Miljøministeriet
Naturstyrelsen

NATURA 2000

THISTED KOMMUNE

LIFE 08 NAT/DK/000464 Dry Grassland in Denmark –

Restoration and Conservation, LIFE-Dry Grassland II

After- LIFE Conservation Plan

Introduction

The LIFE Dry Grassland II (LIFE 08 NAT/DK/000464) project ran from 1st January 2010 to 31st December 2013. The project made improvements for a number of habitats and species listed in the EU's Habitats Directive Annexes I and IV, in the Natura 2000 areas Fyns Hoved, Lillegrund and Lillestrand, Thurø Rev, Sydfynske Øhav, Hanstholmreservatet, Nors Sø and Vandet Sø, Hanstholmknuden, Suså, Tystrup-Bavelse Sø, Slagmosen and Bjergene, Diesbjerg and Bollinge Bakker.

The project includes areas owned by the Danish Nature Agency on Funen, Thy, Storstrøm and West Zealand plus some areas owned by Thisted Municipality.

The aim of LIFE-Dry Grassland II is to improve and extend threatened dry grassland habitats in Natura 2000 areas through, amongst other things, clearing and grazing. Activities to improve nature, and to improve the potential for the habitats to spread have been conducted on almost 300 hectares. In addition to this, habitats for the natterjack toad, great crested newt, tree frog and agile frog can also be improved. Another aim of the project is to improve knowledge about controlling the invasive *Rosa rugosa* (Japanese Rose), which is a significant threat to the different dry grassland habitats. The project also aims to provide better information about the nature areas, and to improve conditions for visiting and staying in the areas.

The project's activities target specific habitats and species such as:

- Xeric and calcareous grasslands (type 6120)
- Semi-natural dry grasslands (type 6210), species-rich *Nardus* grasslands (type 6230), European dry heaths (type 4030), decalcified fixed dunes with *Empetrum nigrum* (type 2140)
- Fixed coastal dunes with herbaceous vegetation (”grey
- dunes”) (type 2130)
- Natterjack toad
- Great crested newt
- Tree frog
- Agile frog

The aim of an After-LIFE Conservation Plan is to establish a plan for the on-going management of a LIFE project after its formal completion.

All the project sites are within Natura 2000 areas, which means that the national Natura 2000 plans – with associated action plans – constitute the overall planning for achieving favourable conservation status goals. Natura 2000 plans are revised every six years, and the current Natura 2000 plans for 2009 to 2015 will be replaced by a new policy. The new (second) plan which will be based on base-line studies, is currently under discussion. The data for base-line studies originates from the national monitoring program NOVANA.

Detailed below are the management and maintenance plans for the specific project areas that were included in this LIFE project.

After-LIFE management and maintenance

Bjergene and Bollinge Bakker
The plan for the Bjergene and Disbjerg area will focus on the following points:

- Ensuring continuity of grazing of the area's dry grasslands
- Maintaining good structural condition – for example by clearing woody plants
- Extending dry grassland areas and linking existing dry grassland fragments

Continuity of grazing of the area's dry grasslands

The target is to have continual grazing – with low grazing pressure early in the grazing season on the most valuable dry grasslands, so that plants will flower in the summer months and for there to be fresh manure available from April to November for dung beetles and fungi. Former crop rotation areas should be grazed more intensively early in the grazing season to remove and redistribute nutrients. Grazing pressure should be monitored throughout the grazing season and any adjustments agreed to with the animal owners. Cattle and horses are preferred over sheep and goats as grazing animals, though the latter two are preferable to no grazing at all. There should be no supplementary feeding, apart from mineral supplements, to avoid the extra addition of nutrients.

Maintenance of good structural condition – for example by clearing woody plants

At Diesbjerg and Bjergene the structural condition of the cleared areas can be ensured with periodic clearing of regrowth. Regular clearing also prevents the new growth of young scrub. Invasive plants, such as *Rosa rugosa* can be controlled with a sustained effort. It is expected that there will need to be considerable follow-up maintenance in the years to come.

Existing scrub and established solitary trees and bushes should be preserved as they are important habitat for birds, invertebrates and fungi. Wood and branches should be removed or incinerated outside the project area. It is crucial that the area is grazed together with existing dry grassland areas immediately after clearing, as the grazing animals spread seeds from dry grassland plants while at the same time disturbing the soil – thus creating germination areas for dry grassland plants.

Extending dry grassland areas and linking existing dry grassland fragments

The overall aim is to link existing dry grasslands and potential dry grasslands in the form of abandoned fields. The restoration of dry grasslands on abandoned fields is predominantely restricted by the colonisation potential from the surrounding areas, nutrient residues in the soil from previous cultivation and the existing established cultivated grasses and clover.
Dry grassland plants are very restricted in their potential for dispersal and most species are only spread effectively with grazing animals. The Danish Nature Agency will continue to try to counter fragmentation of dry grassland areas by joining animal pens, optimising placement of existing pens and those on government owned areas as well as cooperating with private landowners as much as possible.

In the case of converting abandoned fields, the area will not be sown with cultivated grasses or clover, but will be left to natural succession, with the help of hay cutting, and/or grazing. There can however be a problem with grazing potential dry grasslands together with existing high-value areas, as this can result in transporting nutrients from formerly cultivated fields to established dry grasslands. Ways to prevent this are for the grazing animals to overnight on the former field areas, and to limit access between these areas and the established dry grasslands to a narrow corridor, thus limiting nutrient exchange. This scenario is primarily relevant for the merger between Rævebjerg and the areas towards the south.

Fyns Hoved

The plan for the Fyns Hoved and Jøvet area will focus on the following points:

- Clearing woody growth
- Extending grazing and converting former cultivation land or vegetation growth to dry grassland.

Clearing woody growth

It is important to retain grazing on the areas where woody growth has been cleared, and a perfect solution here is to use lightweight robust cattle breeds on the slopes. The area's geomorphology with its long isthmus and incidence of different habitats such as dry grassland and salt meadow make it ideal to introduce nature-like grazing of the whole of Fyns Hoved: thereby making it possible for the animals to reach all the way out to the coast.
This can be achieved by moving the fence line down to the beach, or by establishing a transverse fence and a cattle grid on the isthmus out to Fyns Hoved. It should of course be considered whether this can be combined with the area's function as a visiting area. At the moment the walking paths are outside the fence, and there is access to the grazed areas through self-closing gates.

Extending grazing and converting former cultivation land or vegetation growth to dry grassland

When agreements under the '20 year set-aside' scheme end (in 2018 to 2020 at the latest), a common grazing strategy will be implemented in the remaining areas on Fyns Hoved in cooperation with the private landowners and the municipality. The first part of the strategy is to divide Fyns Hoved into three equal parts, and to be able to have two large pens for potential winter grazing. The area has been prepared under this project.

The conservation status of the former cultivated areas should be continually monitored to see if the vegetation is developing in the desired direction, with a species-rich dry grasslands vegetation and semi-natural ponds with low vegetation. If the area develops according to the project's aims, then there is no need to change the strategy. However, if the area becomes species-poor with nitrophilic and even invasive species, then biomass, in the form of hay, will be removed over a two-year period.

Thurø
The future maintenance of Thurø Rev will focus on the following points:

- Optimising grazing pressure
- Follow-up removal of woody plants and *Rosa rugosa*

Optimising grazing pressure
Thurø Rev has been grazed with a combination of horses and cattle for a number of years. To optimise the grazing regime, cattle should be chosen as the primary grazing animal, as they graze more on coarse vegetation and in ponds – keeping them semi-natural and thus suitable breeding grounds for natterjack toads. Horses prefer to graze on areas of pasture which they maintain as one to two centimetres high vegetation throughout the grazing season, while other parts of the grazing area aren't grazed at all, or only to a limited extent. A large pen has been established at Thurø Rev, which encompasses dry grassland and salt meadow. To control the grazing pressure on the dry grasslands, and especially around the natterjack toad's breeding ponds, the project has set up a mobile fence, so that the pen divisions can be altered throughout the grazing season. It is important that this is monitored and continually evaluated.

***Follow-up removal of woody plants and* Rosa rugosa**
The control of *Rosa rugosa* on the dune ridge immediately east of the fencing should be followed-up. The area should be mowed for a number of years each April if control methods are to be effective. In addition, the area can be fenced with a mobile fence, so that animals can graze the dune ridge in the winter months – when this will not be a problem for beach visitors. Grazing will help to reduce the spread of *Rosa rugosa* on the dry grasslands, but only as long as there aren't too many or too large clumps of the rose.
The project includes clearing blackberry brambles and woody plant growth, so that the remaining trees and bushes are more exposed to sunlight and more accessible for animals, ensuring grazing will be more effective in reducing overgrowth in the future. In the years to come, there will be regrowth in the areas where scrub has been cleared, and in some areas the re-establishment of blackberries. These areas should be mowed until grasses and herbaceous vegetation can take hold.

Ristinge Klint and Sydlangeland
The future maintenance of Ristinge Klint will focus on the following points:

- Extending grazing
- Follow-up of clearing of woody plants and *Rosa rugosa*
- Extending the dry grassland area

Extending grazing
There is no grazing on the xeric and calcareous grasslands (type 6120). Most of the cliff is too steep and erosion creates a natural dynamic in the vegetation, but the easternmost 300

metre of the cliff constitutes stable areas with bushes and compact turf. It could be relevant to introduce grazing here, to prevent overgrowth of woody plants, tall grasses and herbs. Hardy animals which eat woody plant growth, and which can move in the hilly terrain are recommended here for conservation maintenance.
The grazing pressure should be kept low for the sake of invertebrates, with all-year grazing or grazing over as long a season as possible – so that herbs can flower in the spring and summer months, and so the vegetation is grazed low at the end of winter.
To exploit the potential of grazing animals to spread dry grassland plants from the existing dry grassland areas to the new derelict fields, grazing should continue in large pens, where animals have access to both kinds of areas, and as large areas as possible.
Fixed coastal dunes with herbaceous vegetation ("grey dunes") (type 2130) along the coast east of the cliff itself are also not grazed at the moment, and a considerable amount of *Rosa rugosa* has been cleared in the area during the project period. To follow-up after clearing, it is recommended that this area should also be grazed in the future. There is no need for high grazing pressure on the dune, so grazing is recommended in a short period in the early spring, with a temporary fence, so the animals can disturb the soil and help to keep the rose under control. In this way, grazing can also be adapted to the needs of beach visitors in the summer.

Follow-up of clearing of woody plants and Rosa rugosa

Follow-up controls to combat *Rosa rugosa* should be conducted annually in April. The overgrown areas should be mowed for a number of years to be controlled effectively. Grazing will help to reduce the spread of *Rosa rugosa* on dry grasslands, but will only be effective as long as there aren't too many, or too large clumps of the rose. The project has led to clearing blackberry brambles and woody plant growth, so that the remaining trees and bushes are more exposed to sunlight and more accessible for animals, ensuring grazing will be more effective in reducing overgrowth in the future. In the years to come, there will be regrowth in the areas where scrub has been cleared, and in some areas the re-establishment of blackberries. These areas should be mowed until grasses and herbaceous vegetation can take hold. A number of small stands of scrub have been retained inside the fencing for the benefit of birds and insects.

Extending the dry grassland area

There is great potential for extending the areas of dry grassland, especially semi-natural dry grasslands (type 6210) on the abandoned fields above Ristinge Klint.
After the last harvest in 2000, these areas were sown with grass – a practise that has unfortunately proven to be inappropriate. During the past years, a compact grass layer has formed, which has made it difficult for dry grassland plants to become established. Development towards dry grassland has therefore been very slow. There is a large pool of dry grassland species present, that can potentially spread to the new dry grasslands, but are restricted by the compact layer.
Another potentially restricting factor has been eliminated by the project. Samples have shown that the soil contains less than 10 mg of phosphorus per kilogram, so the soil does not require further nutrient depletion to be able to establish dry grassland vegetation. Efforts have therefore been made in the project to try to speed up this process by introducing peat from nearby dry grassland areas to inoculate the former fields north of the westernmost part of the slope. If this has a positive result, then it is recommended that the fields near the eastern part of the cliff are also inoculated with dry grassland peat.

Large pens should be used for grazing in order to exploit the abilities of grazing animals to spread dry grassland plants on the inoculated areas and from the established dry grasslands to the new abandoned fields.
In the long-term, the dry grassland area can be expanded even more by including cultivated areas next to the dry grasslands if it is possible to purchase these areas. In the final years of use, these areas should be cultivated without fertilisers or chemicals, and the recommendations in regard to nutrient depletion and inoculation should be followed (see section on Suserup).

The future maintenance of dry grasslands in Sydlangeland will focus on the following points:

- Improving the species list
- Forest grazing

There are other methods that could be used to improve this area – to be brief, these are: to deplete nutrients in the soil; to make it easier for stress-tolerant species which are adapted to dry grasslands to be able to move into and become established; to assist in the spreading of seeds.

Improving the species list
Nutrients in the soil should be depleted in areas where animals do not graze, and where the vegetation is tall and uniform.
Biomass should be removed two times a year, for two to three years in the form of hay removal. The first time should be after the first long warm period in June, and the second time in August or September. It is important that cut biomass is removed from the area.
The aim is to deplete the soil and stress the dominant grasses – for example orchard grass (*Dactylis glomerata ssp. glomerata)* and false oatgrass *(Arrhenatherum elatius)*.
Combined grazing will also be introduced, with cattle and horses, as cattle graze mostly on coarse vegetation and overgrown scrubby areas.

Forest grazing
If it is decided to establish grazing in the coppice forests of Vestre Gulstav and the northern triangle of Østre Gulstav – as described in the action plan, then the following is recommended:
Initially, two to four areas measuring 500 to 1000 square metres should be felled to create circular clearings in the forest. To begin with, the focus should be on removing non-native tree species (coniferous species and maple) and groups of trees which are mature for harvesting. Large deciduous trees and badly shaped, slow-growing, fungus-infested or overgrown trees should be preserved as much as possible as solitary trees in the clearings. These types of trees have the most potential for biodiversity and can quickly create improved structural variation.

Grazing should, as much as possible, be planned as all-year grazing, and would be best with both cattle and horses. Other animal species could be introduced as grazers in the future: for example red deer or European bison.
Forest grazing should be monitored with the view to fence the animals out of the forest if, after 10 to 20 years of grazing, it can be seen that the forest is degenerating due to the grazing pressure being too high, or that more diversity is lost than gained. However, forest

clearings and damaged trees can be of great benefit for biodiversity in the area, and are not an indication that grazing is detrimental to natural values or biodiversity.

Hanstholm (DK00EX130/DK00EX283)
Maintenance for the project area Hanstholm Syd will focus on:

- Improving the species list

Improving the species list

A dry grassland area, or a dune that has been exposed to overgrowth without maintenance for a longer period of time, will have lost a number of plant species and associated insects. The goal here is to increase the number of species for typical dry grassland and dune species. To achieve this, it is recommended to continue with the same grazing pressure for the next two to three years. This grazing pressure will reduce biomass, increase the amount of sunlight on the soil surface and thereby increase the chances of establishing new, and possibly extinct species on the exposed soil. Grazing should then be more extensive and varied. The goal with more extensive grazing is to give plants the possibility to flower and set seed – thereby benefiting plants and insects. Future grazing should therefore also have variations in time and space.
The aim with grazing is also to deplete the area of nutrients, with the view of improving conditions for the rare stress-tolerant species, so it is obvious that the addition of nutrients from neighbouring areas must be reduced. It is recommend that a 50 metre buffer zone is established where fertilisers and pesticides may not be used: especially in the areas above the lime slope where there aren't any agreements as yet. Finally, it is recommended that there be no supplemental feeding all year to avoid any extra addition of nutrients.

Maintenance for the project area Hanstholm Nord will focus on:

- Control of *Rosa rugosa*

Control of Rosa rugosa

A long-term plan or strategy is needed for combating *Rosa rugosa*, that will prioritise and focus efforts, and secure the necessary resources for implementation until the final goal is reached. Eradication of established clumps of *Rosa rugosa* will take many years. The many examples of failed attempts are often due to unsystematic methods, and ceasing attempts too early.
The area will now be monitored annually. If permission is given, then the plan is to continue with trials using herbicides, as a prolonged trial period will perhaps give a different result.
If necessary, then new plants which emerge should be pulled up or sprayed. In addition, a new impact assessment is planned for the bushes which have been sprayed two times, and a report will be created, with expert help, about the optimal post-utilisation of the project. The three grazing trial fens will be put together as one pen, and grazing will then continue here.

Suserup
Maintenance for the project area Suserup will focus on:

- Nutrient depletion and competition
- Grazing

- Inoculation with dry grassland peat

Nutrient depletion and competition

For the first three to five years, the new dry grassland should be mowed at a height of approximately 20 to 30 centimetres before setting seed, to limit some of the tall, competitive, undesired species, and to reduce their spread, thus benefiting the more light-demanding dry grassland species. Nutrient depletion of the area should continue concurrently.

Grazing

The project has created conditions which make it possible to establish extensive cattle grazing in large pens. This will ensure seed dispersal while keeping the new ponds semi-natural and *Rosa rugosa* under control. Cattle should preferably be put out to pasture early, and brought in again late, to ensure a long grazing season.

Inoculation with dry grassland peat

To further support development towards dry grassland, a trial will be conducted inoculating new areas with peat from existing dry grassland areas. This will initiate the development of dry grassland with a combined package of dry grassland flora and fauna species. The plan is to move 200 to 300 pieces of 40 x 40 x 10 centimetre peat from neighbouring quarries and dry grasslands. The areas will be maintained by harrowing between the planted peat.

Future maintenance costs

Future maintenance of government areas will be funded by the regional bodies. Thisted municipality is responsible for the municipality areas.
Maintenance funds will be supplemented with EU funding from the EU's Rural Development Program, which gives grants for the maintenance and grazing of Natura 2000 areas.