



natuurpunt

**LIFE**

# Vlaams Veldgebied

Heathland restoration in Flanders





Vlaams Veldgebied is part of the Natura 2000-network of the European important nature reserves and receives financial support of the LIFE-fund of the European Union. (You can find more information at [www.life-vlaamsveldgebied.be](http://www.life-vlaamsveldgebied.be))



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Bog asphodel (Gulke Putten)

In recent years a European nature restoration project took place in the project area 'Vlaams Veldgebied'. With the help of this project Natuurpunt could restore a large area of heathland habitats, resulting in a better future for many rare plant and animal species. In this brochure you will find out more about the objectives and results of this project.

## Vlaams Veldgebied

Although heathland is mainly associated with the Flemish region 'De Kempen' (Antwerp province), vast areas of heathland formerly occurred between Bruges and Ghent. The landscape in this sandy region used to be a mosaic of heathland and woodland. Some large forest and heathland areas remained.

In the project area of Vlaams Veldgebied a special type of heath occurs. The 'intermediate Atlantic heath' leans towards the Atlantic heath of South West England and Brittany and forms a transition type to the North Atlantic heathland in the Netherlands and the Belgian 'Kempen'. Atlantic species include bell heather (*Erica cinerea*) and green-ribbed sedge (*Carex binervis*). Cross-leaved heath (*Erica tetralix*) and heather (*Calluna vulgaris*) are species with a rather North Atlantic distribution. The combination of species from both subtypes makes the area unique within Europe.

## History

The project area was mainly covered with mixed deciduous forest during the late Bronze Age. From 10,000 BC on, the proportion of forest in the landscape decreased substantially, mainly as a result of clear cutting and overgrazing. As a consequence, the remaining forests evolved to wooded heathland in the late Middle Ages. This mix of forest and heath was called 'wastine'. During the first cultivation period in the 10th and 11th century the heathland areas were partly re-planted with deciduous forest. For this forestry activity abbey farms were founded, which are still found near Bruges and Maldegemveld. From the 13th century on also fishponds were present in this region. These fenlike habitats were used for fish breeding. Nevertheless, they harbored a lot of plant and animal species that have become rare now.

On maps of Ferraris, that display the late medieval location of wastines and field ponds, the term 'veld (=field)' is already mentioned. From the second half of the 18th century, the remaining heath was massively converted into arable field or planted with pinewood. Meanwhile, the ponds became obsolete and evolved into forest, wet grasslands or croplands. The large-scale heathland cultivation was accompanied by the construction of straight avenues. **These avenues are still visible as a checkerboard pattern in the current landscape. The avenues have not only a scenic value, but also an ecological function. Many heath relicts remain around avenues.**



## Project areas

### Heathland around Bruges

The area near Bruges harbors remnants of the former 'Sint-Andriesveld' and 'Sijseleveld'. In 'Sijseleveld' Schobbejakshoogte (6,5 ha) is located. This is an inland dune near Rijckevelde. Inland dunes are an extreme environment where wind and sun set abiotic conditions. Most of the inland dunes in Flanders have been stabilized and therefore lack typical sand dynamics. Inland dunes have become very rare. Specific plant species, such as shepherd's cress (*Teesdalia nudicaulis*) en small cudweed (*Filago minima*), are usually small and well adapted to extreme temperature fluctuations and the movement of sand. The fauna species-richness is large with many heat-loving species. Not only viviparous lizards (*Zootoca vivipara*) are active here, but also many invertebrates. Green tiger beetles (*Cicindela campestris*) run across the sand in search of prey, while numerous solitary bees and wasps dig their nest tunnels in the warm sand.

The historic 'Sint-Andriesveld' encompasses two nature reserves, Zevenkerken (3,5 ha) and Rode Dopheidereservaat (5,7 ha). Zevenkerken is located in the domain of the abbey of Zevenkerken and is managed by Natuurpunt. The Rode Dopheidereservaat is located in a water extraction area. Mainly plant species from dry heath vegetation occur in both reserves. The Atlantic species bell heather (*Erica cinerea*) occurs in both areas.

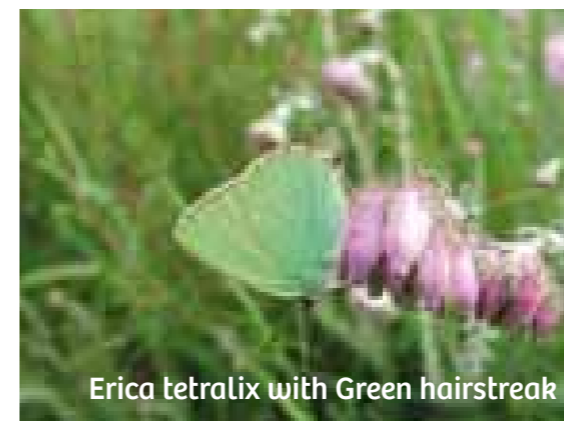


#### GREEN TIGER BEETLE

This beautiful beetle feels at home in a loose, sandy soil in dunes and heathland. It feeds on other insects and captures them rapidly with its jaws. The larvae live in tunnels where they lurk on passing prey, like ants.



Rode Dopheidereservaat



Erica tetralix with Green hairstreak



Vorte Bossen



Viviparous lizard



### POOL FROG

The pool frog is the smallest of the three green frog species in Flanders. The pool frog lives on sandy soils and is bound to small, oligotrophic to slightly eutrophic ponds with a good developed vegetation.

### Gulke Putten, Heideveld-Bornebeek and Vorte Bossen

Towards the southeast of 'Sint-Andriesveld' there are three areas that were once part of the vast 'Bulskampveld'. The 'Gulke Putten' (121 acres) harbours important remnants of wet and dry heathland vegetation, species-rich *Nardus* grasslands and several coppice woods. The name refers to the numerous ponds that occurred here 250 years ago. In the military broadcasting station notable plants like bog asphodel (*Narthecium ossifragum*), sundew species (*Drosera*), heath milkwort (*Polygala serpyllifolia*) and tormentil (*Potentilla erecta*) occur. In the 'Predikherenbossen' and 'Disveld' woodland, heath and 'field ponds' determine the landscape. The tree pipit (*Anthus trivialis*), black woodpecker (*Dryocopus martius*), and European honey buzzard (*Pernis apivorus*) nest in Gulke Putten. The management focuses primarily on restoration and protection of species-rich *Nardus* grassland and wastines.

Further southeast of the Gulke Putten lies the reserve Vorte Bossen (48 ha). This area is a forest complex with valuable alluvial forests with a lot of spring flowers and dry deciduous and pinewood forests on nutrient-poor sandy soils. In some of these dry locations heathland occurs.

The Heideveld-Bornebeek reserve (27 ha) is located northwest of the Gulke Putten. It is part of the provincial domain 'Lippensgoed-Bulskampveld'. Nutrient-poor alluvial forest with sphagnum moss and hard-fern (*Blechnum spicant*) alternate with patches of dry and wet heath. Marshes with lesser spearwort (*Ranunculus flammula*) and marsh St John's wort (*Hypericum elodes*) are also typical for this area. Both the pool frog (*Rana lessonae*) and the European pine marten (*Martes martes*) live in this area.



*Drosera intermedia*



Common gorse



European pine marten

## Maldegemveld

Maldegemveld (129 ha) is located southwest of Eeklo and is part of the larger Drongengoed complex. In the late Middle Ages Maldegemveld was about 2000 hectares large. The soil in the area is moderately wet. A shallow clay layer ensures that groundwater reaches temporarily the surface in winter and spring. Both wet and dry heathland habitats are found here. A checkerboard pattern of avenues that arose during the exploitation of the area in the 18th century still characterizes the landscape. In addition to pinewood plantations oak-birch forests occur. In the forested areas important heath relicts are preserved along the avenues. Some important species in Maldegemveld are royal fern (*Osmunda regalis*), petty whin (*Genista anglica*), white admiral (*Limenitis camilla*), palmate newt (*Lissotriton helveticus*) and black woodpecker (*Dryocopus martius*).

## Heidebos

Nature reserve 'Heidebos' (283 ha) is located Northeast of Ghent. During the late 18th century this area was still a vast forest, until exploitations in later centuries resulted in a more open forest structure. Recently the area evolved again to a more closed forest. As a result of dry soil conditions only species of dry heath and nutrient-poor grassland occur: heather (*Calluna vulgaris*), purple moor-grass (*Molinia caerulea*), heath milkwort (*Polygala serpyllifolia*), broom (*Cytisus scoparius*), etc. There are a lot of pinewood plantations. Black cherry (*Prunus serotina*) is a pest species that was removed in the whole area. Bracken (*Pteridium aquilinum*), also a dominant species, is frequently mowed. By creating gaps in the forest a mosaic of forest and heath originated. Gaps with sandy soil attract heat-loving insects. Those insects are very important for the nightjar (*Caprimulgus europaeus*). Grazing by Galloway cattle leads to a more naturally structured vegetation.

### WHITE ADMIRAL

This butterfly flies from early June to mid-August in moist, half open deciduous forests. These butterflies live mainly high in the trees, but come down in the morning to drink from rotting fruit or moisture from the ground. The caterpillar of the white admiral lives exclusively on honeysuckle.





## Positive change thanks to LIFE

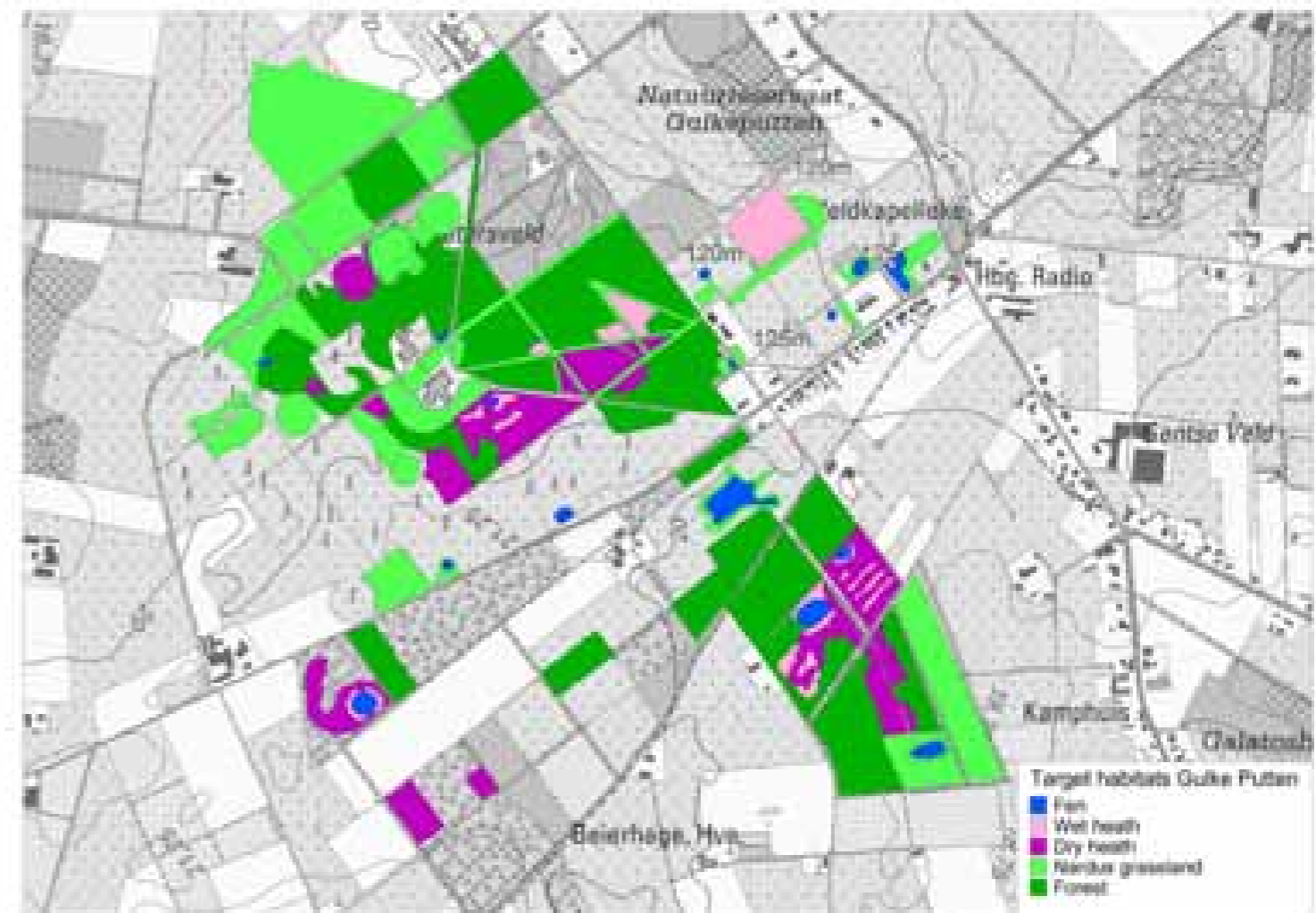
From 1999 on restoration activities considerably intensified. With the financial support of a first LIFE project of the European Commission Natuurpunt could buy more than 100 acres of valuable land in the Gulke Putten and Maldegemveld. LIFE is the nature restoration program of the European Commission with the aim of strengthening the Natura 2000 European network of important nature reserves. Natura 2000 is the centerpiece of EU nature and biodiversity policy. The aim of the network is to ensure the long-term survival of Europe's most valuable and threatened species and habitats.

Nature restoration was achieved through cutting pinewood, removing the humus layer and extensive grazing. In 2009 Natuurpunt started with a second LIFE project, 'Vlaams Veldgebied'. The project period went on from 1st January 2009 to 30 June 2014. With the help of this LIFE project, Natuurpunt could restore many acres of target habitats. In eight nature reserves restoration measures were carried out during this new LIFE project.

## Sharp decline

Until the mid- 20th Century the special habitats in 'Vlaams Veldgebied' deteriorated strongly. The heath developed slowly into woodland or was reforested. Species-rich *Nardus* grasslands became degraded or were converted into arable field and many 'field ponds' disappeared. By 1950, less than 1 % heathland out of the original 12,000 hectares of heathland landscape remained.

A tipping point was the restoration of a parcel in the Gulke Putten by Natuurpunt in 1969. In subsequent years, increasingly more areas were added to the managed patrimonium of Natuurpunt. As a result, approximately 620 acres are now protected by Natuurpunt in the project region.





## Project objectives

The main objective of this LIFE + project was the large-scale restoration of the heath landscape, consisting of several European protected target habitats (see table). The unique geographic location of these habitats in between the North Atlantic zone and the Atlantic zone sets them apart. Following target species were given special attention:

- bell heather (*Erica cinerea*)
- green-ribbed sedge (*Carex binervis*)
- grizzled skipper (*Pyrgus malvae*)

Target habitat	Habitat code	Target habitat	Habitat code
Dune heaths	2310	Nardus grasslands	6230+
Dune grasslands	2330	Molinia grasslands	6410
Oligotrophic to mesotrophic waters	3130	Acidophilous beech forests	9120
Wet heaths	4010	Old acidophilous oak woods	9190
Dry heaths	4030	Alluvial forests	91E0+

### GRIZZLED SKIPPER

In Vlaams Veldgebied about the last populations of grizzled skipper in Flanders occur. The main host plants of this particular butterfly are trailing tormentil and tormentil. Both species are typical of species-rich *Nardus* grasslands. In Gulke Putten and near Maldegemueld grizzled skipper still occurs.



## What measures were taken?

### Large-scale heathland restoration

During the LIFE project 'Vlaams Veldgebied' 39,2 acres of heathland habitats were restored on large-scale. This expansion of heathland habitats was achieved by removing pinewood plantations. After removing the stumps, the organic top layer (humus) was removed. As a result, suitable conditions for germination from the seed bank of many heathland species were created. Species as heather (*Calluna vulgaris*), pill sedge (*Carex pilulifera*) and purple moor-grass (*Molinia caerulea*) germinated within the year. Also several animal species depend on these bare soil patches during some years of their life cycle (small copper (*Lycaena phlaeas*), tree pipit). In addition to these large-scale measures, also small-scale restoration of forest and heathland mosaic took place. These restoration measures consisted mainly of small-scale cutting and mowing on patches where removal of the top layer was not necessary. Such a mosaic is particularly interesting for many animal species of the target habitats and is necessary for reducing habitat fragmentation. In addition to expansion of target habitats, restoration was also achieved through improvement of habitat quality (e.g. by removing exotic species).

### Nardus grassland restoration

A vast area of the 18th century wastine landscape was converted to farmland. These originally nutrient-poor habitats were converted to intensively used agricultural land since WWII. As a result, significant areas of wet and dry heath, species rich *Nardus* grasslands and dune grasslands were converted into monotone, intensively cultivated and fertilized pastures and fields. During the LIFE project 19,7 ha of agricultural land was excavated (20 to 30 cm) to restore the different target habitats.

### Fen restoration

In the project area fens were restored on historic sites by the excavation of historical depressions. The locations of these 'veldvijvers' were determined on the basis of old maps. The restoration of fens creates and strengthens a network of suitable habitats for the many animal and plant species bound to these habitats, such as pool frog and lesser marshwort (*Apium inundatum*). A total of 25 small and 14 large ponds were restored.

### Forest restoration

To develop more natural and species-rich forests, monotonous pinewood plantations were partially cleared and exotic species like black cherry, red oak and june berry were removed. Dead trees were spared because dead wood increases forest biodiversity. As a result, varied oak-beech forests develop with sunny sheltered patches which is beneficial to many insect species. Also many bird species feel at home in such species-rich forests.

#### HEATHER

Heather is the most common and well known species of the native heath species and determines the typical appearance of the 'purple heathland'. Heath species are very well adapted to dry and nutrient-poor conditions because of their small, leathery leaves.



Scarce Blue-tailed Damselfly



### Long-term management of open habitats

In order to develop and preserve heath and grassland habitats, sustainably management is necessary. To prevent these rare habitats from evolving into woodland extensive grazing was initiated with both own Galloway cattle as with cattle from local farmers, and with sheep on some of the smaller parcels. Grazing aims to rejuvenate heather, to reduce domination of grasses and litter accumulation and to counteract forest development. Grazing also provides additional structure in the vegetation which is beneficial to many insect species. When necessary, some parcels are additionally mowed.

### Removal of exotic species

To ensure a sustainable and qualitative development of all target habitats throughout the project area, exotic species were removed. Preventing colonization by invasive alien species enhances the chances of establishment of target species. The main exotics that occurred in the project area were black cherry, red oak and june berry.

### Public support

Increasing public support was also an objective of this LIFE project. Without broad public support, the long-term conservation of European biodiversity is impossible. In LIFE 'Vlaams veldgebied' substantial efforts were made to communicate the project aims to the public and stakeholders. These included information sessions, information brochures, guided walks, press articles, information boards, public events and a website.

Especially the cutting of forest in favor of open vegetation was hard to understand for visitors without further background information. Despite the extensive communication efforts, some people were left unconvinced and were dissatisfied with the planned transformations. Now the commotion has died down and results are becoming apparent, public support for the restoration works is continuously growing. Hikers enjoy the beauty of the heath landscape.





### The volunteer as ambassador

Volunteers are indispensable to the project! They form the eyes and ears of a nature reserve and feel responsible for the nature in their neighborhood. Volunteers know the area thoroughly and are imbedded in local social life. They are contact persons for the neighbourhood and have important responsibilities. A short overview of tasks carried out by volunteers: land purchase, cooperation with farmers, communication, organization of guided tours, nature management, .... In short, indispensable.

## Results

The results of the project can now be admired. Several large and small ponds have their place back in the landscape and already harbor many amphibians and dragonflies. Palmate newt colonized several new ponds. The vegetation recovers surprisingly fast. Heather and pill sedge germinate everywhere the humus layer was removed. On parcels restored when the project was launched, a beautiful heathland vegetation has developed with numerous additional target species such as purple moor-grass, tormentil, heath speedwell (*Veronica officinalis*), cross-leaved heath and heath rush. In humid patches many-stalked spike-rush (*Eleocharis multicaulis*), spatulaleaf loosestrife (*Lythrum portula*), common yellow sedge (*Carex demissa*), sundews and marsh clubmoss (*Lycopodiella inundata*) germinated. Also the important Atlantic species green-ribbed sedge and bell heather are expanding!

Several bird species show positive trends. The number of breeding couples of woodlark, European honey buzzard, black woodpecker and tree pipit are rising. These species are typical for a varied landscape with forest, heathland and grassland. For the first time in years the nightjar was observed in Heidebos and Maldegemveld. Also slow worm (*Anguis fragilis*) and viviparous lizard are expanding their territory.

### EUROPEAN HONEY BUZZARD

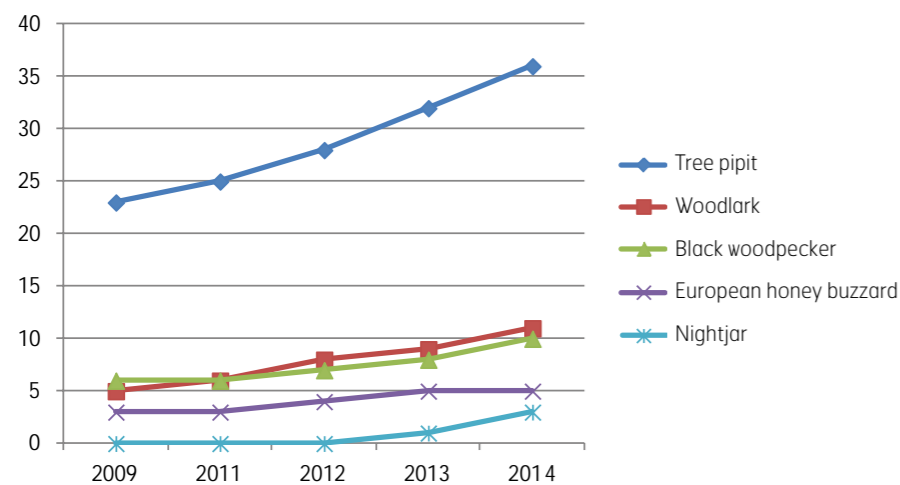
This shy, mysterious bird shows some resemblance to the more familiar buzzard and is specialized in detecting and digging wasp combs. The honey buzzard feeds its young mainly wasp larvae. His narrow head and long, narrow tail distinguish it from the buzzard. European honey Buzzards nest in open woods and hunt in half open areas.



**Table: realisation of project objectives**

Objective	Target habitat	Realisation (ha)
Land purchase	2310, 2330, 4010, 4030, 6230+, 9120, 9190	42,4 ha
Wet and dry heath restoration	4010, 4030	81 ha
Dune heath and grassland restoration	2310, 2330	43 ha
Nardus grassland restoration	6230+, 6410	45 ha
Fen restoration	3130	3,7 ha
Forest restoration	9120, 9190, 91E0+	168 ha

**Graph: Number of breeding couples of typical bird species**



### WOODLARK

When you see a lark with a very short tail on sandy heathland with shrubs and scattered trees, it is almost certainly a Woodlark. Usually, you will first hear the woodlark sing before you see it. During the song he floats in great circles above its territory. At the end of the song he slides down in a spiral flight. The Woodlark eats insects and broods from late March to July.



## Remarkable results of the different project areas are mentioned below:

### Gulke putten

In Gulke Putten lesser marshwort colonized new patches. Also seedlings of royal fern were observed. The habitat of the grizzled skipper (*Pyrgus malvae*) and green hairstreak (*Callophrys rubi*) is greatly increased. We expect that these populations will expand the coming years

### Maldegemveld

In Maldegemveld important target species as green-ribbed sedge, spoonleaf and round-leafed sundew and marsh clubmoss germinated on the restored parcels. For the first time in years, the nightjar was observed in 2014. The new pools are being colonized by many dragonfly and damselfly species. The populations of the more than 30 species in the area will benefit from the fen restoration. The scarce emerald damselfly (*Lestes dryas*, Red List) is present since 2013.



### Heidebos

In Heidebos the target habitats dry heath, dune heath and dune grassland developed well at the parcels restored during the first project years. These habitats will expand further in the coming years. Nightjar is observed again since 2013. The minotaur beetle has increased in number.

### Heideveld-Bornebeek

In Heideveld-Bornebeek pillwort (*Pilularia globulifera*) appeared at one of the new fens! Pool frog has increased in number and hairy greenweed (*Genista pilosa*) reappeared.

### Vorte bossen

In Vorte Bossen white admiral (*Limenitis camilla*) and European honey buzzard were observed for the first time in 2013.

### Rode dopheidereservaat, Zevenkerken and Schobbejakshoogte

At all three nature reserves around Bruges (Rode Dopheidereservaat, Zevenkerken and Schobbejakshoogte) the important target species bell heather has expanded. In Rode Dopheidereservaat the Red List-species *Myrmica specioides* was found. In Zevenkerken the dragonfly downy emerald (*Cordulia aenea*) is observed since 2013. An important grasshopper species that will benefit from nature restoration in Schobbejakshoogte is lesser mottled grasshopper (*Stenobothrus stigmaticus*).

### NIGHTJAR



## Colofon

Use of information from this publication to motivate people for Vlaams Veldgebied is permitted provided that the publication and initiator, Natuurpunt, are referred to. This Layman's report was realized within the framework of the European LIFE-project 'Vlaams Veldgebied' (LIFE+ 07 NAT/B/000024).

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## What happens after Life?

Now the large-scale habitat restoration is done, the restored open habitats will be mowed yearly or will be grazed. Mowing management will partly be done by local farmers. Wet parcels or parcels that are nutrient-poor (not interesting for farmers) will be mowed by the professional nature workers of Natuurpunt and /or the local volunteers of Natuurpunt. After the Life-project volunteers will continue to perform important tasks such as land purchase, cooperation with farmers, communication and organization of activities and guided walks.

### Your support for Vlaams Veldgebied is essential

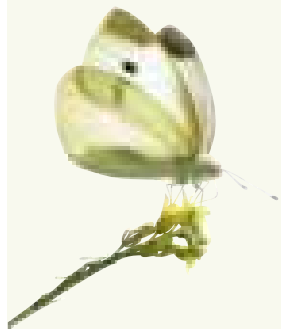
You can support Vlaams veldgebied by making a donation on the account number 293-0212075-88 (IBAN = BE56 2930 2120 7588 • BIC = GEBABEBB) of Natuurpunt. Donations from € 40 are tax deductible in Belgium.

### Please mention the project number of the nature reserve you want to support:

Gulke Putten: 5540, Heidebos: 6636, Heideveld-Bornebeek: 5559, Maldegemveld: 6627, Rode Dopheidereservaat: 5513, Schobbejakshoogte: 5528, Vorte Bossen: 5521, Zevenkerken: 5542



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## BECOME A MEMBER!

Natuurpunt is the largest nature conservation organization in Flanders and protects plants, animals and their habitats for more than 50 years. This is necessary since many natural habitats are threatened in Flanders. With your support we can give a strong signal to the government and protect more nature. The membership fee is 27 euro for the whole family. Join us and receive several benefits:

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### **Natuur.blad**

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