DANUBEPARKS – Danube River Network of Protected Areas Danube Dry Habitat Strategy

Annex I: Fact sheets of best practice maintenance measures

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audited on 19 September 2019

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1. Mowing

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**World Heritage Communities Wachau**	**1.1**

Title

1.1 Mowing regime and butterfly conservation (Austria)

Measure Type

- ☒ Mowing
- ☐ Grazing
- ☐ Burning
- ☒ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Austria

Location

Spitz an der Donau

Area Size

11,6 ha

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ Flood protection dyke
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The nature monument Setzberg is the most important dry grassland area in Wachau. It ist also the most important habitat of a special butterfly (*Polyommatus/Agrodiaetus damon*) in Wachau.

For the conservation of the butterfly a special mowing manangement is done. Essential are the stocks of Sulla (*Onobrychis*) which do not get cut or get cut very late in the year.

Start	End
July-2018	October-2018 (June 2019)

Implementation Status

- ☒ Terminated
- ☐ In progress
- ☐ Not started yet

In Charge of Implementation

- ☒ Staff of responsible organization
- ☐ Farmers/shepherds
- ☐ Volunteers
- ☒ External paid service
- ☐ Non-profit institution

Financing

- ☐ Self-sustaining business
- ☐ Volunteering program
- ☐ Regular budget of responsible organization
- ☐ National funding
- ☒ EU funding

Costs

8.800 EUR

(financed partly by EU-funds of DANUBEparksCONNECTED)

Measure Description

- Mowing management adapted to habitat requirements of *Polyommatus/Agrodiaetus damon*

Achieved Output

- Pilot action for conservation of endangered butterfly
- In the long-term maybe an increase of the local butterfly population

Evaluation

- ☐ Completely successful
- ☒ Satisfactory (? -> Evaluation June 2019)
- ☐ Falling short of expectations
- ☐ Failed

Lessons learned and Recommendations

- Every year there are different conditions. That is why this specil mowing management should take some years to gain experience over a longer period.
- The population of the butterfly species depends not only on the mowing management but also on other conditions like the local climate, the vegetation etc.
- Special mowing method was required (4 ha, only partly possible with machine).

Transferability to comparable Areas

- ☐ Easily transferable
- ☒ Needs substantial adaptation
- ☐ Not transferable

Available Information

- ☒ Report (June 2019)
- ☐ Maps
- ☐ Digital GIS data
- ☐ Publications

Sustainability

- ☐ Part of a comprehensive action plan to connect dry habitats
- ☐ Follow-up project planned
- ☒ Standalone measure

Photos – before

Photos – afterwards / recently grazed areas

Photos – work in progress

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**Persina Nature Park Directorate**	**1.2**

Title

1.2 Management of dry grasslands through mowing and shrub removal (Bulgaria)

Measure Type

- ☒ Mowing
- ☐ Grazing
- ☐ Burning
- ☒ Conservation of specific species
- ☒ Mechanical removal of bushes
- ☒ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Bulgaria

Location

Persina Nature Park, Persin Island

Area Size

1,2 ha dyke and 4,8 ha dry grasslands

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☒ Flood protection dyke
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The protective dyke surrounding the biggest Bulgarian Danube Island represents an important habitat from an ecological point of view. Many years ago, the maintenance of the dyke by regular, mechanical mowing was a very important task implemented on state level and also there was grazing and animal husbandry in this area. Nowadays, the maintenance is not a state obligation anymore and there is also no more grazing in these areas. Moreover, this valuable habitat is threatened by the invasion of alien bushes (Amorpha fruticosa).

The removal of bushes and the management of the grasslands are activities that are implemented on Persin Island, too. The main reason for their implementation is the maintenance of the dry grassland communities and to stop of the loss of the habitat of Allium angulosum. There is no more grazing in this area.

Start	End
May-2017	

Implementation Status

- ☐ Terminated
- ☒ In progress
- ☐ Not started yet

In Charge of Implementation

- ☐ Staff of responsible organization
- ☐ Farmers/shepherds
- ☐ Volunteers
- ☒ External paid service
- ☐ Non-profit institution

Financing

- ☐ Self-sustaining business
- ☐ Volunteering program
- ☐ Regular budget of responsible organization
- ☐ National funding
- ☒ EU funding

Costs

approx. 8.000 EUR

Measure Description

- Mechanical mowing of the top of the protective dyke twice in 2017 and once in 2018
- Pilot action demonstrating best practice management : Removal of bushes, elimination of alien species and management of grasslands
- If the results are completely successful, the management measures are intended to be applied on longer dyke sections and at large grasslands

Achieved Output

- Test and demonstrate approach for the management of the dry habitat
- Maintaned, protective dyke
- Postponed loss of the dry habitat types

Evaluation

- ☐ Completely successful
- ☒ Satisfactory
- ☐ Falling short of expectations
- ☐ Failed

Lessons learned and Recommendations

- The period of the implementation of this activity is too short to say whether this is the right way to fight invasive species or to maintain dry grasslands.
- The only thing we can say for now is that the mechanical fight by mowing becomes easier with every passing year, but the lack of external expertise service for this type of dyke maintenance and mowing of grasslands is a serious difficulty.

Transferability to comparable Areas

- ☐ Easily transferable
- ☒ Needs substantial adaptation
- ☐ Not transferable

Available Information

- ☐ Report
- ☐ Maps
- ☐ Digital GIS data
- ☐ Publications

Sustainability

- ☒ Part of a comprehensive action plan to connect dry habitats
- ☐ Follow-up project planned
- ☐ Standalone measure

Photos – before: Protective dyke

Photos – afterwards: Protective dyke

Photos – before: Protective dyke

Photos – afterwards: Protective dyke

Photos – work in progress: Mowing of dyke

Photos – before: Mowing of grasslands

Photos – afterwards: Mowing of grasslands

Photos – work in progress: Removal of bushes

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**PINP Kopački rit Hrvatske vode**	**1.3**

Title

1.3 Special mowing regime on dykes to stop invasive plant species (Croatia)

Measure Type

- ☒ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Croatia

Location

PINP Kopački rit

Area Size

298,76 ha

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

An external expert was included for the floristic inventory and mapping of dry grasslands in DANUBEparks-CONNECTED project activity (WP5) and presented preliminary results of his survey and implied on the problem of expanding invasive plant species, especially *Asclepias syriaca*.

A representative from Hrvatske vode agreed to implement a special regime of mowing grasslands on the dykes to contribute towards stopping this invasive plant.

Start	End
August-2018	September-2018

Implementation Status

- ☒ Terminated
- ☐ In progress
- ☐ Not started yet

In Charge of Implementation

- ☒ Staff of responsible organization
- ☐ Farmers/shepherds
- ☐ Volunteers
- ☐ External paid service
- ☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☒ Regular budget of responsible organization
☐ National funding
☐ EU funding

Costs

0 EUR

Measure Description

- Mowing grasslands on dykes in specific time of the year to stop expanding invasive plant species
- Raising awareness about a growing problem in our area – invasive plant species
- Cooperation with other Croatian public institution – Hrvatske vode

Achieved Output

- Reduction of invasive plant species
- Continued cooperation with Hrvatske vode

Evaluation

☐ Completely successful
☒ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Special regime of mowing grasslands on the dykes started last year and the results will be visible this year.
- The mowing of the grassland from Zmajevac part of dyke to Podravlje part of dyke started on 10th August 2018 because it was the best time to supress this expanding invasive plant.
- This activity should be promoted in the future so that there will be better visible results of stopped invasive plants expansions.

Transferability to comparable Areas

☒ Easily transferable
☐ Needs substantial adaptation
☐ Not transferable

Available Information

☒ Report
☐ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☒ Part of a comprehensive action plan to connect dry habitats
☐ Follow-up project planned
☐ Standalone measure

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**District Neuburg-Schrobenhausen (LKNS)**	**1.4**

Title

1.4 „Donau-Brennen-Mahd“ - Mowing of dry habitats (Germany)

Measure Type

- ☒ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Gemany

Location

Landkreis Neuburg an der Donau

Area Size

20 ha

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

“Brennen” are dry habitats along the Danube river. They are extremely rare and valuable biotopes, containing a high number of endangered species. The areas are threatened by scrub encroachment and their conservation can only be ensured through coordinated, periodic mowing in autumn and subsequent removal of the mowed crop.

Start	End
August-2018	September-2018

Implementation Status

- ☐ Terminated
- ☒ In progress
- ☐ Not started yet

In Charge of Implementation

- ☒ Staff of responsible organization
- ☒ Farmers/shepherds
- ☐ Volunteers
- ☐ External paid service
- ☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☐ Regular budget of responsible organization
☒ National funding
☒ EU funding

Costs

approx. 12.000 EUR

Measure Description

- Briefing with farmer (contractor)
- Marking/designation of unmown stripes
- Mowing only by cutter bar
- Focus on late flowering plants
- Crop removal

Achieved Output

- Conservation of extremely rare and valuable dry “Brennen” habitats and its characteristic species

Evaluation

☒ Completely successful
☐ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Smaller areas of unmowed grassland stripes, especially on the edge of the woods, are left to protect butterflies like the Scarce heath (*Coenonympha hero*). The position of the stripes varies to prevent scrub encroachment.

Transferability to comparable Areas

☐ Easily transferable
☒ Needs substantial adaptation
☐ Not transferable

Available Information

☐ Report
☐ Maps
☒ Digital GIS data
☐ Publications

Sustainability

☐ Part of a comprehensive action plan to connect dry habitats
☒ Follow-up project planned
☒ Standalone measure

Fact Sheet

Project Name	Responsible Organization	Number
Managementplan for the nature reserve "Donauleiten from Passau to Jochenstein"	**Passau District**	**1.5**

Title

1.5 Mowing of embankment and slopes to control invasive species (Germany)

Measure Type

- ☒ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☒ Mechanical removal of bushes
- ☒ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Germany

Location

Railway embankment between Kernmühle und Obernzell

Area Size

10,5 km

Initial Habitat Type

- ☐ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☒ Disused railway embankment
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The embankment and the slopes are mowed annually to maintain open, sun-exposed spots which are very important habitats for reptiles in the nature reserve.

Start	End
June-1995	No end, annual measure

Implementation Status

- ☐ Terminated
- ☒ In progress
- ☐ Not started yet

In Charge of Implementation

- ☐ Staff of responsible organization
- ☒ Farmers/shepherds
- ☐ Volunteers
- ☐ External paid service
- ☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☐ Regular budget of responsible organization
☒ National funding
☐ EU funding

Costs

30.000 EUR/year

The measure is 100% financed by the state.

Measure Description

- Mowing with the brush cutter
- Picking up the brush by hand

Achieved Output

- Preserved open, sunny habitats

Evaluation

☐ Completely successful
☒ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Mowing the embankment is very difficult as the tracks are still there. It happens again and again that smaller stones splinter and injure the workers; also the mowers can be damaged when they hit stones.
- The removal of the crop or the brushwood is complex, it has to be charged from the road and departed in a second step.
- Mowing the knotweed is laborious and must be done on a monthly basis to reduce itching.
- These are very long-term, time-consuming and labor-intensive measures. Due to the hard work, it is becoming increasingly difficult to find workforce for it. In the near future, it is planned to try the mowing with a special rail vehicle.

Transferability to comparable Areas

☐ Easily transferable
☒ Needs substantial adaptation
☐ Not transferable

Available Information

☒ Report
☐ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☒ Part of a comprehensive action plan to connect dry habitats
☒ Follow-up project planned
☐ Standalone measure

Photos – before

Photos – afterwards

Photos – before

Photos – afterwards

Photos – work in progress

Fact Sheet

Project Name	Responsible Organization	Number
Managementplan for the nature reserve "Donauleiten from Passau to Jochenstein"	**Passau District**	**1.6**

Title

1.6 Mowing of steep, dry meadows (Germany)

Measure Type

- ☒ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Gemany

Location

Kernmühle, Grünau

Area Size

0,34 ha Kernmühle; 1,91 ha Grünau

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☒ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The affected meadows are very steep and can no longer be managed by conventional agriculture. The surfaces have to be mowed with a motor mower; hay must be transported downhill by hand or on tarpaulins. These areas are important habitats for endangered plants and animals (e.g. orchids, butterflies) and would fade and get lost without this elaborate manual labor.

Start	End
August-1995	No end, annual measure

Implementation Status

- ☐ Terminated
- ☒ In progress
- ☐ Not started yet

In Charge of Implementation

- ☐ Staff of responsible organization
- ☒ Farmers/shepherds
- ☐ Volunteers
- ☐ External paid service
- ☐ Non-profit institution

Financing

☐ Self-sustaining business
☒ National funding
☐ Volunteering program
☐ EU funding
☐ Regular budget of responsible organization

Costs

- Kernmühle: 2.200 EUR/year
- Grünau: 3.300 EUR/year

  Each for 2 mowing periods/year.

- The measure is 100% financed by the state.

Measure Description

- Mowing with motor mower once a year (August)
- Making hay by hand
- Removing the hay

Achieved Output

- Securing difficult-to-manage habitats, preserving and promoting highly endangered species

Evaluation

☒ Completely successful
☐ Falling short of expectations
☐ Satisfactory
☐ Failed

Lessons learned and Recommendations

- It is the only way to preserve this small, steep, valuable habitats
- It is costly, but effective for each species

Transferability to comparable Areas

☒ Easily transferable
☐ Needs substantial adaptation
☐ Not transferable

Available Information

☒ Report
☐ Digital GIS data
☐ Maps
☐ Publications

Sustainability

☒ Part of a comprehensive action plan to connect dry habitats
☐ Standalone measure
☐ Follow-up project planned

Photos – afterwards: Kernmühle

Photos – afterwards: Grünau

Photos – afterwards: Grünau

2. Grazing

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**Donau-Auen National Park BROZ WUK**	**2.1**

Title

2.1 Cross-border grazing as an alternative management for dykes (Austria)

Measure Type

- ☐ Mowing
- ☒ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Austria

Location

Schönau an der Donau

Area Size

10 ha

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☒ Flood protection dyke
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The Marchfeld flood protection dyke represents an important secondary habitat from an ecological point of view. It functions as a corridor connecting the surrounding protected semi-dry grasslands.

For the preservation of its ecological functions regular mowing and the removal of the crop is necessary. Leaving the crop leads to nutrient enrichment and to a felting of the vegetation and represents a relevant problem from an ecological point of view.

Grazing makes the removal of the crop superfluous and therefore represents an interesting alternative or complementary maintenance measure to mowing as well as a cost-effective approach compared to the removal and disposal of biomass. As the conservation of these grasslands is important, the main aim for the grazing pilot action is to implement and optimize best practice management and an alternative managing measure to mowing on the dyke along Donau-Auen National Park.

As a short-term strategy, grazing will continue in 2019 with an increased flock and pasture size. In the long term, grazing the flood protection dyke should be established as a standalone, sustainable management measure.

Start	End
May-2018	October-2018

Implementation Status

☒ Terminated
☐ In progress
☐ Not started yet

In Charge of Implementation

☒ Staff of responsible organization
☐ Farmers/shepherds
☐ Volunteers
☐ External paid service
☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☐ Regular budget of responsible organization
☐ National funding
☒ EU funding

Costs

approx. 87.000 EUR

(financed partly by EU-funds of DANUBEparksCONNECTED, by the cross-border Interreg 3EMorawa as well as own contributions of the partner organizations. e.g. local caretaking with volunteers)

Measure Description

- Establishing a cross-border cooperation
- Raising awareness and exchanging experience with key stakeholders
- The management measure is intended to be applied to grazing activities also on longer dyke sections
- The chosen breed of sheep was a particularly heat-resistant breed suitable for dry grasslands (Krainer Steinschafe)
- For exclusionary practice a solar-powered electric fencing was used
- The animals were herded into a fresh pastural section every couple of days
- Field workers from 3 responsible partners provided caretaking and equally shared responsibility

Achieved Output

- Test and demonstration of an alternative approach for the management of a biocorridor
- Formation of a cross-border cooperation of expert groups
- Pilot action documentation: Grazing report

Evaluation

☐ Completely successful
☒ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Species composition and thus nutritional quality of the vegetation changed significantly along some sections of the dyke, which meant having also less grazed patches.
- After grazing, there is a need for aftercare such as the removal of (single) emerging woody plants or other herbaceous plants that are ignored by the sheep.
- Monitoring the effects of grazing on the vegetation is of great importance for a establishing a best practice management.
- Finding an optimized fence system is crucial for organized grazing action.
- Caretaking requires the involvement of at least 2 individuals with support on hand if needed.
- Raising awareness on-site locally and through different mediums is a key element: The feedback to the pilot action was very positive.

Lessons learned and Recommendations (continuation)

- The general know-how of grazing should be standardized but the methods must always be adapted to the specific local conditions.

Transferability to comparable Areas

☒ Easily transferable
☐ Needs substantial adaptation
☐ Not transferable

Available Information

☒ Report
☐ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☐ Part of a comprehensive action plan to connect dry habitats
☐ Follow-up project planned
☒ Standalone measure

Photos – before

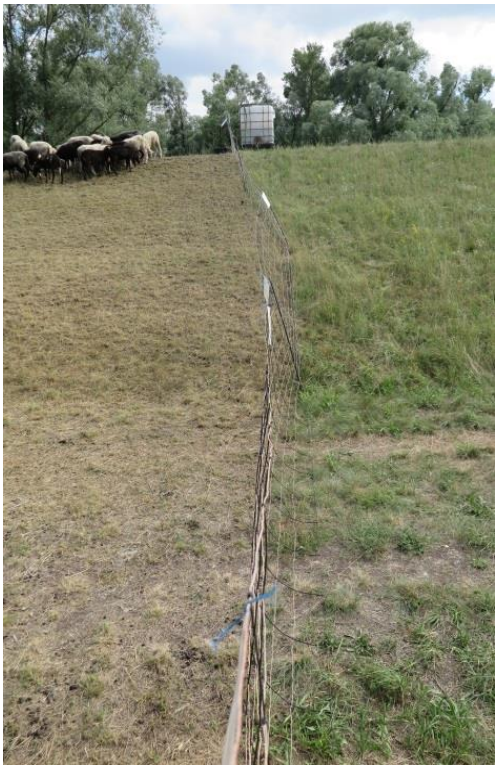
Photos – afterwards / recently grazed areas

Photos – before

Photos – afterwards

Photos – work in progress

Photos – work in progress



Fact Sheet

Project Name	Responsible Organization	Number
LIFE-Nature Project "Unterer Inn mit Auen" 1998-2001	**Passau District**	**2.2**

Title

2.2 Sheep grazing concept for the Inn dams (Germany)

Measure Type

- ☒ Mowing
- ☒ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Germany

Location

Egglfing - Deindorf

Area Size

11,6 km of dams

Initial Habitat Type

- ☐ Dry grassland
- ☐ Mesoxerophytic grassland
- ☒ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☒ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The dyke maintenance through sheep grazing, which had a model character for both project-involved countries, was the general goal of the LIFE project. In the initial planning stage, a management plan was created aiming to promote the development of species-rich, nutrient-poor meadows. For this purpose, grazing was an ideal measure because it allows at the same time a seed transfer and can be coordinated with fire maintenance measures. In addition, it was a cost-effective option because no material had to be disposed and machine use was avoided.

Further basic goals of grazing the dams and adjacent areas with sheep are:

- Keeping nutrient-poor, sunny locations open
- Promotion of typical plant communities
- Reduction of mowing effort
- Leaching of the surfaces
- Promotion of biodiversity as well as pasture farming
- Improvement of the landscape and the recreational value
- Genetic exchange of animal and plant populations
- Establishment of a self-supporting method for using the dams
- Securing the protective effect of the dams

Planned Objectives and Reasons (continuation)

In general, the aim of grazing is that the sheep eliminate at least 70% of the vegetation. If the effect of grazing is below 70 %, the suitability of grazing on the respective site must be doubted. Generally, more grazing is welcome but should not be implemented at the expense of a compacted, damaged soil. Therefore, the grazing should be conducted with the aim of removing as much herb growth as possible while at the same time impaing the dam structure the least as possible. The same objectives are pursued for those areas where firing and grazing are combined.

Start	**End**
May-1999	October-2007

Implementation Status

- ☒ Terminated
- ☐ In progress
- ☐ Not started yet

In Charge of Implementation

- ☐ Staff of responsible organization
- ☒ Farmers/shepherds
- ☐ Volunteers
- ☒ External paid service
- ☐ Non-profit institution

Financing

- ☐ Self-sustaining business
- ☐ Volunteering program
- ☐ Regular budget of responsible organization
- ☒ National funding
- ☒ EU funding

Costs

7.000 €/year (2 grazing periods per year)

Measure Description

- 2 grazing periods per year (spring and autumn) with 300 sheep each time
- Before grazing: Fencing off valuable areas that should not be grazed to protect the plants (orchids)
- Creation of pens for the night outside the grazing areas
- No grazing on moist dam areas because of the dam safety

Achieved Output

- Uniform grazing of large dam areas
- Transport of seeds of valuable plant species to more remote areas through the sheep

Evaluation

- ☐ Completely successful
- ☒ Satisfactory
- ☐ Falling short of expectations
- ☐ Failed

Lessons learned and Recommendations

- We have made the experience that some people have high expectations of grazing while others are showing tremendous scepticism.
- An evaluation of the effects seems most promising when experiences from comparable concepts are taken into account jointly with the results from the own trial.

Lessons learned and Recommendations (continuation)

- With proper herd management a well and evenly grazed area that looks like a mowed meadow can be achieved. By the hoof kicks of the sheep, small open spots are created in the turf which provide habitats for characteristic pioneer species of the meadows and less competitive plants, thus leading to an increased biodiversity.
- Additional cuttings will be unavoidable to remove bad tasting and inedible herbs as well as woody growth and rank patches. The amount of green waste disposal decreases noticeably, but can not be avoided completly.
- An enrichment of the pleasure in experiencing landscape by the wandering flock of sheep is undeniably present, at the same time it is a permanent attraction for the numerous visitors of the dam, which leads to a disturbance of the herd and strains for the shepherd. This may be accompanied by conflicts due to mud-soiled lanes.
- Economic profitability of sheep grazing is only given when there is external support from public or private institutions, a circumstance that is also the rule in many other (agricultural) sectors
- Because of the large linear extent of the area, the sheep are grazing just for a relatively short period of time in one place. This means that a direct impairment of the grazing areas of game species is only given on small scale. The food competition between sheep and roe deer was mitigated by the fact that in the course of the LIFE-project additional areas beyond the dam with rich food supply for were developed game (e.g. by opening overgrown forest clearings). These areas can buffer incompatibilities between sheep and game. The green areas at the dam itself have been extended as well and are also available now.
- The shepherd needs a high level of expertise with regard to the speed (movement of the sheep) and the quality of grazing.
- Mowing between pastures can not be discarded, as the sheep do not eat carefully enough at the margins. Here, ruderalization was observed harassing valuable flowering plants.
- For larger grazing areas, it is absolutely necessary to provide resting places for the sheep outside the grazing areas in order to avoid accumulation of nutrients in the grazing areas.
- According to Luik, an expternal expert, the issue of "grazing" involves captivating aspects and synergies: animals can eat the growing vegetation, the nowadays costly disposal of plant material is solved naturally, the landscape is kept open as desired, a romantic aspect is highlighted by the preservation of traditional land-use methods, nature conservation and desired biodiversity targets can be reached and ultimately, high-quality products that can be used economically is produced. Luik then contrasts this somewhat transfigured description of grazing with reality where hunting tenants are very sceptical of grazing and "knowledgeable, scientifically educated and private conservationists" equate extensive grazing with neglect and wilderness or worry about the "poor sheep".

Transferability to comparable Areas

☐ Easily transferable
☒ Needs substantial adaptation
☐ Not transferable

Available Information

☒ Report
☐ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☒ Part of a comprehensive action plan to connect dry habitats
☐ Follow-up project planned
☐ Standalone measure

Photos – before

Photos – afterwards

Photos – work in progress

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**City of Ingolstadt**	**2.3**

Title

2.3 Management of combined dry habitats through grazing (Germany)

Measure Type

- ☐ Mowing
- ☒ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☒ Public relations (information event, campaign…)
- ☐ _____

Country

Germany

Location

Ingolstadt

Area Size

14,3 ha

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☒ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☒ Flood protection dyke
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

Previously mulched, species-poor and structurally-poor dyke areas with predominantly goldenrod growth should upgraded by grazing and serve as biotope compensation areas for dry habitats.

The area consists of left-sided embankment, dike slopes and adjacent (degraded) semi-arid grasslands. They combine several heathlands and secondary rough pastures, which were also included in the grazing.

Start	End
May-2018	June-2018

Implementation Status

- ☒ Terminated
- ☐ In progress
- ☐ Not started yet

In Charge of Implementation

- ☒ Staff of responsible organization
- ☒ Farmers/shepherds
- ☐ Volunteers
- ☐ External paid service
- ☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☒ Regular budget of responsible organization
☐ National funding
☒ EU funding

Costs

approx. 5.500 EUR

(financed partly by EU-funds of DANUBEparksCONNECTED)

Measure Description

- Raising awareness and exchanging experience with key stakeholders (landowners, agriculture)
- Grazing with sheep and goats in herding
- The animals were herded into a fresh pastural section every couple of days
- Creating horse areas in the least valuable conservation areas

Achieved Output

- Test and demonstration of an alternative approach for the management of a biocorridor
- Pilot action documentation: Grazing report

Evaluation

☐ Completely successful
☒ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Species composition and thus nutritional quality of the vegetation changed significantly along some sections of the dyke which meant having also less grazed patches
- After grazing, there is a need for aftercare such as the removal of (single) emerging woody plants or other herbaceous plants that are ignored by the sheep
- Monitoring the effects of grazing on the vegetation is of great importance for a establishing a best practice management
- Intensive care is necessary
- Fencing orchid locations makes sense
- Shaded horse areas are a rare commodity: Number and distances are important, also to cram the horses at midday
- Raising awareness on-site locally and through different mediums is a key element: The feedback regarding the pilot action was very positive
- The general know-how of grazing should be standardized but the methods must always be adapted to the specific local conditions
- Water supply is often problematic
- Right timing is important: Partly start of grazing clearly required before May (observation of phenology)
- Drift routes have to be organized (safety)

Transferability to comparable Areas

☒ Easily transferable
☒ Needs substantial adaptation
☐ Not transferable

Available Information

☒ Report
☒ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☒ Part of a comprehensive action plan to connect dry habitats ☐ Standalone measure

☒ Follow-up project planned

Photos – before

Photos – afterwards:

Photos – before

Photos – afterwards

Photos – work in progress: (Top: Fenced orchid locations)

3. Removal of elements

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**District Neuburg-Schrobenhausen (LKNS)**	**3.1**

Title

3.1 Bush removal on dry grassland to support grazing (Germany)

Measure Type

- ☐ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☒ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Germany

Location

Rennertshofen

Area Size

approx. 4 ha

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The areas have formerly been used for sheep grazing. Unfortunately, sheep farming went unpopular in the 60's and the areas were overgrown with bushes and trees.

For the recovery of the ecological functions of this biotope, dry grassland has to be restored by removing bushes and trees like pines, spruces and deciduous trees. Afterwards, grazing is again possible to preserve the biotope.

Start	End
October-2018	February-2019

Implementation Status

- ☐ Terminated
- ☒ In progress
- ☐ Not started yet

In Charge of Implementation

- ☒ Staff of responsible organization
- ☒ Farmers/shepherds
- ☐ Volunteers
- ☐ External paid service
- ☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☐ Regular budget of responsible organization
☒ National funding
☐ EU funding

Costs

approx. 15.000 EUR

Measure Description

- Briefing with contractor
- Marking of trees
- Removal of crop

Achieved Output

- Restored dry grassland

Evaluation

☐ Completely successful
☐ Satisfactory
☒ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Marking the trees for removal or reverse
- Protecting the shrubs/trees which should be kept
- In the following years, monitoring the area to prevent scrub encroachment

Transferability to comparable Areas

☒ Easily transferable
☐ Needs substantial adaptation
☐ Not transferable

Available Information

☐ Report
☐ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☐ Part of a comprehensive action plan to connect dry habitats
☐ Follow-up project planned
☒ Standalone measure

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**District Neuburg-Schrobenhausen (LKNS)**	**3.2**

Title

3.2 Removal of invasive species (*Solidago canadensis)* in dry habitats (Germany)

Measure Type

- ☐ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☒ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Germany

Location

Neuburg an der Donau

Area Size

1 ha

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

To stop eutrophication of dry habitats through goldenrod (*Solidago canadensis*) populations, the distribution of the invasive plant has to be reduced. Areas with massive goldenrod were mulched in early May 2018.

Start	End
May-2018	May-2018

Implementation Status

- ☐ Terminated
- ☒ In progress
- ☐ Not started yet

In Charge of Implementation

- ☒ Staff of responsible organization
- ☒ Farmers/shepherds
- ☐ Volunteers
- ☐ External paid service
- ☐ Non-profit institution

Financing

- ☐ Self-sustaining business
- ☐ Volunteering program
- ☐ Regular budget of responsible organization
- ☒ National funding
- ☐ EU funding

Costs

approx. 300 EUR

Measure Description

- Mulching of areas with goldenrod in early May

Achieved Output

- Restored valuable dry habitas
- Stopped eutrophication

Evaluation

☐ Completely successful
☒ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Better marking of the areas for the executing person, maybe with wooden sticks
- Due to good results in 2018, mulching is planned to continue in 2019

Transferability to comparable Areas

☒ Easily transferable
☐ Needs substantial adaptation
☐ Not transferable

Available Information

☐ Report
☐ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☐ Part of a comprehensive action plan to connect dry habitats
☐ Follow-up project planned
☒ Standalone measure

Fact Sheet

Project Name	Responsible Organization	Number
Managementplan for the nature reserve "Donauleiten from Passau to Jochenstein"	**Passau District**	**3.3**

Title

3.3 Clearing of a forest edge to promote woody species and reptiles (Germany)

Measure Type

- ☐ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☒ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Germany

Location

Jochenstein

Area Size

50 m

Initial Habitat Type

- ☐ Dry grassland
- ☐ Mesoxerophytic grassland
- ☒ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☒ Forest edge
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The edge of the forest near Jochenstein is overgrown with Clematis and Humulus, which means that forest edge shrubs completely disappear underneath and under certain circumstances can vanish.

The aim of the project was to free the edge of the forest from this overgrowth to improve the lighting situation for important woody species and reptiles. Additionally, new habitat structures for reptiles should be created.

Start	End
September-2018	September-2018

Implementation Status

- ☒ Terminated
- ☐ In progress
- ☐ Not started yet

In Charge of Implementation

- ☐ Staff of responsible organization
- ☒ Farmers/shepherds
- ☒ Volunteers
- ☐ External paid service
- ☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☒ Regular budget of responsible organization
☒ National funding
☐ EU funding

Costs

500 EUR

Measure Description

- Cutting off the creepers
- Ripping out the roots (as far as possible)
- Cutting back shrubs
- Making rice piles
- Making wooden stacks as a hiding place for reptiles

Achieved Output

- The edge of the forest was cleared
- Valuable woody plants like bladdernut (*Staphylea pinnata*) can spread again
- The edge of the forest is flooded with light and offers the reptile fauna a habitat again

Evaluation

☒ Completely successful
☐ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Very good measure with little effort to achieve a good result
- Thanks to the volunteers, the measure is not expensive and can be done well in half a day

Transferability to comparable Areas

☒ Easily transferable
☐ Needs substantial adaptation
☐ Not transferable

Available Information

☒ Report
☐ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☒ Part of a comprehensive action plan to connect dry habitats
☒ Follow-up project planned
☐ Standalone measure

Photos – before

Photos – afterwards

Photos – work in progress

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**Passau District**	**3.4**

Title

3.4 Management concept for steep slopes in narrow Danube valley (Germany)

Measure Type

- ☐ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☒ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Germany

Location

Gaishofen near Passau

Area Size

1,65 ha

Initial Habitat Type

- ☐ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☒ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☒ South-exposed hillside mixed forest
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The slopes of the Danube valley near Passau are of high importance for local as well as for national matters of nature conservation. Due to the natural habitat diversity on the one hand and the former extensive forestry on the other hand, the slopes contain an exceedingly heterogeneous mosaic of habitats. Thus, the landscape in the Danube Valley has partially developed over centuries under the influence of human management. In many parts of the slopes of the Danube Valley the characteristic landscape is dominated by coppice forests. However, this typical landscape gets lost due to lack of management, particularly the coppice forestry. Probably that goes along with a shift in the ratio of habitat types, changes in openness due to increasing closure of canopies, partly loss of dry habitats and edge structures (esp. inner edges) and also faunistic and floristic diversity.

As part of the INTERREG project "Danube Dry Habitat Corridor Pilots", a concept or guideline for the conservation of valuable dry habitats in the steep slopes in the district of Passau had to be developed. For this purpose, a project area was selected by the contracting authority and data of the vegetation, fauna and the general condition of the project area were raised. On the basis of the collected and existing data, the actual condition of the test area was evaluated. Based on the evaluation as well as on other local aspects, a guideline with a catalogue of measures should to be developed.

Planned Objectives and Reasons (continuation)

On the one hand, the aim is to maintain and improve the local situation on the test area and on the other hand, the guidelines developed here will be used to derive recommendations for action for the entire Danube valley in order to secure the dry habitats in the Danube area.

Start	**End**
June-2018	May-2019

Implementation Status

☐ Terminated
☒ In progress
☐ Not started yet

In Charge of Implementation

☐ Staff of responsible organization
☒ Farmers/shepherds
☐ Volunteers
☒ External paid service
☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☐ Regular budget of responsible organization
☐ National funding
☒ EU funding

Costs

6.000 EUR

Measure Description

Short term:

- The implementation of measures took place on 18th of December 2018. The focus was on the dry habitats in the project area.
- Removal of young beech (up to approx. 25 cm DBH) in the oak-hornbeam population and rock area to increase sun exposure (west side of the area). Felled logs remained as lying deadwood on-site and were secured against slipping. Furthermore a sufficient safety distance to the state highway had to be ensured.
- Cutting of trunks of approx. 7-10 hornbeams and oaks to illuminate and rejuvenate the stock and to create a mosaic. Felled logs also remained on site as lying deadwood and were secured against slipping.
- Removal of spruce in the oak grove and rock area. Spruce with bark beetle infestation were removed from the area if possible.
- Removal of spruce stock and shelling of bark beetles infested trees, removal of the strains in case of bark beetle infestation. Partial surface left to natural regeneration.
- Removal of selected trees in one or two points of the forest edge in the western part of the area to create bays. Here construction of structures for reptiles (branches, stacks of wood, trunks).

Medium and long term:

- General control of the stock and the success of the previous measures approximately every 10 years (including documentation).
- Cutting of selected hornbeams and oaks in the oak-hornbeam population and rock area for the first time after 10 years, then about every 20-30 years.

Measure Description (continuation)

- Removal of young beech in the oak-hornbeam population and rock area for the first time after 5 years, then every 10-15 years. If necessary, selection and marking of offspring for biotope trees or renewal of previous markings.
- Maintenance of the edge of the forest through trimming of trees and supplementing structures as needed. Control of the measure after 2 years. Possibly mowing of emerging or spreading blackberry (*Rubus*) necessary.

Achieved Output

- In the rocky area as well as in the dry-warm forest edge, which are located in the west of the project area, a total of 22 trees (hornbeam, oak, lime) have been cut down. This will enhance rejuvenation by stump shooting and preserve the sparse and coppice-like character of the site.
- To increase the sun exposure in the area 14 beech and spruce trees have been cut down in the rocky area and its surroundings. Also young beeches and spruces (about 2 to 4 years) have been removed. Furthermore some spruce trees in the spruce monoculture have been cut down and carted off.
- Three piles of branches and stem parts were buildt for reptiles along the forest edge.
- Success of the implemented measures will be controlled in June 2019.

Evaluation

☐ Completely successful
☒ Satisfactory (but monitoring has not yet taken place)
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- To counteract imminent loss of biodiversity in the Danube Valley, a revival of low and medium forest management forms like coppice forestry or coppice forestry with standards (hold-over trees) should be considered. This kind of managment would enhance the diversity of habitats in the Danube Valley near Passau.
- To preserve the cultural landscape and the most valuable habitats in the Passau Danube Valley, landscape conservation measures need to be implemented urgently and regularly.
- In addition, specific nature conservation measures have to be implemented to preserve the quality of dry habitats (like rocks, block fields and forest edges). Of particular importance is the small-scale structuring of sites, which can be ensured by spatially limited, alternating and periodically implemented measures.
- Through monitoring, the measures can be reviewed and the management adjusted accordingly.

Transferability to comparable Areas

☐ Easily transferable
☒ Needs substantial adaptation
☐ Not transferable

Available Information

☒ Report
☐ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☒ Part of a comprehensive action plan to connect dry habitats
☐ Follow-up project planned
☐ Standalone measure

Photos – before

Photos – afterwards

Photos – before

Photos – afterwards

Photos – work in progress

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**District Neuburg-Schrobenhausen (LKNS)**	**3.5**

Title

3.5 Restoring dry grassland through removal and burning (Germany)

Measure Type

- ☐ Mowing
- ☐ Grazing
- ☒ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☐ _____

Country

Germany

Location

Hennenweidach

Area Size

1,5 ha

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ Flood protection dyke
- ☐ _____
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The former dry habitats at Hennenweidach (nutrient-poor grassland on calcareous substrates and nutrient-poor grassland on sandy substrates), which are rich on endangered species, were about to be changed into a poorer vegetation consisting mainly of bushes, trees and different shrubs due to the suspending of the regular land-use in the habitat.

For the preservation of its ecological functions regular grazing and the removal of crop is necessary. Leaving the crop leads to nutrient enrichment and to a felting of the vegetation and represents a relevant problem from an ecological point of view.

As a short-term strategy, we decided to remove trees and bushes and burn the remaining leftovers and mulch to ensure best starting conditions for the new growing dry habitat vegetation. In the long term and as a follow-up management, grazing with sheep and a minimum percentage of 25% goats will be established as a sustainable management measure for the habitat.

Start	End
December-2014	March-2015

Implementation Status

- ☒ Terminated
- ☐ In progress
- ☐ Not started yet

In Charge of Implementation

- ☒ Staff of responsible organization
- ☐ External paid service
- ☐ Farmers/shepherds
- ☐ Non-profit institution
- ☐ Volunteers

Financing

- ☐ Self-sustaining business
- ☒ National funding
- ☐ Volunteering program
- ☐ EU funding
- ☒ Regular budget of responsible organization

Costs

approx. 12.000 EUR

Measure Description

- Removal of trees and bushes
- Burning down the mulch
- Reintroduction of grazing
- The chosen breed of sheep and goats is a particularly heat-resistant breed suitable for dry grasslands

Achieved Output

- Test and demonstration of an alternative approach for the management of very nutrient-poor dry grasslands

Evaluation

- ☒ Completely successful
- ☐ Falling short of expectations
- ☐ Satisfactory
- ☐ Failed

Lessons learned and Recommendations

- Species composition and thus nutritional quality of the vegetation changed significantly after the measures were taken.
- After burning and grazing, there is a need for aftercare such as the removal of (single) emerging woody plants or other herbaceous plants that are ignored by sheep and goats.
- Burning after the removal of woody plants is an easy and cheap method to clear nutrient-poor dry habitat areas after a long period of non-intervention.

Transferability to comparable Areas

- ☒ Easily transferable
- ☐ Needs substantial adaptation
- ☐ Not transferable

Available Information

- ☐ Report
- ☐ Digital GIS data
- ☐ Maps
- ☐ Publications

Sustainability

- ☐ Part of a comprehensive action plan to connect dry habitats
- ☒ Standalone measure
- ☐ Follow-up project planned

Photos – before:

Aerial view

Photos - afterwards:

Aerial view

Photos – afterwards

4. Other measures

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**Persina Nature Park**	**4.1**

Title

4.1 Study of grass plant species in Persina Nature Park (Bulgaria)

Measure Type

- ☐ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☒ Study

Country

Bulgaria

Location

Persina Nature Park

Area Size

22.000 ha

Initial Habitat Type

- ☐ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ Flood protection dyke
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

- Support the creation of an illustrative map of the Danube Dry Habitat Corridor
- This kind of study has never been done before at the territory of PNPD
- We do not have information about the existence of orchids in Persina Nature Park

Start	End
April-2018	October-2018

Implementation Status

- ☒ Terminated
- ☐ In progress
- ☐ Not started yet

In Charge of Implementation

- ☐ Staff of responsible organization
- ☐ Farmers/shepherds
- ☐ Volunteers
- ☒ External paid service
- ☐ Non-profit institution

Financing

- ☐ Self-sustaining business
- ☐ Volunteering program
- ☐ Regular budget of responsible organization
- ☐ National funding
- ☒ EU funding

Costs

Approx. 7.800 EUR

Measure Description

- Drawing of a cadastre and a Danube–wide map of dry habitats and orchids as flagship species based on the data collected during the implementation of project activities.
- The implementation of this action and the mapping of all dry habitats in Persina Nature Park was done in order to visualize the corridor and to identify the gaps.

Achieved Output

- New data for dry habitats and grass plant species
- Photos from the field work and plant species
- Location of the discovered orchids
- Report

Evaluation

☒ Completely successful
☐ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Results from this contract not only support the creation of an illustrative map of the Danube Dry Habitat Corridor. This kind of study has never been done before at the territory of Persina Nature Park.
- As a result, we did not only receive a report, but also discovered two new plant species (2 orchids), which means an enrichment of the biodiversity of our protected area.

Transferability to comparable Areas

☒ Easily transferable
☐ Needs substantial adaptation
☐ Not transferable

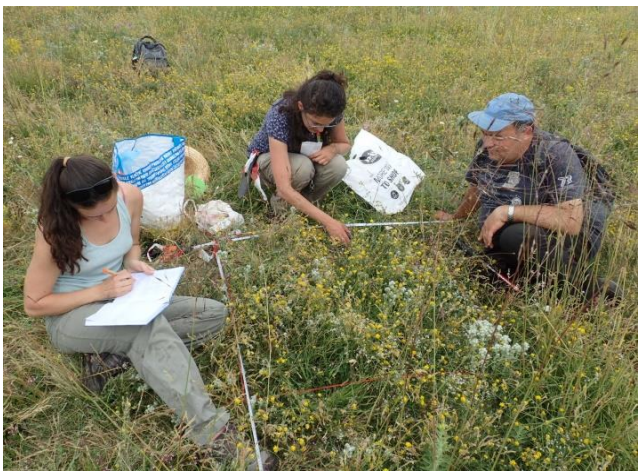
Available Information

☒ Report
☐ Maps
☐ Digital GIS data
☐ Publications

Sustainability

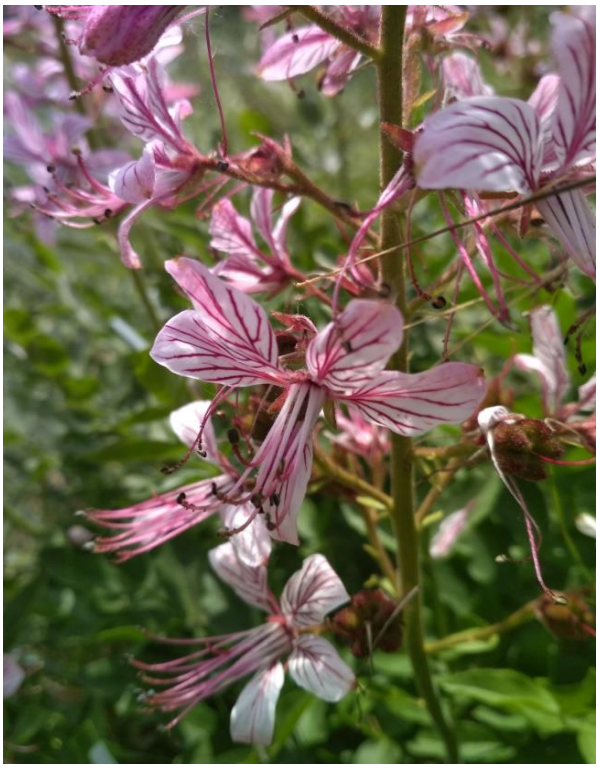
☒ Part of a comprehensive action plan to connect dry habitats
☐ Follow-up project planned
☐ Standalone measure

Photos – work in progress



Photos – work in progress

Photos – work in progress



Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**Persina Nature Park Directorate**	**4.2**

Title

4.2 Mapping of habitats on the territory of Persina Nature Park (Bulgaria)

Measure Type

- ☐ Mowing
- ☐ Grazing
- ☐ Burning
- ☐ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☒ Survey and mapping

Country

Bulgaria

Location

Persina Nature Park

Area Size

22.000 ha

Initial Habitat Type

- ☐ Dry grassland
- ☐ Mesoxerophytic grassland
- ☐ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☐ Inland sand dune
- ☐ Inland saline marsh
- ☐ Flood protection dyke
- ☒ Dry habitats
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

The obligatory for all partners was to provide existing data and to do small-scale surveys to fill gaps for the Danube-wide map for dry habitats.

After carefully considering existing data and the DANUBEparksCONNECTED project's goals, a new mapping

has been undertaken in Persina Nature Park in spring and summer of 2018 under the DANUBEparks-CONNECTED project.

Start	End
December-2017	October-2018

Implementation Status

- ☒ Terminated
- ☐ In progress
- ☐ Not started yet

In Charge of Implementation

- ☐ Staff of responsible organization
- ☐ Farmers/shepherds
- ☐ Volunteers
- ☒ External paid service
- ☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☐ Regular budget of responsible organization
☐ National funding
☒ EU funding

Costs

approx. 8.000 EUR

Measure Description

- The external expert mapped habitat types and their areas and compared them with previous data.

Achieved Output

- New data for dry habitats
- Maps
- GIS data interpretation
- Report

Evaluation

☒ Completely successful
☐ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- As a result, we received a report and GIS data for dry habitats. Now data about the boundaries of the dry habitats in Persina Nature Park, the actual territory they cover and their condition are available.

Transferability to comparable Areas

☒ Easily transferable
☐ Needs substantial adaptation
☐ Not transferable

Available Information

☒ Report
☒ Maps
☒ Digital GIS data
☐ Publications

Sustainability

☒ Part of a comprehensive action plan to connect dry habitats
☐ Follow-up project planned
☐ Standalone measure

Photos – work in progress

Photos – work in progress

Fact Sheet

Project Name	Responsible Organization	Number
DANUBEparksCONNECTED	**Danube Delta Biosphere Reserve Authority**	**4.3**

Title

4.3 Limitation of grazing and tourism in strictly protected area (Romania)

Measure Type

- ☐ Mowing
- ☐ Grazing
- ☐ Burning
- ☒ Conservation of specific species
- ☐ Mechanical removal of bushes
- ☐ Mechanical removal of invasive species
- ☐ Chemical removal of bushes
- ☐ Chemical removal of invasive species
- ☐ Public relations (information event, campaign…)
- ☒ Fence around 1/3 of the strictly protected area

Country

Romania

Location

Danube Delta Biosphere Reserve

Area Size

1.000 ha

Initial Habitat Type

- ☒ Dry grassland
- ☐ Mesoxerophytic grassland
- ☒ Dry meadow
- ☐ Shrub heath
- ☐ Rockfield
- ☐ Heissland
- ☒ Inland sand dune
- ☐ Inland saline marsh
- ☒ Flood protection dyke
- ☒ Dry mixed forest
- ☐ _____
- ☐ _____

Planned Objectives and Reasons

This activity, considered as a good practice, was implemented in the project "Letea Forest Conservation".

History: In 1938, the Letea forest of the Danube delta was declared as a natural reserve. In the 1950´s a total surface of 40.000 ha of the Danube delta was declared as a nature conservation area. In 1978, the Roşca – Buhaiova – Hrecisca area was declared as a biosphere reserve. Since 1990, the Danube delta and the other adjacent units were declared as a biosphere reserve in the UNESCO Programme “Man and Biosphere”.

The Letea Forest area consists of a unique mosaic of dunes, grasslands and forest habitats. The higher parts of the dunes are covered by xerophytic flora, whereas the lower parts and inter-dunes are favourable to develop dry forests and dry grasslands.

Among the plants characteristic to these dunes, the main role of fixing the sand is played by Mammoth wildrye (Elymus sabulosus). The Sea Grape (Ephedra distachya) lives in soils rich in humus, parts with lower humidity pose a habitat for Dwarf morning glory (Convolvulus persicus), Soják (Centaurea arenaria), Dwarf everlast (Helichrysum arenarium), Gypsophyla perfoliata, Stachys maritima and Plantago coronopus. On the sands of beach cordons we encountered Common sea-buckthorn (Hippophae rhamnoides), Rosemary willow (Salix rosmarinifolia) and Russian olive (Elaeagnus angustifolia).

The bank ridges Letea and Caraorman offer pedoclimatic conditions (reduced trophicity of soil, water deficit, etc.) which privileged the appearance of Danubian deltaic steppes (typical for Danube delta), characterised by the presence of the sub-mediterranean species Feather grass (Stipa lessingiana, Stipa ucrainica) and Scented grass (Chrysopogon gryllus). The high dunes with unfixed and unsolidified sand are populated amongst others by Mammoth wild rye (Elymus sabulosus), Soják (Centaurea arenaria), European knotweed (Polygonum arenarium), Sand wormwood (Artemisia arenaria).

Because of high impact of grazers and unguided tourism, all these very sensitive species and habitats (which are even included in Natura 2000 annexes) are threatened. Therefore, a sourrounding fence was constructed to limit domestic grazers such as sheeps, goats and cows over at least 100 ha of the most influenced part of the Letea forest and also to prevent tourists to pass unguidedly over these sensitive habitats and destroy sensitive flora species / habitats or tree seedlings.

We expect a better recovery of flora species and a better recovery of sensitive habitats from dunes, dry grasslands and a better regeneration of the oak trees. We understand that such measures require more time for the effecs to be assessed, but for 2019 we will still have some aspects to measure.

Start	**End**
June-2013	June-2014

Implementation Status

☒ Terminated
☒ In progress
☐ Not started yet

In Charge of Implementation

☒ Staff of responsible organization
☒ Farmers/shepherds
☐ Volunteers
☐ External paid service
☐ Non-profit institution

Financing

☐ Self-sustaining business
☐ Volunteering program
☒ Regular budget of responsible organization
☒ National funding
☐ EU funding

Costs

approx. 1.300.000 €

(financed through the Sectorial Operational Programme Environment)

Measure Description

- Establishing a cross-border cooperation
- Raising awareness and exchanging experience with key stakeholders
- The management measure was intended to be applied to grazing activities
- The management measure was intended to be applied to unguided tourism
- For exclusionary practice a regular barbed wire fencing was used
- The domestic animals were herded outside the fence-surrounded area
- Only natural grazers such as red deer, wild boars and wild horses are still inside of the area surrounded by fence
- Tourists can visit the area only through certain gates and trails only for exhibition purposes
- Special locked gates, special tourist trails and fire prevention checks were build–up in order to develop exhibition places for tourists
- Field workers from 3 responsible partners provided caretaking and equally shared responsibility

Achieved Output

- Test and demonstration of an alternative approach for the management of a biocorridor
- Establishing a cross-border cooperation of expert groups
- Pilot action documentation: Report on species / habitat conservation in Letea forest (work in progress)

Evaluation

☐ Completely successful
☒ Satisfactory
☐ Falling short of expectations
☐ Failed

Lessons learned and Recommendations

- Start of species/habitat restoration in the most influenced/degraded areas.
- Monitoring the effects of native grazing on the vegetation is of great importance for a establishing a best practice management.
- Taking care to preserve the fence, gates and trails for further protection is important.
- Caretaking requires local people involvement and constant contact with Danube Delta Biosphere Reserve Authority representative/ranger as well as with the forestry management representatives.
- Raising awareness on-site locally and through different mediums is a key element: The feedback to the pilot action was very positive.
- The general know-how of Letea Forest importance and the importance of long term conservation has increased and is becoming a tourist driving attraction to the area.
- Respect to nature and local traditions has increased from visitors part and also from local stakeholders / local inhabitants.

Transferability to comparable Areas

☒ Easily transferable
☐ Needs substantial adaptation
☐ Not transferable

Available Information

☐ Report
☒ Maps
☐ Digital GIS data
☐ Publications

Sustainability

☐ Part of a comprehensive action plan to connect dry habitats
☐ Follow-up project planned
☒ Standalone measure

Photos – before: chaotic tourism even on the dunes 	**Photos – afterwards:** recent tourism trails 
Photos – before: chaotic tourism trail 	**Photos – afterwards:** regeneration of flora species 

Photos – before:

chaotic grazing in the area

Photos – afterwards:

recent fence/gates

Photos – work in progress:

Assessment of the local stakeholders involvement/ collaboration

Photos – work in progress:

Assessment of the flora / habitat regeneration