6th European Conference on

ECOLOGICAL RESTORATION

10 September 2008 | Ghent (Belgium)

Excursion Map

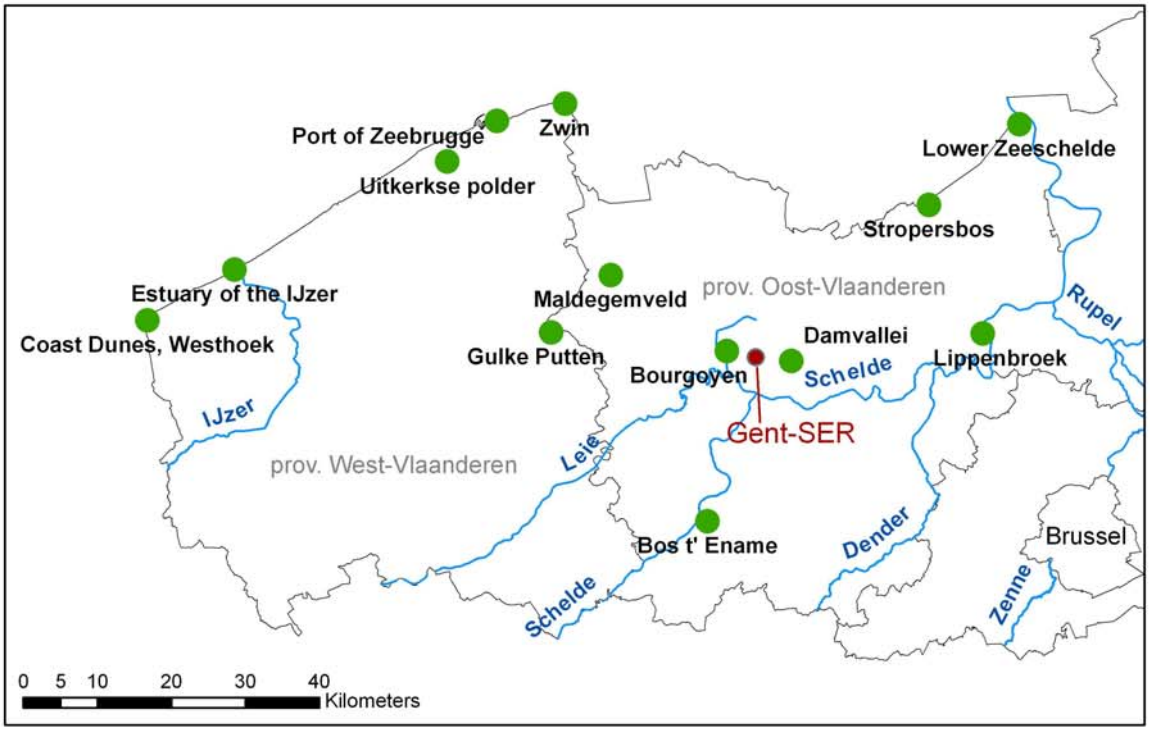
Bulskampveld - Gulke Putten

Excursion Gulke Putten Nature Reserve

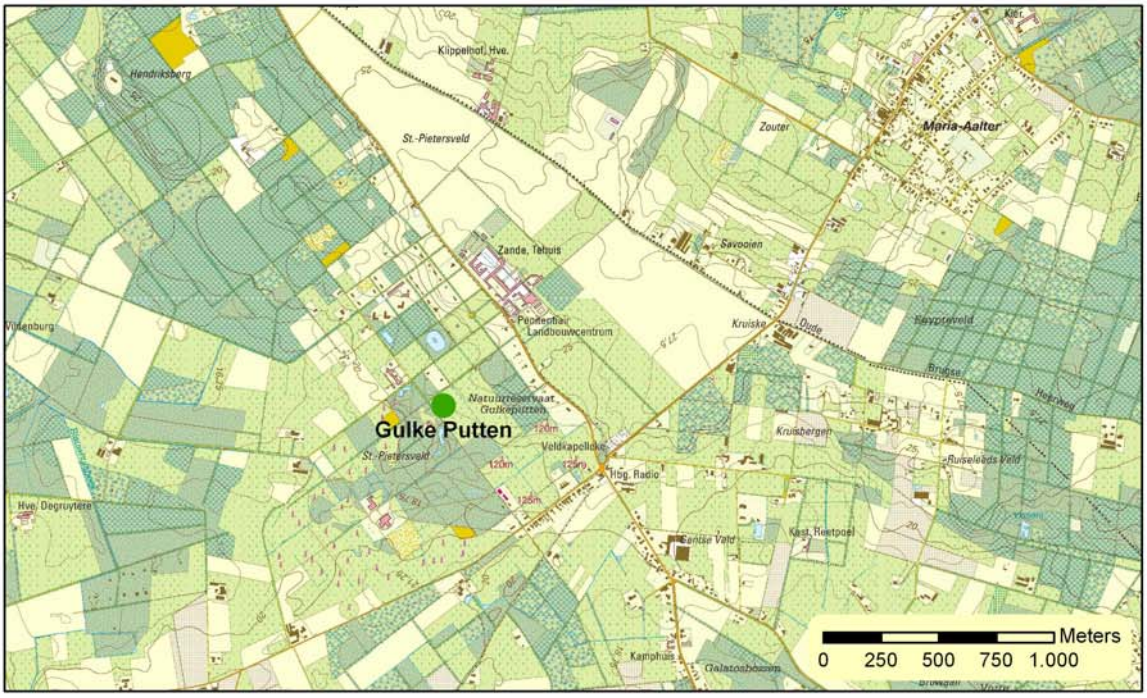
(Wingene, West-Vlaanderen)

10 September, 2008

Location of excursions



Detail Gulke Putten



GULKE PUTTEN NATURE RESERVE (WINGENE, W. Vl.)

1. Short description of the area

1.1. name, municipality

Wingene & Ruiselede (prov. West-Vlaanderen)

1.2. biogeographical region

Flemish sandy area (Pleistocene) with occurrence of cuestas

1.3. management authority

Natuurpunt (since 1969)

1.4. protection status

Natura 2000 (Intermediate Atlantic Heath systems), mostly nature zone on physical, planning map and designated in the Flemish Ecological Network, situated in a protected landscape, acknowledged private nature reserve (partly owned by Ministry of Defense: 65 ha partly by Natuurpunt: 30 ha) ; supported by LIFE-funding and the Flemish Government.

1.5. ecological characteristics

soil type

pleistocene acid sandy soils, locally with iron podzolic layer at 40 cm; gradients from permanent wet to drier soil types

ecological key processes

the core areas are influenced by seepage from nearby questa ridge; some small ditches originate in the area

historical information

The reserve is situated in the late-medieval heathland region south of Brugge ('Bulscampveld'). This wilderness was only cultivated from the early 1800s ; the rectangular parcel structure (draughtboard pattern) of the reserve area and the surrounding (protected) landscape witnesses this historical development.
In this area many shallow fishponds were established in the 1600s or earlier, situated in the natural and permanent wet depressions below sandy cuesta ridges (seepage!), These fishponds gradually disappeared in the late 1700s and early 1800s. One of the local pond toponyms was used to name the reserve 'Gulke Putten'.
The reserve core area is situated in the Radio Sending Station domain, established in 1923; this area was intensively maintained (cutting trees and mowing) in view of the dense antennae park and to prevent burning risks, as most of the domain was

heathland. Marginal parts of the area were used for sheep grazing in the 1950s and 1960s. Some grasslands were abandoned, others were intensively used by farmers.

important nature values

Relict landscape representing the ***intermediate Atlantic heath systems***. The small core area with species rich vegetations is mainly *Ericetum* with *Erica tetralix*, *Molinia caerulea*, *Calluna vulgaris, Carex binervis* and *Nardus*-grasslands on acid Pleistocene sandy soils with local seepage; other parts of this reserve are former heatlands under coppice woods and young forest (basically Querco-Betuletum, but with many exotics); grassland zones were partly abandoned, partly intensively manured by agriculture; recently some mixed wood plantations are included in the reserve, which thus represents a varied mosaic with historic landscape patterns. Unless the restricted surface area of the first reserve parcel (1,25 ha managed since 1969) and the surrounding intensive agriculture, several rare species survived here such as Narthecium ossifragum, Carex binervis, Pedicularis sylvatica, Viola lactea (now extinct), Myrica gale, Lycopodiella inundatum, Eriophorum polystachion, Eleocharis multicaulis, Drosera rotundifolia and D. intermedia, etc.

Also 14,5 ha of coppice woods planted around 1920 in drier types of former heath vegetations became part of the nature reserve. This zone has ornithological interest (a.o. Anthus trivialis breeding in open spaces).

Many parcels are separated by alleys or corridors of nutrient-poor grasslands which are mown annually since the 1920s in function of the sending trechniques.
Due to this regime all grounds, sometimes narrow strips under the antennae developed to highly species rich acid grassland, with abundant Orchis maculata, Succisa pratensis, Polygala serpyllifolia, Potentilla erecta, Nardus stricta, Sieglingia precumbens, Erica tetralix, Calluna vulgaris etc. This is also the typical habitat for the rare Botrichium lunaria. Exceptionally high numbers of fungi with 14 Hygrocybe species occur and relict populations of rare butterflies such as Pyrgus malvae and Callophris rubi survive well. Lacerta vivipara is still common.

One parcel (2 ha) dominated by Molinia caerulea is grazed by sheep and offers breeding habitat for Anthus trivialis. Exclosures show that heathland species are abundant (Erica, Calluna, Polygala, etc.) and pioneers from seed bank fastly germinate after sod-cutting.

The reserve has only limited open water, except some small pools (relicts after bombing, cattle ponds) that offer suitable habitat for typical insects (hooverflies) and amphibians (a.o. Triturus helvetica).

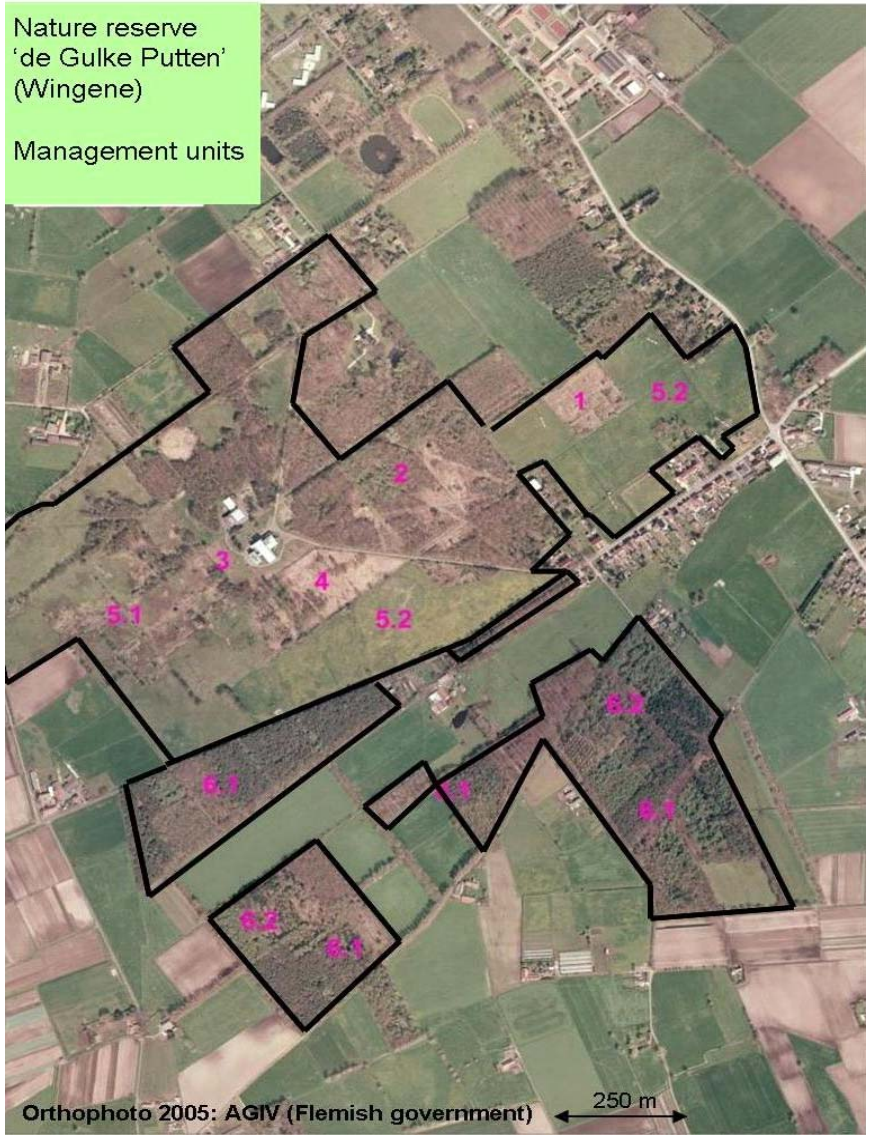
important ecological constraints

Ground water quality is negatively influenced by intensive agriculture in the infiltration zone (high nitrate content); atmospheric deposition causes acidification and enrichment of poor soils with nitrogen; problems of surface water pollution in a central ditch (sewage from nearby houses) has been solved recently.
In 1975-1980 most sending installations were abandoned and maintenance by personnel stopped. mowing of Nardus-grasslands and cyclic cutting of coppice since then had to be continued for conservation by Natuurpunt. Shortage of manpower caused regrowth of forest in former heath vegetations.
Former concessions to farmers lead to high levels of manuring interesting Agrostis-grasslands surrounding the core nature area.

1.6. ecological objectives for the area (see also numbers on map with management codes)

Referring to old maps (Ferraris 1777, Van der Maelen 1860) the potentials for the area in view of heathland restoration are envisaged as the main conservation aim.
The late medieval landscape of wilderness became cultivated from the early 1800s with typical draughtboard pattern. This landscape structure is also respected.
More recent developments in agriculture and forestry changed the original heathland, that only survived as relicts within the sending station domain, established in 1923..
Special attention is paid to this core area with 'intensive care' management without heavy machines and with help of many volunteers.
The maintenance of oligotrophous vegetations depending on the nutrient poor and acid pleistocene sandy soils requires a careful hydrological balance between seepage water and stagnant rain water (subject to high atmospheric deposition of nitrogen and acidification elements).

2. Map with management units



Nature reserve 'de Gulke Putten' (Wingene)
Managed by Natuurpunt NGO

Management units
Zones 1-5: property of Defence Ministry: sending station
Zones 6: property of Natuurpunt

1. Core parcel with well developed Atlantic heath (Ericetum with Carex binervis, Narthecium ossifragum, etc.; permanent seepage influence) managed since 1961: cutting young trees, cyclic mowing, short extensive late summer grazing
2. Coppice and young Querco-Betuletum on former heathlands in abandoned antennae area
   - restoration of heath on clear-cut plots
   - management aiming Nardus grasslands following old feeder lines and antennae corridors pattern
3. Nardus-grasslands (Orchids rich lawns around sending station)
4. Molinia dominated heath with sheep grazing management ; exclosures for demonstration of differences with mowing and sod-cutting mgmt.
5. Formerly fertilised grasslands (managed since 2001)
   5.1. Year round grazed area (18-25 galloway cattle on 40 ha) with spontaneous mixed landscape structure (grassland, Rubus and Sarothamnus shrub, young Quercus, Betula, Willow etc.)
   5.2. Mowing regime (mostly 2x/y) + seasonal grazing september-january
6. Forest area (owned by Natuurpunt NGO since 2001)
   6.1 Mixed stands, development to Querco-Betuletum with Pinus nigra
   6.2 Clearcut coniferous stands (2006)
   - followed by removal of humus layer (2008)
   - local restoration of former pools (cfr. fishponds present until early 1800s)

3. Management/restoration objectives and techniques

(1) In permanent wet (seepage!) parts of the Ericetum-vegetation with Molinia and Sphagnum dominance 'classic' conservation of rare species is aimed. This core parcel also was additionally structured with willow and birch corridors in view of special or rare butterflies such as Pyrgus malvae and Callophris rubi.
Mowing of the Erica-Molinia heath and of the nutrient poor grasslands in late July-August is continued, as well as an experimental cyclic mowing (5 year period).
Cyclic cutting of spontaneous trees is needed (every 3-5 y). Most successful is sod-cutting to restore pioneer vegetations on wet and poor sandy soils.

(2) Area with coppice woods partly to be opened and transformed into the original heathland: mostly dry type, Molinia and Calluna, locally with Erica and Sphagnum.

- Cutting of open patches (2-3 ha) followed by mowing of regrowing shrub (every 2-3 years) until Calluna-Molinia and even Nardus-grassland restore. Removal of humus or sod-cutting stimulates fast germination of Calluna etc. from seedbank.
- Maintenance of coppice wood (8-10 year cycle) in some parcels and natural succession towards older Querco-Betuletum type in other parts. Zero management allow development of Querco-Betuletum. Both options, however, need fight against exotics, esp. Amalanchier lamarckii, Prunus serotina and Quercus rubra
- Maintenance and expansion of species-rich and nutrient-poor Nardus grasslands , incl. corridors and lanes in coppice woods. Annual mowing in late summer, followed by cutting the bordering coppice strips of 5-10m to prevent shadow and to extend the width of the grassland corridors (also in view of insect life).

(3) 'Lawns' near sending station building with dominance of Orchis maculata; also Botrichium and 14 sepcies of Hygrocybe occur. Annual mowing in late summer.

(4) Molinia-dominated heathland sheep grazed (May-October) After sod-cutting on wet spots Drosera and Lycopodiella appeared.

(5.1) Management of formerly sheep grazed grasslands and fields with patchy structure of Molinia vegetations and willow-oak-birch shrub aims restoration of Calluna/Molinia heath and species-rich grassland vegetations over >40 ha, mixed with spontaneous woody patches, comparable to the late medieval wastelands ('wastines'). Year-round grazing with Galloway cattle (18-25 animals/ha) prevents development of closed forest, but in massifs of Rubus sp., growth of young trees (Salix, Betula, Quercus) remains possible ans results in an open and varied park-like landscape.

(5.2) Restoring flowering meadows: starting from heavily manured grasslands this requires the decrease of the high nutrient levels from these systems by intensive mowing (2x/y), followed by seasonal grazing (galloways) from mid-September until early February: successful return of biodiversity (a.o. Orchis maculata)

(6) Recently acquired forests (30 ha divided in 7 small parcels connected with alleys and separated by agricultural land).

(6.1) The option for this zone is renaturation of the former plantations (Populus, Larix, Pinus), elimination of exotic species and development towards Querco-Betuletum.

(6.2) Potentials for heathland restoration became clear after clear cuttings, with successful germination of Calluna, Carex sp. Molinia etc. Also the water vegetation of the brook with especially Apium inundatum, Callitriche sp. etc. has ameliorated thanks to more sunlight after cuttings.

Supporting authorities for the management costs and acquisition of land comes from the Flemish Ministry (Nature and Forest Agency) and a temporal project with LIFE-funding. Natuurpunt has a technical team of terrain workers and conservators organise working days or weekends for volunteers. Youth federation for nature held almost annual camps during 34 years.

Public interest is growing, but the Sending Station domain is not accessible except during guided visits. Two free walking trails are signposted (see example in annex) and information is available in some folders (in Dutch only: see pdf in annex).

4. References

Stieperaere, H., C. Verscheure & E. Kuijken 2005. *Rhynchospora alba* opnieuw in het Vlaams district (Wingene, West-Vlaanderen) Dumortiera 84: 1-5 (with summary)

Text and photos: Eckhart Kuijken & Christine Verscheure (Natuurpunt site managers)
e-mails: eckhart.kuijken@scarlet.be & christine.verscheure@scarlet.be
Lindeveld 4, B-8730 Beernem (tel +32.50.78 94 63)

5. Annexes

5.1. Annex 1: Maps and photos of the area

5.2. Annex 2: Flyer Ministry of Defence and Natuurpunt

5.3. Annex 3: Panel along walking trail

5.4. Annex 4: Text 9th European Heathland Workshop Excursion (14 September 2005)

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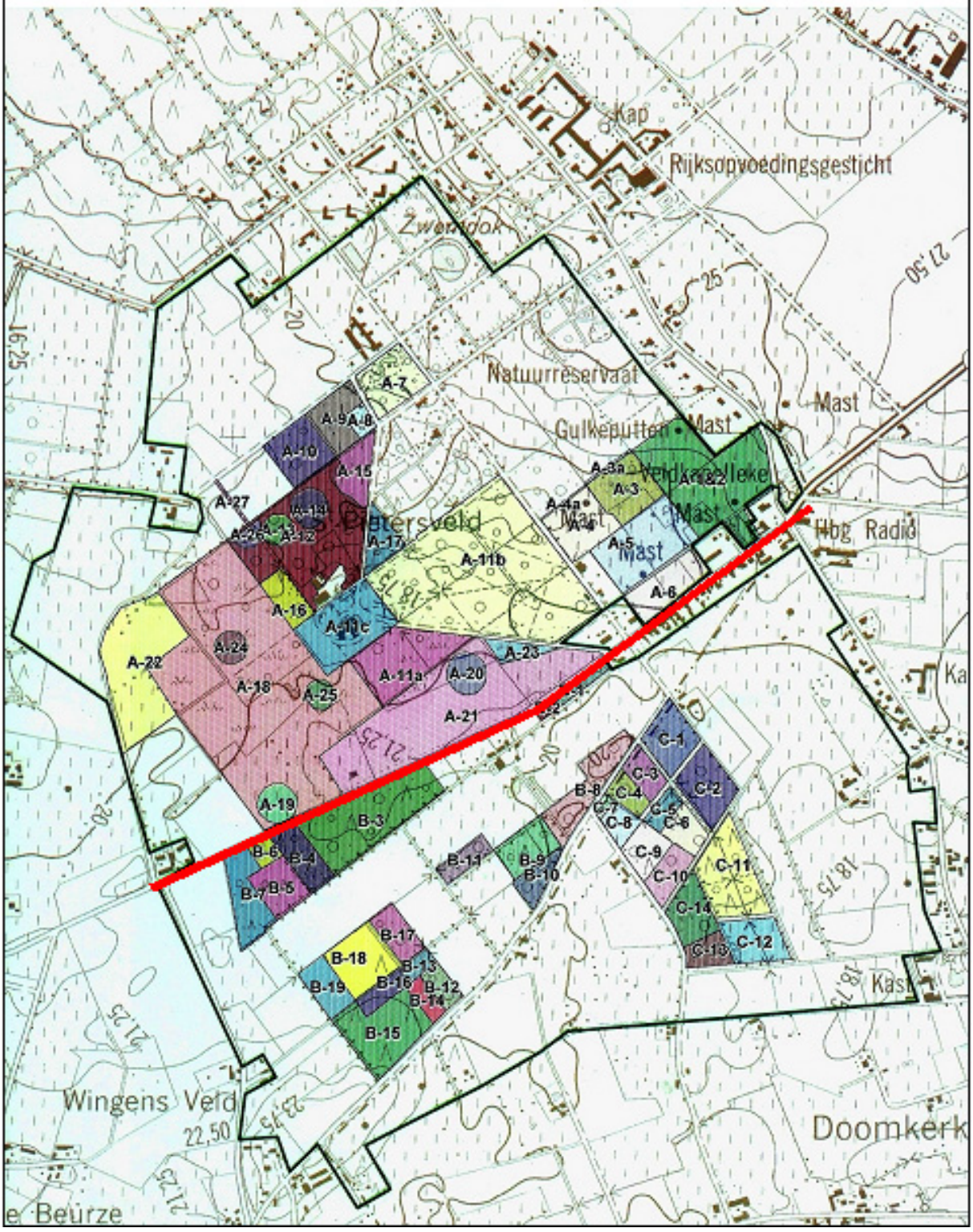
Annex 1:
Maps and photos of the area

Gulke Putten Nature reserve, topographic map (1/10.000)
with coded management parcels and reserve perimeter
grounds south of red line are owned by Natuurpunt NGO



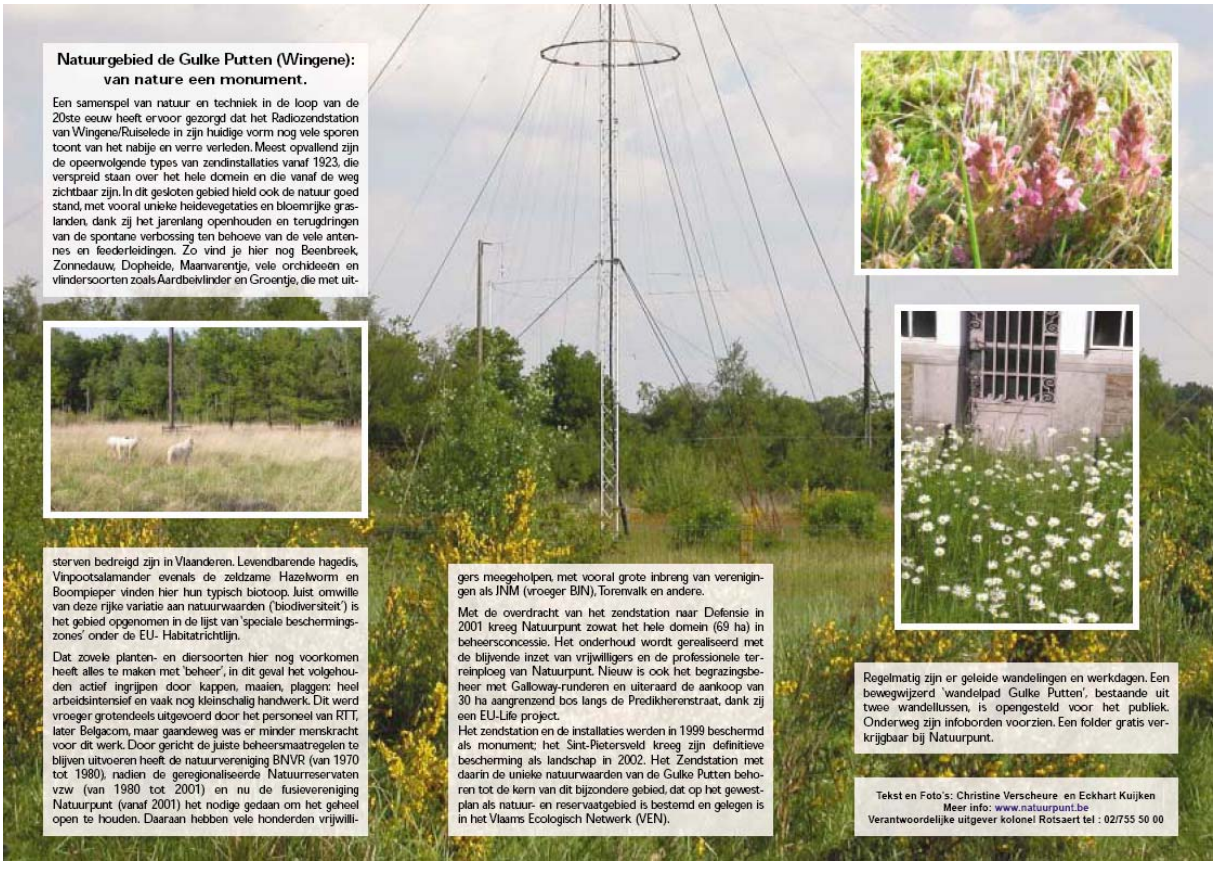
Ferraris map 1770
central heath, fishponds and surrounding woodland

Situation Gulke Putten ◯ you are here ☆

Orthofoto 1990 draught-bord patterns (early 1800s)
heath relicts in forests, agriculture, ecological networks

Situation Gulke Putten ◯ you are here ☆

Annex 2:
Flyer Ministry of Defence and Natuurpunt



Annex 3:
Panel along walking trail

Gulke Putten
en Predikherenbossen

Hier start een gevarieerde wandeling van een zestal km (ongeveer drie uur) doorheen een beschermd landschap met de mooiste restanten van het voormalige uitgestrekte Bulskampveld, woeste gronden die tot in de 19de eeuw de streek kenmerkten. Dit wandelpad sluit aan bij het Parochieveldpad en het leerpad van vzw De Zande.

Het kerngebied van het natuurgebied 'de Gulke Putten' is één van de laatste, kwetsbare relicten van het vroegere, onontgonnen veldgebied. De uiterst waardevolle heischrale graslanden zijn rijk aan tandjesgras, tormentil, borstelgras, gevlekte orchis, gewone vleugeltjesbloem en maanvaren. We vinden er soorten zoals levendbare hagedis, boompieper en aardbeivlinder.


boompieper

De bijzondere natuurwaarden bleven bij de inplanting van het zendstation in 1923 bewaard en worden nu door Natuurpunt verder ontwikkeld. Hiervoor sloot de vereniging een overeenkomst met de Belgische Krijgsmacht, eigenaar van het gebied.


levendbarende hagedis

Samen met het aangrenzende Predikherenbos vormen de Gulke Putten bijna 100 ha aaneengesloten natuur. Omwille van zijn internationale betekenis geniet het hele gebied Europese bescherming en maakt het deel uit van het Europees netwerk van belangrijke natuurgebieden Natura 2000.

Toegang

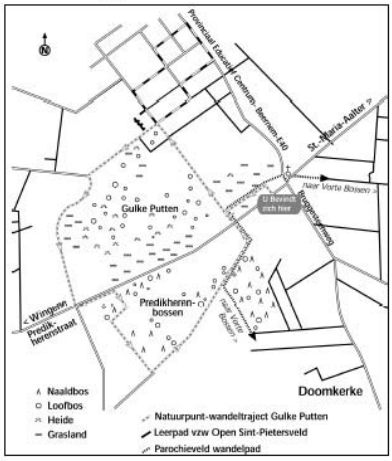
Dit kerngebied is enkel toegankelijk tijdens geleide bezoeken. De andere delen zijn vrij toegankelijk op de aangeduide paden. Het traject is niet geschikt voor rolstoelen of kinderwagens. Laarzen zijn aangewezen. Geniet van bos, hei en schraal grasland en ontdek de vele cultuurhistorische elementen van deze streek.

natuurpunt
natuur voor iedereen

Informatie

Voor meer informatie kan u terecht bij de conservators:
Christine Verscheure & Eckhart Kuijken, tel. 050 78 94 63

Situering



Life

Dit natuurgebied wordt beheerd door Natuurpunt vzw
Vereniging voor natuur en landschap in Vlaanderen
Postbus 334 • 2800 Mechelen • info@natuurpunt.be • www.natuurpunt.be

Annex 4:

Text 9th European Heathland Workshop Excursion (14 September 2005)

Until the 18th century the Bulskampveld was the largest uncultivated area ('wastine') south of Bruges in the western part of Flanders, covered by heathland-like vegetations and shrub (Querco-Betuletum) on poor sandy soils. Grazing, wood cutting and removal of humus were most important activities. In the wet depressions with seepage shallow fish ponds were established. Gradually the edges of this area became afforested. The remaining central parts of the original heathland were reclaimed in the early 1800s for agricultural and forestry purposes following strict draught-bord patterns (125x125 m units). Today the landscape still reflects this typical structure with impressive alleys and small square parcels. In a few sites with only extensive exploitation or military function some of the late medieval heathlands survived. In the surrounding landscape agriculture or forestation (mainly Pinus) became more intensive.

At the beginning of the 20th century a Radio Transmitting Station was established; after cutting most of the woody vegetation a 'modern' antennae park was erected. This enabled the revival and survival of the heathland habitats as the further management of this site consisted of intensive mowing to keep clear the antennae and feeder lines and prevent burning risks. These conditions and continued management during almost 80 years were clearly favourable for the conservation and development of rich heathland habitats and species.

From 1969 onwards the last uncultivated wet heathland parcel (1,5 ha) was discovered by Herman Stieperaere and became managed for conservation, followed by the most important parts of this sending station (coppice and heathland relicts) up to 16 ha. Due to the work of volunteers the area became well known as the Gulke Putten nature reserve. Nowadays 69 ha of the sending station is under conservation concession by the NGO 'Natuurpunt' from the Defense Ministry. In addition the association could purchase 30 ha of adjacent woodlands with relicts of heathland with support of a EU LIFE project.

From a phyto-geographical point of view, the reserve is quite unique. Its vegetations are known as intermediary variants of the North Atlantic heath of the Campine, the Netherlands and North Germany on the one side and the Atlantic heath of South West England and Brittany on the other side. This heath is not only characterised by a high diversity but is also the place where strict Atlantic species can be found, such as Carex binervis and Ulex europaeus (and in the region of Bruges also Erica cinerea). Beside of dry and wet heathland habitat types of Ericion tetralicis and Calluno-Ulicetea, especially the species-rich Nardus grasslands cover a relatively important surface and represent one of the best developed examples of Nardetalia in Flanders (thanks to the long lasting mowing regime).

Beside Erica tetralix and Calluna vulgaris, we find numerous interesting species in the Gulke Putten reserve, e.g. Narthecium ossifragum, Lycopodiella inundata, Drosera intermedia, Drosera rotundifolia, Carex binervis, Carex panicea, Myrica gale, Pedicularis sylvatica, Eriophorum polystachion, Viola lactea, Apium inundatum, Botrychium lunaria, Carex lasiocarpa, Carex pallescens, Dactylorhiza maculata, Euphrasia stricta, Illecebrum verticillatum, Platanthera bifolia, Polygala serpyllifolia, Viola canina, etc.
In Flanders, most of these are Red List-species. Also an exceptional high number of 12 Hygrocybe species and other rare fungi is to be mentioned. Finally some typical fauna elements occur, often in relict populations (Pyrgus malvae, Callophrys rubi, Saturnia

pavonia, Lacerta vivipara, Anguis fragilis, Anthus trivialis, etc.). Some habitat structures are managed in favour of these species, thus maintaining this regional biodiversity hot spot.

This nature reserve is recognised as a 'special area of conservation' (Natura 2000 network) under the EU-Habitat Directive. It is part of the Flemish Ecological Network and is protected by physical planning instruments. Only the recent part owned by 'Natuurpunt' (33 ha of woodland) is recognised and subsidised as private nature reserve by the Flemish Government. The reserve and its surroundings have a protected landscape status, which also includes monuments and industrial archaeology.

The critical condition of the relicts of Atlantic heathland all over East and West Flanders was the main criterion for the European Commission to finance a project for restoration and expansion of these habitats. This project fitted in a LIFE Nature Programme started in 1999 and ended in 2003. Other comparable project areas next to Gulke Putten are Maldegemveld and the heath relicts that can be found at the aerodrome of Ursel. Important actions were e.g. the acquisition of land in view of "curing" the intermediary heath, the increase of better management of precious relicts, the re-development of heath habitats by selected methods of remodelling management and raising awareness of the public.

Nowadays, Gulke Putten has already increased up to almost 100 ha and management could be improved to an optimum by purchasing very specific working tools. The year round grazing project with 'Galloway' cattle was started (2001) in the new concession areas (40 ha) of mostly abandoned grasslands and shrub (Querco-Betuletum with Salix spp., Amalanchier lamarckii, etc.) and heathland patches, next to a Molinia dominated parcel with sheep grazing since 30 years.

The positive management and restoration results make the Gulke Putten reserve a very valuable reference for curing other Atlantic heath areas in East and West Flanders. Unfortunately, the environmental conditions of the area are less favourable, with high levels of atmospheric ammonium depositions and ground water influenced by nitrates from intensive agriculture in the vicinity. Monitoring and research is realised by scientists from mainly the University of Ghent, the Royal Botanical Garden of Meise and the Institute of Nature Conservation (Brussels). Guided visits are organised by the site managers as the core area is not open for the public.

Eckhart Kuijken, Christine Verscheure, Tom Debeelde and Herman Stieperaere

For more information: please contact the Natuurpunt site managers:
eckhart.kuijken@scarlet.be
christine.verscheure@scarlet.be
Lindeveld 4, B-8730 Beernem

or: 'Natuurpunt' headquarters, Coxiestraat, B-2800 Mechelen
tom.debeelde@natuurpunt.be
or: National Botanic Garden of Belgium, Domein van Bouchout, B-1860 Meise
Stieperaere@br.fgov.be



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