spoonbill	<i>Platalea leucorodia</i>	2	5	4	11	11	10	9	19	12
Greylag Goose	<i>Anser anser</i>	3	2	1	3	2	2	1	8	3
Egyptian Goose	<i>Alopochen aegyptiacus</i>	0	1	0	2	0	2	1	0	1
Common Shelduck	<i>Tadorna tadorna</i>	20	17	8	23	30	22	9	9	5
Mallard	<i>Anas platyrhynchos</i>	5	3	0	5	5	6	2	1	3
Red-breasted Merganser	<i>Mergus serrator</i>	0	0	0	0	0	0	2	4	0
Common Eider	<i>Somateria mollissima</i>	64	12	14	15	NG	12	9	6	7
Marsh Harrier	<i>Circus aeruginosus</i>	2	2	2	3	4	3	4	4	2
Common Buzzard	<i>Buteo buteo</i>	0	1	0	0	0	0	0	0	1
Common Quail	<i>Coturnix coturnix</i>	0	0	0	0	1	0	0	0	1
Common Pheasant	<i>Phasianus colchicus</i>	12	5	4	6	3	5	0	2	1
Oyster Catcher	<i>Haematopus ostralegus</i>	63	54	43	50	39	39	32	23	24
Pied Avocet	<i>Recurvirostra avocetta</i>	0	0	0	0	0	0	6	11	0
Eurasian Curlew	<i>Numenius arquata</i>	3	2	3	2	2	3	3	3	1
Common Redshank	<i>Tringa totanus</i>	18	17	9	11	15	10	9	12	5
Mew Gull	<i>Larus canis</i>	17	15	15	13	13	4	0	0	1
Lesser Black-headed Gull	<i>Larus fuscus</i>	237	148	150	113	158	170	214	38	40
Herring Gull	<i>Larus argentatus</i>	220	162	145	153	140	182	148	136	76
Great Black-backed Gull	<i>Larus marinus</i>	1	1	1	1	1	1	1	2	2
Wood Pigeon	<i>Columba palumbus</i>	3	6	2	3	1	3	2	2	1
Common Cuckoo	<i>Cuculus canorus</i>	1	0	1	0	0	0	2	2	0
Short-eared Owl	<i>Asio flammeus</i>	0	0	1	0	1	1	0	0	0
Eurasian Skylark	<i>Alauda arvensis</i>	11	21	17	21	32	27	65	56	41
Meadow Pipit	<i>Anthus pratensis</i>	48	57	53	59	57	55	108	85	68
Blue-headed Wagtail	<i>Motacilla flava</i>	3	4	1	2	2	5	9	12	10
Yellow Wagtail	<i>Motacilla f. flavissima</i>	1	1	0	0	0	0	0	0	0
Winter Wren	<i>Troglodytes troglodytes</i>	18	10	2	8	9	13	17	27	8
Hedge Sparrow	<i>Prunella modularis</i>	3	2	0	0	0	1	3	4	5
Northern Wheatear	<i>Oenanthe oenanthe</i>	0	0	0	0	0	0	0	0	0
European Stonechat	<i>Saxicola rubicola</i>	0	0	0	1	0	0	0	1	3
Common Nightingale	<i>Luscinia megarhynchos</i>	1	0	0	0	0	0	1	1	0
Grasshopper Warbler	<i>Locustella naevia</i>	11	23	10	4	10	9	14	13	13
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	1	0	0	0	3??	0	0	0	0
Icterine Warbler	<i>Hippolais icterina</i>	0	1	0	0	2	2	3	1	0
Lesser Whitethroat	<i>Sylvia curruca</i>	4	2	2	4	5	2	11	2	6
Common Whitethroat	<i>Sylvia communis</i>	9	19	14	15	16	16	22	32	27

Garden Warbler	<i>Sylvia borin</i>	1	0	0	0	0	1	0	1	1
Blackcap	<i>Sylvia atricapilla</i>	3	0	0	0	0	0	0	1	0
Willow Warbler	<i>Phylloscopus trochilus</i>	1	0	0	3	2	1	4	4	3
Northern Chiffchaff	<i>Phylloscopus collybita</i>	2	3	4	5	3	3	7	5	7
Common Magpie	<i>Pica pica</i>	1	0	1	1	1	1	0	0	0
Carrion Crow	<i>Corvus corone</i>	9	9	8	8	6	8	4	2	3
Linnet	<i>Carduelis cannabina</i>	0	0	0	0	1	1	2	7	5
Common Redpol	<i>Carduelis cabaret</i>	0	0	0	2	1	0	0	0	0
Reed Bunting	<i>Emberiza schoeniclus</i>	10	18	11	13	9	9	15	12	11

Appendix 1: Breeding birds observed in Vierde Duintjes monitoring area (215 ha)

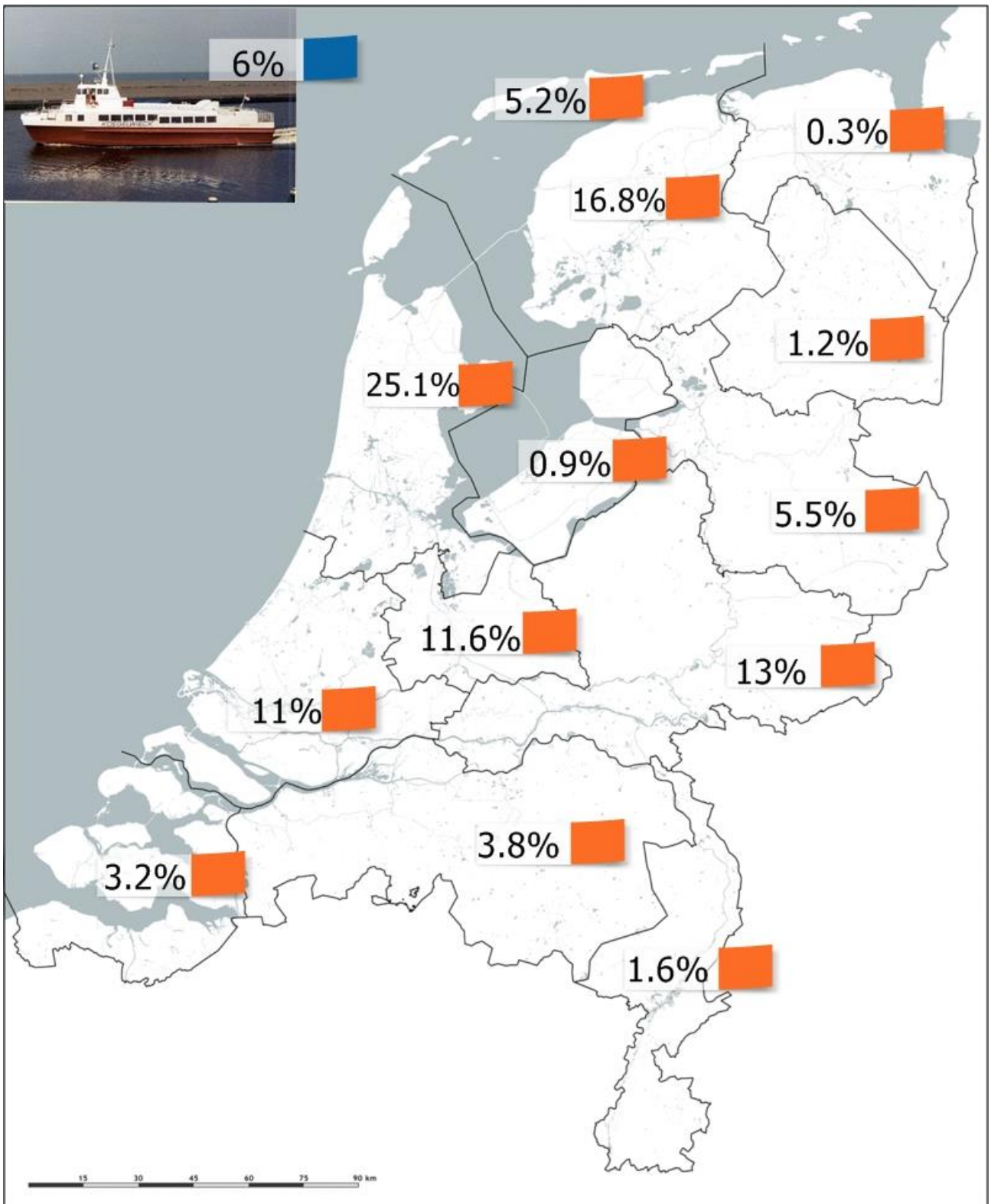
Species		2010	2011	2012	2013	2014	2015	2016	2017	2018
Common Spoonbill	<i>Platalea leucorodia</i>	225	293	139	150	163	137	163	115	121
Common Eider	<i>Sommateria mollissima</i>	1060	nk	2086	2100	2500-4000	1297	1500	nk	960
Marsh Harrier	<i>Circus aeriginosus</i>	17-18	24	12	13	14	12	10	15	12
Hen Harrier	<i>Circus cyaneus</i>	0	0	nk	0	0	0	0	1	0
Avocet	<i>Recurvirostra avocetta</i>	1	25	6	6	25	22	24	2	11
Common Ringed Plover	<i>Charadrius hiaticula</i>	5	nk	nk	4	4	6	3	5	3
Kentish Plover	<i>Charadrius alexandrinus</i>	3	2	nk	2	0-1	3	2	2	1
Lesser Black-headed Gull	<i>Larus fuscus</i>	nk	10524	10115	nk	nk	nk	nk	nk	nk
Common Tern	<i>Sterna hirundo</i>	180	272	120	70	ng	1	12	nk	11
Arctic Tern	<i>Sterna paradisea</i>	32	60	29	30	0	19	3	12	0
Little Tern	<i>Sterna albifrons</i>	21	15-25	9	3	4	23	22	60/90	20
Short-eared Owl	<i>Asio flammeus</i>	5	1	nk	3	3	3	2	0	1
Great Cormorant	<i>Phalacrocorax carbo</i>	259	211	224	170	140	289	327	nk	371
Great Black-headed Gull	<i>Larus marinus</i>	12	11	9	14	0	14	8	nk	11
Herring Gull	<i>Larus argentatus</i>	nk	3820	4620	nk	nk	nk	nk	nk	nk
Greylag Goose	<i>Anser anser</i>	ca. 35	nk	nk	36-97	nk	nk	12	nk	44
Barnacle Goose	<i>Branta leucopsis</i>	0	0	nk	0	13	12	21	35	71
Little Egret	<i>Egretta garzetta</i>	0-1	0	1	0	0	0	0	nk	0
Red-breasted Merganser	<i>Mergus serrator</i>	0	0	nk	0	1	1	2	3	1

Appendix 2: Special and characteristic breeding birds on Boschplaat 2010 – 2018

nk = not known

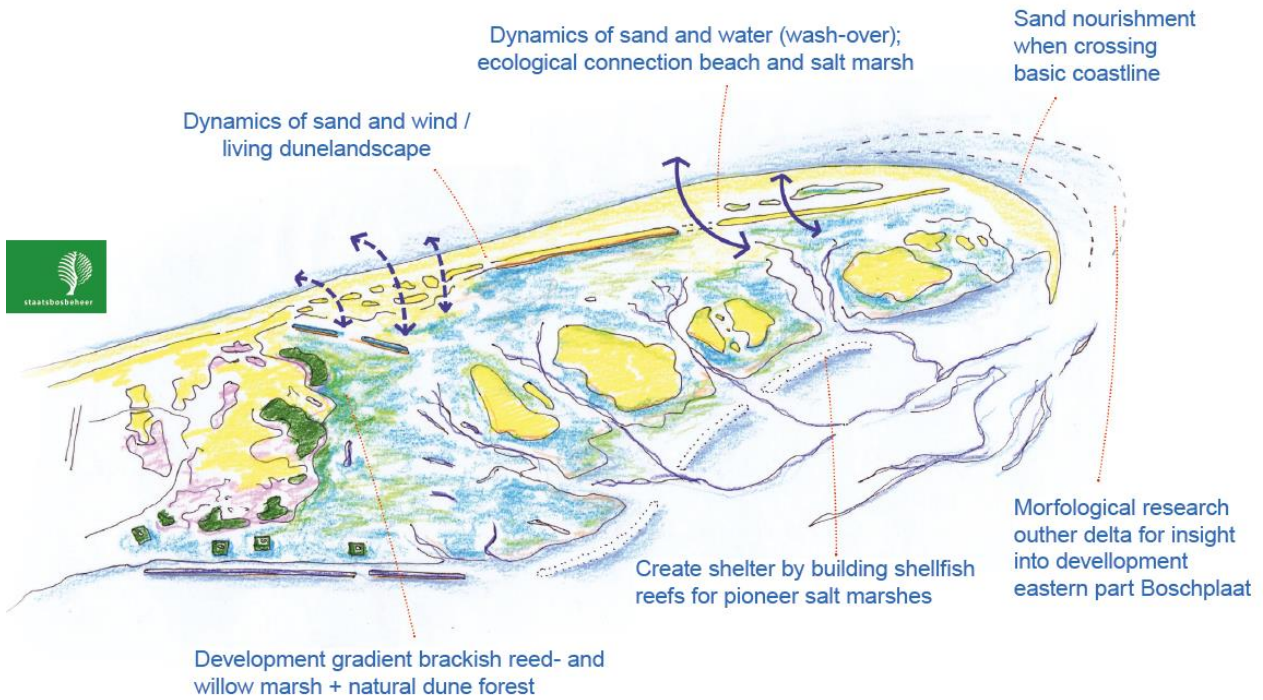
Species		2010	2011	2012	2013	2014	2015	2016	2017	Peak	1% norm	x1%
Great Cormorant	Phalacrocorax carbo	280	325	379	433	629	549	746	486	746	6200	0,1
Common Spoonbill	Platalea leucorodia	330	37	147	537	61	281	660	698	698	160	4,3
Greylag Goose	Anser anser	937	1098	1789	2507	1308	1622	1346	963	2507	6100	0,4
Barnacle Goose	Branta leucopsis	1024	52	2070	951	175	2073	527	998	2070	7700	0,2
Brent Goose	Branta bernicla	3064	1971	2790	3418	3672	3704	1878	3841	3841	2200	1,7
Common Shelduck	Tadorna tadorna	2592	2699	2409	3155	2058	1670	1866	3500	3500	2500	1,5
Wigeon	Anas penelope	13164	1086	8100	5290	14658	7039	15689	20767	20767	14000	1,5
Common Teal	Anas crecca	432	1086	1069	1011	2070	2177	1395	1318	2070	5000	0,4
Pintail	Anas acuta	2256	1230	906	1465	3067	5321	5141	3055	5321	650	8,2
Common Eider	Somateria mollissima	4624	2411	4378	8320	4406	5541	6343	2919	8320	9800	0,8
Oyster Catcher	Haematopus ostralegus	7783	7722	9133	9771	15527	5148	6746	4500	15527	9000	1,7
Pied Avocet	Recurvirostra avosetta	508	250	419	450	366	250	339	370	450	730	0,6
Common Ringed Plover	Charadrius hiaticula	386	462	313	305	419	577	1133	536	1133	2400	0,5
Grey Plover	Pluvialis squatarola	3917	4596	2343	1748	1302	2112	2876	3228	4596	2500	1,8
Red Knot	Calidris canutus	11680	6551	10360	9195	13079	5135	9220	8532	13079	4500	2,9
Sanderling	Calidris alba	1272	1343	1030	1824	1437	1692	1626	1713	1824	1200	1,5
Dunlin	Calidris alpina	13036	8129	18550	14988	12830	7950	12199	8216	18550	13300	1,4
Bar-tailed Godwit	Limosa lapponica	15618	11240	18322	16265	25360	17553	24900	12697	25360	5000	5
Eurasian Curlew	Numenius arquata	8491	7855	4801	5014	7993	9918	6693	7824	9918	7700	1,3
Common Redshank	Tringa totanus	4063	2468	2214	2364	4500	2919	3289	6290	6290	1800	3,5
Common Greenshank	Tringa nebularia	565	379	238	595	505	1316	619	256	1316	3300	0,4
Ruddy Turnstone	Arenaria interpres	736	69	118	230	276	102	246	870	870	1400	0,6
Black-headed Gull	Larus ridibundus	6100	6220	8942	8328	3750	7558	11862	9883	11862	31200	0,4
Mew Gull	Larus canus	8324	2825	15270	5293	2504	1765	2375	3751	15270	16400	0,9
Herring Gull	Larus argentatus	14185	10354	21328	7080	5712	6215	7787	10201	21328	10200	2,1
Great Black-headed Gull	Larus marinus	1183	2093	1537	196	1426	855	917	475	2093	4200	0,5

Appendix 3: Wading and water birds Boschplaat 2010 – 2017.



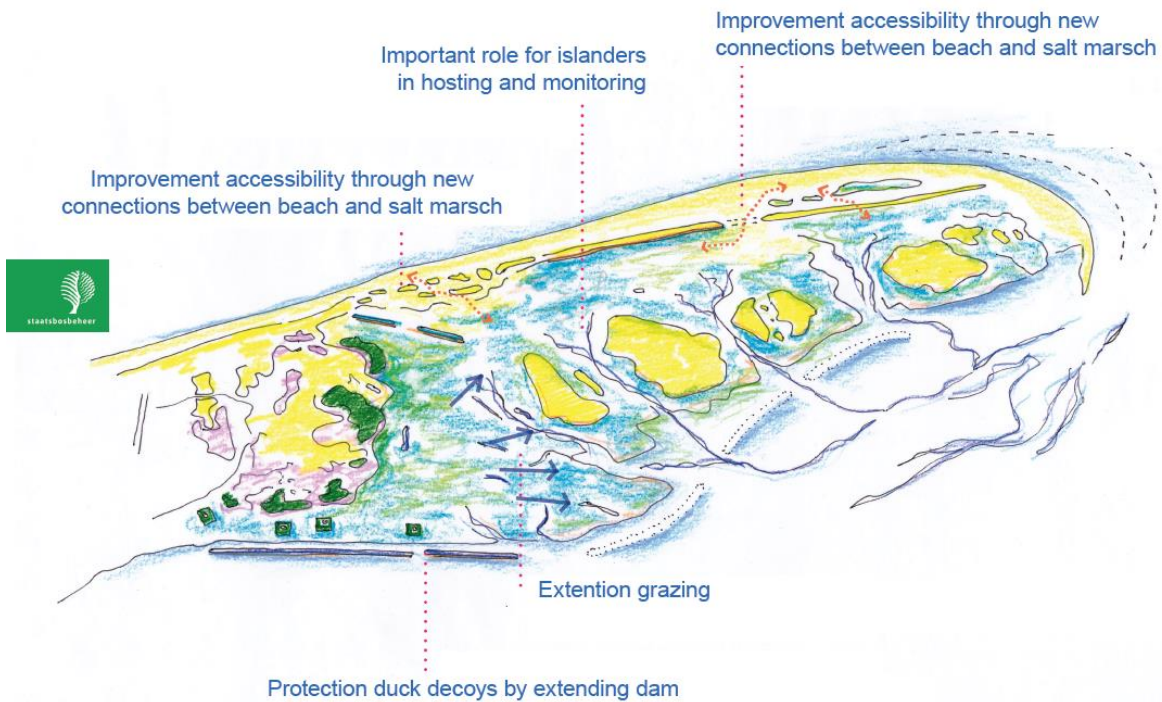
Appendix 4: Origin of visitors Boschplaat Summer 2018

Boschplaat 2050: Sketch Nature



Appendix 5

Boschplaat 2050: Sketch Men and culture



Appendix 6