

RESTORING NATURAL HABITATS

for critically endangered species
by defragmenting the Sonian Forest



SONIAN FOREST





Ecofence next to R0 (©Life+OZON)

1. Introduction

From July 2013 to June 2018, the Life+ OZON project put considerable work into the ecological defragmentation of the Sonian Forest, along with the support of the European structural fund Life+, in a broad partnership across the borders of competences, administrative levels and regions.

Browse through this report and find out how and why the most tangible achievements of the project came about. Although summarising all the details of five years of study, construction and monitoring activities in this overview is virtually impossible, we hope that you get a good picture of the project and easily find your way to the extra online information.

If you have any further questions about the project, please feel free to contact the Agency for Nature and Forests (ANB) | Regiokantoor Groenendaal | Tel 02 685 24 60 | groenendaal.anb@vlaanderen.be | www.sonianforest.be/lifeozon.

2. The Sonian Forest

The Sonian Forest is around 4,400 hectares in size. The forest and nature reserve has substantial ecological and scientific value with international recognitions of Natura 2000 and UNESCO (*ancient and prehistoric Carpathian beech forests and other regions of Europe*). Roughly 74% of the Sonian Forest consists of acid-loving beech trees. Other habitat types such as grasslands and nutrient-rich shrubs (herbaceous vegetation) are also well represented.

The Sonian Forest is home to a huge number of species: of the 132 species occurring in Europe in old forests, 70 can be found in the Sonian Forest. In addition to some 400 plant species, you will also find more than 1,000 species of fungi, 570 species of beetles and 102 species of hoverflies. The Sonian Forest is therefore the very best location for these organisms in the Benelux and one of the strongholds in Western Europe. The Sonian Forest is also popular with bats. There are 21 species in Belgium, 18 of which can be found in the Sonian Forest. If you calculate

the ratio between nature reserve surface area and bats, you soon come to the conclusion that the Sonian Forest boasts nearly twice as many species as you would expect from European averages. In this area of the domain we count up to 100 species of breeding birds; far above the European average of 76 species. Amphibians also show a similar pattern: of the 16 species occurring in Belgium, 12 live in the Sonian Forest.

A number of protected relics and monuments in the Sonian Forest refer to a rich cultural-historical past. From the Neolithic period (2000 BC), across the Carbonaria Sylva or Coal Forest from the Roman period (4th century) to the early days of Belgian independence. The well-preserved landscape with its dry valleys dates from the last ice age, some 10,000 years ago. Soil research has shown that the Sonian Forest is therefore quite unique in Europe: virtually all beech forests in Europe are found on soils that were at least briefly farmed.



3. Challenges for the Sonian Forest

The Sonian Forest spreads over the Flemish, Brussels and Walloon regional borders. The various managers work together on the basis of an interregional structural vision around five objectives:

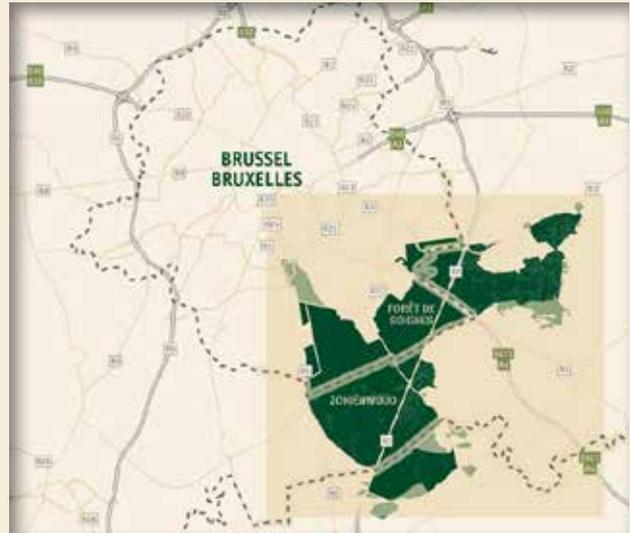
- Demarcation of the ecological heart
- Connection with surrounding nature
- Development of access points
- Ecological defragmentation
- Recreational networks

The OZON project focuses on the last two challenges.

3.1 Ecological fragmentation

Despite its large natural structure, the Sonian Forest is a highly fragmented area. Busy traffic arteries intersect the forest: the E411 (Brussels-Namur-Luxembourg) and the eastern part of the Ring around Brussels (R0), the Waterloosteenweg (N5), the Terhulpensteenweg (N275) and the Tervurensesteenweg. In addition, there are a number of busy secondary roads that are often used as shortcuts: the Welriekendedreef, Vlaktedreef and Duboislaan. In addition to these roads, the Brussels-Luxembourg railway line 161 runs directly through the forest.

This traffic infrastructure creates barriers for animals. For a number of species these are insurmountable, for others life-threatening. Figures from the study 'Dood doet Leven' reveal that in the 2008 - 2012 period, around 50 larger mammals such as fox, roe deer, squirrel and mustelids were run over in the Sonian Forest each year. In addition, the annual amphibian migration at various locations in the forest leads to hundreds of victims among frogs, toads and salamanders. Less visible is the fragmenting effect of headlights and street lighting on light-averse bat species. For many mobile forest inhabitants, these barriers cause a fragmentation of their population into sub-populations. Examples include the Daubenton's bat, pine marten, leather beetle and palmate newt.



Location of the Sonian Forest in relation to Brussels (©Brussels Environment)

3.2 Urbanisation and recreational pressure

In contrast to many other large forest complexes, the Sonian Forest lies on the outskirts of a big city. The centre of the European capital Brussels is less than 10 kilometres away, and has 1.2 million inhabitants. Because of further urbanisation of the region, the open border zones of the forest (grasslands, heathland, fallow lands) and therefore also the animal species tied to them are disappearing. The forest today has a lot of rigid borders and is under heavy pressure from the outside.

With approximately 2 million annual visitors, there is also considerable visitor pressure from the inside. Recreational users such as hikers, joggers, mountain bikers and riders move around – deliberately or otherwise – through the habitat of different animal species on a daily basis. These animals are disrupted in their rest, hunting or other activities or are chased away to a busy thoroughfare with collisions as a result.

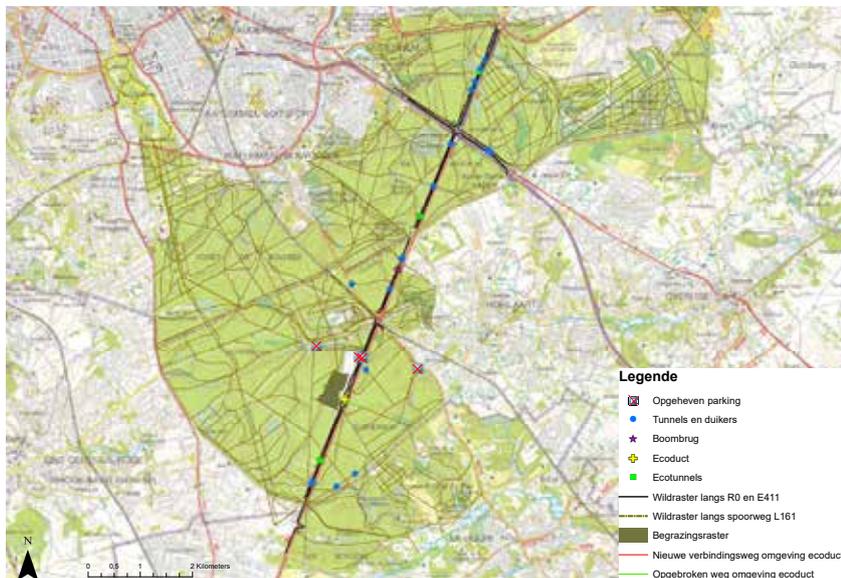
4. Approach

In 2012 a project proposal was drawn up for the call for projects of Life+ Nature (more info on the back cover of this report). A number of preparatory studies were the basis for this. For example, in 2009 the design and consultancy organisation Arcadis carried out a study commissioned by the Road and Traffic Agency (AWV) about the ecological defragmentation of the E411 and R0 motorways through the Sonian Forest. A number of proposed solutions from that study were included in the OZON project. The findings from the above-mentioned 'Dood doet Leven' study contributed to a sharper problem definition and final positioning of the Groenendaal Ecoduct.

The project application was submitted in September 2012 and approved in mid-2013. An interdisciplinary partnership at various levels of government (see the back cover of this report) launched the OZON project on 1 July 2013. The project proposal included actions and budget for study, infrastructure works, monitoring, communication and general project management.

4.1 Objectives of OZON

→ The OZON project aims to reconnect ecological hotspots and the habitat of different target species through the realisation of infrastructure (ecoduct, eco tunnels and eco grids), with elaboration from study to construction included in the project.



Life project map of achievements (©Life+OZON)

- In addition to the much-needed infrastructure interventions, attention is also paid to the nature-friendly redevelopment of the forest edges with extra open zones and shrub and herbaceous vegetation, in combination with the structure of eco grids and game mirrors. This is included in the existing management plan of the Sonian Forest.
- In view of the increasing disruptive effect of recreation in the Sonian Forest, the project looks at how recreation can be shifted to less disruption-sensitive zones and thus away from the defragmenting infrastructure.
- Through monitoring and communication the project is followed up before, during and after (After Life+).

4.2 Expected results of OZON

Installing habitat corridors to limit the current habitat fragmentation in order to allow movement between isolated subpopulations.

- Defragmenting and restoring habitats with the expansion of populations with the habitat-specific species, including a number of red-listed species
- Encouraging sound, sustainable follow-up management with the updated management plan with attention to the ever-increasing recreational pressure

→ Reducing the number of road casualties by more than 90% in view of population protection and limiting material and human damage

→ Enhancing respect, involvement and greater insight by the public into the Sonian Forest with its valuable European habitats and species

5. Studies

A number of studies of the project are connected to infrastructure works. We will discuss this further in this report.

Reports available on request via anb.groenendaal@vlaanderen.be

5.1 Technical elaboration and image determination of defragmentation measures

In 2014, a study was carried out on the technical elaboration of the defragmentation measures from the project proposal. Based on field visits with the site manager, consultation of experts and desk research, recommendations were made for the integration and guidance of the different target species into the future ecoduct, eco tunnels and tree bridge. The study was commissioned by the Witteveen + Bos agency for the Agency for Nature and Forests (ANB), for a total cost of 25,896.07 euro.

5.2 Study of defragmentation measures N275

Between June 2014 and May 2015, potential defragmentation measures were studied for the Terhulpensesteenweg (N275) in the Sonian Forest. The purpose of the study was to investigate possible constructions, set up projects and technically develop them into sketches and preliminary designs including an indicative cost price estimate. The study was carried out by the Driekwart Groen agency on behalf of the ANB, for a total cost of 40,264.76 euro.

Proposed and elaborated measures from the report included an ecoduct north of the Bundersdreef, a large fauna tunnel at the Kwekerijvoetpad, several small fauna tunnels and similar, an eco-grid and rope-tree bridges.

In 2016 and 2017, two fauna tunnels were realised as a spin-off of the OZON project. These were financed and built as compensatory measures of grid operator



Tunnel Bundersdreef (©Life+OZON)

SIBELGA for the structure of a gas pipeline along the N275 through the Sonian Forest. The total cost of these works amounted to approximately 100,000 euro, outside the OZON budget.

5.3 Monitoring of ecological infrastructure

In the period December 2013 to June 2018, we monitored the use of a number of defragmentation elements (fauna tubes, eco tunnels, tree bridge and ecoduct). The methodology was tailored to the different target species: larger mammals, amphibians and reptiles, ground beetles and bats. Regular route counts were also carried out for monitoring road casualties along the R0 and E411.

This study included not only a methodological framework, but also the follow-up, technical support and statistical analysis of the collected data. The study was carried out by Natuurpunt Studie on behalf of the Agency for Nature and Forests (ANB), for a total cost of 73,416.75 euro.

Further in this report, along with the realised infrastructure, we refer to observed species.

6. Eco tunnels

Various types of underpasses were realised as part of the OZON project. These were grafted onto existing road infrastructure or newly constructed during the project. Each type has its own target species, largely related to the location and dimensions. Below we focus on two types: the ecological layout of existing large tunnels and newly constructed fauna tubes.

All actions related to the repair, cleaning and refitting of 18 existing tubes and tunnels were merged with the construction of three new fauna tubes in one public tender under the direction of the Road and Traffic Agency (AWV).

The works were carried out by contractor Krinkels NV and subcontractors in the period from April 2015 to June 2016, for a total cost of 646,457.93 euro.

A final tube at kilometre 18.7 under the Brussels Ring Road could only be cleaned and repaired in May 2017, due to permanent flooding in the preceding period.

From one fauna tube, two tunnels and three tubes, the use was monitored by target species in different ways (wildlife cameras, snake plates, and insect traps) in the period October 2014 to April 2018.

6.1 Ecological design of tunnels Flossendelle and Prinsenweg

After repair and cleaning two tunnels were partially transformed into ecological tunnels. These are tunnels with large dimensions (height 4 metres, width 8 metres and length 50 metres) that are occasionally used by service vehicles and recreational users (cyclists, walkers, etc.). They were covered with a sand layer over a width of 2 metres, a stump and twig barrier on top of this layer and shielding tree trunks. The Flossendelle tunnel is near a pond and is regularly used by amphibians. The entrances were therefore equipped with conductive amphibian screens.

Tunnels with such dimensions are aimed at medium-sized mammal species such as mustelids, but also amphibians, reptiles, bats and ground beetles. Stump barriers provide cover for smaller target species.



Flossendelle tunnel (©Life+OZON)

6.2 Construction of three new fauna tubes

Three new fauna tubes with a diameter of 70 centimetres and a length of 36 metres to 61 metres were installed under the R0 at kilometres 15.02, 20.2 and 22.8. Construction was done by subcontractor Visser & Smit Hanab. We strived for an optimal connection to the slopes of the roads and to the ground level, which provide natural guidance.

These pipes have a gradient of 1% to prevent stagnation of groundwater or rainwater. They are equipped with a continuous sand layer that ensures better conductivity. Small to medium-sized mammals such as fox, mustelids, hedgehog, rabbit and mice/shrews are the target species of this type of tunnel. For target species such as the badger, light entering the tunnel is less important, as they orient themselves using the tunnel walls. This type of tunnel is too small for a deer and the indoor climate is inappropriate for reptiles, who prefer light and warm passages.

6.3 Use of the tunnels

Flossendelle, an ecologically designed tunnel, was monitored for a year from March 2017 to March 2018 with a camera. During this period, different species were observed, including fox and stone marten. The tunnel environment was also monitored for two years in 2015 and 2016 with snake plates. Here, among other things, crested salamander, alpine water salamander, brown frog and common toad were observed. In addition, several beetles were also spotted: *Carabus auronitens* and violet ground beetle.

Faunabuis Noord, a newly constructed fauna tube, was monitored over a period of 3.5 years from September 2014 to March 2018 with two cameras. During this period several species were observed including fox, polecat and stone marten. The environment was also monitored for two years in 2015 and 2016 with snake plates and insect traps. Here, among other things, brown frog and common toad were observed. In addition, several beetles were also spotted: *Carabus auronitens*, blue ground beetle and *Carabus attenuatus*.



Fauna tube South (©Life+OZON)

6.4 Subsequent management

The Road and Traffic Agency (AWV) will regularly check these structures for safety. The Agency for Nature and Forests (ANB) takes care of the maintenance and management of the ecological layout (stump ridges, branch grooves) and conductive measures (mowing of entrances, etc.).

7. Constructing the Groenendaal Ecoduct



Top view of foundation works, stocked local land and temporary lanes (©Life+OZON)

The first ecoduct on the Brussels Ring is next to the former racecourse of Groenendaal (kilometre 16.4). It was built between May 2016 and May 2018 by BAM Contractors NV in assignment of the AWV and the ANB. The total cost amounted to approximately 6.6 million euro.

The preparatory works started in the summer of 2016. The embankments along the highway and top layer of the soil were carefully excavated and stored on site. This valuable soil with local seeds and humus was later replaced on and around the bridge. Temporary lanes were constructed to limit the inconvenience to traffic during the work.

In the winter of 2016 - 2017 122 foundation piles with a diameter of 1 metre were drilled (40 per abutment block, each 16.7 metres deep, and 42 for the middle pillar, each 11.5 metres deep). The armament and concrete works of both abutments blocks and the middle pillar followed in the spring of 2017.

58 supporting beams were installed in the summer of 2017. One beam weighs 40 tonnes and has a length of about 25 metres. First the span was placed over the inner ring (racecourse side) so that all traffic could be guided below and the same works could be carried out on the side of the outer ring.



Fitting supporting beams (©Life+OZON)

The result was a bridge deck of approximately 3,000 m²: 60 metres wide and 50 metres long. The edges of the bridge deck were trimmed with yellow ornamental border elements. The colour refers to the local sandy soil, which is characteristic of the Sonian Forest.

During the works about 100,000 m³ of land was supplied from neighbouring yards. This soil replenishment ensures a smooth connection to the surrounding landscape and makes the bridge accessible to the many target species.

Graffiti artist DZIA decorated both sides of the middle pillar with the target species of the ecoduct: bats, ground beetles, amphibians and mammals.

The official inauguration took place on 3 June 2018 in the presence of the Honorary President of the European Council Herman Van Rompuy, Flemish Minister Ben Weyts, Brussels Minister Céline Fremault, and Administrator General of the Agency for Nature and Forests, Marleen Evenepoel.



Graffiti by DZIA on the middle pillar (©Life+OZON)

7.1 Installation on top of the ecoduct

An ecoduct is the intervention with the broadest ecological effect. The size and thoughtful implantation in the landscape make it possible to create an adapted layout and guidance which several animal species can enjoy. That is certainly the case at Groenendaal Ecoduct.

The embankments next to the yellow ornamental edges shield the bridge deck from the light of passing cars. It creates a pleasant environment for light-averse bats that have been observed in the environment. Due to the southern orientation of these embankments, reptiles such as the viviparous lizard (*Zootoca vivipara*) are able to get sun and find food. The embankments are dotted with flowers attracting countless insects, caterpillars and spiders to which these reptiles are attracted.

In addition to the embankments, a green screen of shrubs was planted including hazel (*Coryllus avellana*), spruce wood (*Rhamnus frangula*) and blackthorn (*Prunus spinosa*). These shrubs ensure the darkening of the bridge deck and serve as a food tree for bees and birds or as a host plant for butterflies and moths. Did you know that moths are among what bats tuck into? Ground beetles and small mammals find shelter in this scrub.

High-stemmed tree species such as winter linden (*Tilia cordata*) and pedunculate oak (*Quercus robur*) provide a linear structure on top of and around the bridge. Bats observed in the environment, such as the Nathusius' Pipistrelle and Serotine Bat, orient themselves on such linear elements.

A continuous stump and trunk barrier connects both sides of the road. Reptiles can shelter, warm up and find food on and between this dead wood. The numerous species of ground beetles that have been observed in the vicinity of the bridge can nest there.

Ponds provide the perfect living environment for amphibians. They are located on both sides of the ecoduct and are connected by a humid zone on top of the bridge. Further inside the forest, ponds have been created that serve as stepping stones to the ecoduct and the other side of the motorway.



Deer along R0 at racecourse Groenendaal (©Life+OZON)

The open plain on top of the bridge also makes the ecoduct accessible to larger mammals such as deer, which by nature are rather shy and like to keep an overview.

7.2 Installation around ecoduct

A herd of eight Scottish Highlanders grazes about 24 hectares (or 48 football fields) of grassland, brushwood and forest on the west side of the ecoduct. These cattle survive year after year all on their own in nature. They keep the landscape half open by pruning woody crops, and eating and trampling during the germination phase. By opening the closed turf, they also stimulate the development of all kinds of aromatic and woody crops. They spread seeds through their fur and manure. Their droppings don't contain any medicines, meaning mushrooms and dung beetles can make the most of them.



The flowers and fruits of the field maple are popular with bees and other insects and bird species (© Paul Busselen)

In 2017 and 2018 approximately 10,500 shrubs and trees were planted in the vicinity of the ecoduct. Planted varieties such as guelder rose (*Viburnum opulus*), red dogwood (*Cornus sanguinea*), mountain ash (*Sorbus aucuparia*) and field maple (*Acer campestre*) provide food for insects, birds and mammals. With some help from the Scottish Highlanders, these plants will continue to spread in a natural way over the next few years. For instance, the former racecourse of Groenendaal is evolving further towards a semi-open grass landscape with species-rich forest edges that contribute to the biodiversity of the Sonian Forest.

A number of buildings in the vicinity of the ecoduct remind us of the former racecourse of Groenendaal. They nowadays serve as a home for bat species such as the lesser noctule (*Nyctalus leisleri*). The attic of the Royal Lodge was designed as a summer residence and the cellars of the demolished stand as a winter residence. People are not allowed here.



Key role of the wild bull (© Jeroen Helmer / ARK Natuurontwikkeling)

7.3 Use of the ecoduct

Three cameras captured images of the Groenendaal Ecoduct, from September 2014 to December 2015. Mainly deer were observed, sometimes dangerously close to the R0.

In addition to cameras, snake plates and insect traps were also used for 7 months in 2017. Here, among other things, viviparous lizard, hazel worm, brown frog and common toad were observed. In the insect traps we encountered several types of beetles including *Carabus auronitens*, *Carabus monilis* and *Cychrus attenuatus*. All rare species that are fairly common to the Sonian Forest.

In 2015 and 2017, the area and the bridge deck of the ecoduct were monitored for bats using bat-loggers. In 2015 we found the common long-eared bat and the Serotine Bat only on the outer ring and the Nathusius' Pipistrelle only on the inner ring. In 2017 the lesser noctule (*Nyctalus leisleri*) was observed en masse above the bridge deck.

7.4 Inaccessibility of the ecoduct



Groenendaal Ecoduct is not made for recreation. An ecoduct only works properly if it features the functions necessary for animals. Unfortunately, people can sometimes throw a spanner in the works, by unknowingly scaring animals away, leaving traces (including smells), scaring animals, destroying shelters or removing food. We count on the sense of responsibility and good will of humans not to walk on the bridge and cross the Ring along the tunnels in the area. In this way we respect the natural biotope of animals on top of and around the bridge.

8. Eco grid along R0, E411 and railway line L161

Eco grids guide amphibians and mammals to safe crossings such as tunnels and divers, tree bridges and ecoducts. At the same time they contribute to the reducing traffic accidents, and prevent human casualties in collisions with heavier animal species such as wild boar.

Between April 2017 and May 2018, a total of 24 kilometres of eco grid was placed along the R0 and E411 on the territory of both the Flemish and Brussels-Capital Region. The works were carried out by contractor Siemes NV in a joint assignment of the ANB and Leefmilieu Brussel, for a total cost of 1,050,000 euros.

The height of the grid varies from 1.8 to 2 metres. The grid consists of a fine-mesh grid (1*4cm) at the bottom and a coarse-mesh grid (10*10cm) at the top. The grid was dug 20 cm deep to keep away species such as foxes and badgers. It is equipped with 34 roe deer and 34 badger gates that allow animals to get back to the forest side in the event they end up on the road side. The grid is also locally equipped with plastic amphibian screens that guide salamanders, frogs and



Eco grid along the R0 (©Life+OZON)

toads to the entrance of an ecological tunnel and the ecoduct.

In October 2014, an identical grid was placed along the railway line L161, over a length of 1.4 kilometres. This grid has two badger gates and two roe deer. The works were carried out by contractor Van der Linden BV on behalf of the ANB, for a total cost of 48,145 euros.

The structure of the eco grid was accompanied by the transformation of highway verges to species-rich forest edges. The tall trees that previously grew on the side of the road made way for flower-rich herbaceous herbs, bacciferous shrubs and trees under coppice management. The sunny east and west-oriented forest edges on the embankments along the RO and the north and south-oriented forest edges of the E411 can thus evolve into a biotope for flower-visiting insects such as butterflies and hoverflies. This edge planting leads mammals to the fauna tubes and shields them from movement, light and noise from traffic. At the same time, the plants provide shelter and attract animals seeking out food.

ANB and AWV jointly manage the eco grid after the end of the project, with agreements about the repair work after any damage to the grid and the ecological management of the verges between road surface and grid.

9. Tree bridge



Nets connect the tree bridge with the crowns of the neighbouring trees (© Wim Van Galster)

A tree bridge is a kind of walkway for small tree-dwelling mammals such as squirrels and pine marten. These species naturally move through high



Inside the metal gutter are branches, leaves and nuts for a more natural design (© Dirk Raes)

tree branches. They shun light and the open terrain of the motorway. The bridge removes these barriers and offers them the chance to cross safely. These constructions can also act as a guide for bats such as lesser noctule, serotine bat and brown long-eared bat that orient themselves on linear elements during their flight.

Even before the start of the OZON project (early 2013), a first tree bridge was built over the Brussels Ring at kilometre 19.1. This structure was built by contractor SOGA NV on behalf of AWV for a cost of 50,850 euros.

The tree bridge spans the entire width of the road and thus connects two forest zones. The structure consists of a 27-metre-long gutter of galvanized steel covered at the top with wire mesh (against predators). The gutter is attached to the top of a road gantry, a metal structure with traffic signs applied. It is perforated every metre so that no water can remain standing. Inside there are branches, leaves and nuts for a more natural design. Herring belts of hemp (at least 4 cm thick) at both ends connect the gutter with a net that is stretched between the crowns of the neighbouring beeches and oaks. After a while, the branches grow between the net and the whole feels more natural.

The use of the bridge was continuously monitored by two wildlife cameras in the period October 2014 to September 2017. Analysis of tens of thousands of images showed no observation of use. This meagre result and limited alternative design options due to safety measures above the motorway have meant that four other planned tree bridges were not carried out as part of the OZON project.

The tree bridge created will be retained and is regularly inspected by AWV.

10. Recreation management

The OZON project aspires to a greater involvement, in addition to more insight and respect from the visitors of the Sonian Forest. In order to achieve this and still be able to protect the valuable European habitats and species, measures for managing recreation will have to be taken.

In September 2015, the parking areas on the Duboislaan (Ganzevoetvijver) and the former racecourse of Groenendaal disappeared. The paving was removed and vegetation was planted.

In other places, implementing defragmentation measures also coincided with interventions in the field of recreational management. The two parking zones along the Brussels Ring (kilometre 17) also disappeared in April 2018. The paving was removed, earthworks were carried out and a forest edge was planted. The eco grid was then placed in such a way that the forest was no longer accessible from the motorway, in contrast to the past. This also applies to several access roads along the R0 and E411 that were closed in the period May 2017 - May 2018 by installing the eco grid (whether or not in combination with an earthen embankment or a service port). The former road signalling and barriers were also removed.



A road under structure in the vicinity of Ecoduct Groenendaal (©Life+OZON)



Viewing cabin at Groenendaal racecourse (©Life+OZON)

As previously mentioned it in this report: we count on the sense of responsibility and good will of recreational users not to enter the ecoduct. In the vicinity of Ecoduct Groenendaal, forest paths were broken up and extended with the intention of keeping visitors at a distance from the entrance of the ecoduct. The grazing block on the racecourse also serves to keep visitors at a distance from the bridge. Here is a new viewing cabin with a view of the entrance of the ecoduct and the grazing block. Information panels in the viewing cabin inform visitors about the OZON project.

Master's thesis research by Gwendolyn Van de Velde, student of Business Engineering at KU Leuven, reveals that more than half of the visitors to the Sonian Forest have no problem with Groenendaal Ecoduct being closed to the public. Moreover, a vast majority are willing to adjust their behaviour and not use the ecoduct if they are provided enough information about why the ecoduct should not be used. With this in mind, we also chose to place a number of information panels in the vicinity of the ecoduct. These info panels provide more information about the inaccessibility of the ecoduct and the impact if this is not respected.

11. Communication

Website:

<http://www.zonienwoud.be/lifeozon/>
<http://www.sonianforest.be/lifeozon/>
<http://www.foret-de-soignes.be/lifeozon/>

Youtube:

<https://www.youtube.com/watch?v=qswxx4JyQ0c&t=15s>
<https://www.youtube.com/watch?v=lbtoLYFy-0g>
<https://www.youtube.com/watch?v=oxhLm9qWl3s&t=2s>

Appearances in media and activities:

	Dutch	French	English
Newspapers and magazines	45	135	2
Internet	75	50	10
Excursion	30	10	15
Television	20	10	
Radio	4	1	
Presentation	7	3	5
Social media	25	5	5
Folders/Posters	2	2	

Activities:

Most important:

- Day of open construction sites 2017: 700 visitors
- Day of the Sonian Forest 2017: 1000 visitors
- Official inauguration of Ecoduct Groenendaal 2018: 175 visitors
- Total number of people guided: +/- 3000

Colophon

LIFE12NAT/BE/000166

LIFE + Project:

Restoration of natural habitats for critically endangered species through the defragmentation of the Sonian Forest
www.zonienwoud.be/lifeozon

Beneficiaries:

Agency for Nature and Forests, Road and Traffic Agency, Bruxelles Environnement - Leefmilieu Brussel (Brussels Environment)

Project partners:

Department of Environment, Municipality of Hoeilaart and Municipality of Overijse.

Symbolic partners: Municipality of Sint-Genesius-Rode, le Département de la Nature et des Forêts and United Nations Environmental Programme.

Budget: Around 11 million euros

Duration of the project: five years (2013-2018)

Project team (Agency for Nature and Forests):

Yoeri Bellemans - project leader (October 2016 to June 2018) and Andreas Baele project employee (February 2017 to June 2018). DrSteven Vanonckelen - project leader (June 2013 to May 2016) and Anouschka Kuijsters - project employee (June 2013 to November 2016).

Abbreviations:

ANB – Agentschap voor Natuur en Bos (Agency for Nature and Forests)

AWV – Agentschap Wegen en Verkeer (Road and Traffic Agency)

OZON – Ontsnippering van het ZONIënwood (Defragmentation of the Sonian forest)

UNESCO - United Nations Educational, Scientific and Cultural Organization

IBGE - BIM - Bruxelles Environnement - Leefmilieu Brussel (Brussels Environment)

Natura 2000

With Natura 2000, Europe calls for an end to the decline of nature. Natura 2000 wants to offer throughout Europe the necessary space for various types of plants and animals, and the areas in which they live. Those natural areas also offer benefits for people. Clean water, space for recreation, healthy soil, fresh air from the Arctic Circle to the Mediterranean coast and from the tips of the Alps to the open expanses of Middle Europe: Europe has an unparalleled spectrum of plants and animals.

This unique natural heritage is threatened by urbanisation, industrialisation, intensification of agriculture, fragmentation by infrastructure, etc. Many habitats for plants and animals have disappeared as the result. Furthermore, the quality of the areas remaining is deteriorating. Animals and plants are also experiencing difficulties. In recent years, 'ordinary' species, such as the sparrow, have faced the same problems as rare European species such as the bear and the lynx. And people are also feeling the consequences. All animals, plants and habitats are part of ecosystems that are important for our own well-being. Forests, for example, provide wood and food, but also ensure a more stable climate, oxygen and clean air.

More info on natura2000.vlaanderen.be

The partnership

The Agency for Nature and Forests (ANB) coordinates the Life + OZON project. The Road and Traffic Agency (AWV) and Brussels Environment are beneficiary partners. The Department of Environment of the Government of Flanders and the municipalities Hoeilaart and Overijse co-finance the project. The municipality of Sint-Genesius-Rode, the Département de la Nature et des Forêts and the United Nations Environmental Programme (UNEP) are symbolic partners.

The **ANB** is an agency of the Government of Flanders that works on the conservation, protection and development of nature. It is responsible for policy, sustainable management and strengthening nature together with all partners. More information at www.natuurenbos.be.

AWV is part of the policy area Mobility and Public Works of the Government of Flanders. It manages approximately 6,970 km of regional and motorway roads and approximately 6,700 km of cycle paths and aims to achieve safe, smooth and sustainable mobility for all road users in Flanders. More info at www.wegenverkeer.be.

Brussels Environment is the public service for the environment and energy of the Brussels-Capital Region. Its mission is the study, supervision and management of air, water, soil, waste, noise and nature (green spaces and biodiversity). More info at <http://leefmilieu.brussels>.

The **Department of Environment** of the Flemish Government creates a high-quality environment, develops an integrated environmental policy (space, environment, nature and energy) and cooperates with cities, municipalities and provinces for local environmental policy. More information via www.omgevingvlaanderen.be.

The **municipality of Hoeilaart** has 11,171 inhabitants (2018 figures). It is one of the most forested and greenest municipalities in the country: more than 50% of the territory consists of forest. The area around the Groenendaal station and the forest museum are being developed as a gateway to the Sonian Forest. More info via www.hoeilaart.be.

The **municipality of Overijse** has 25,169 inhabitants (2018 figures). The arboretum near Jezus-Eik is being developed as a gateway to the forest. More information at www.overijse.be.

The **municipality of Tervuren** has 22,248 inhabitants (2018 figures). The Park of Tervuren is being developed as a gateway to the forest. More information at www.tervuren.be.

The funding from the European structural fund Life+

The European LIFE+ programme is the financial instrument of the EU that supports the environment, nature protection and climate projects in Europe. The programme has supported more than 4,500 projects since 1992. In the period 2014-2020, it will contribute approximately 3.4 billion euro to protecting nature, the environment and the climate.

The LIFE+ OZON project has a budget of approximately 11 million euro of which LIFE+ contributes 3.36 million euro. The remainder of the amount is provided by the project partners and co-financiers. The project ran from July 2013 to June 2018.

