After-Life Conservation Plan

"Demonstrative restoration of the Tyruliai bog as a part of the initiative of the re-wetting of Lithuanian peatlands"

"Tyruliai – LIFE"

LIFE12 NAT/LT/001186

Vilnius, 2018

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Introduction

Bogs have a distinctive feature – unique natural habitats, preserving a landscape hardly disturbed by humans, a rich realm of fauna and flora. They shelter plants preferring dampness that thrive there, also animals and birds adapting themselves with difficulty to the environment altered by humans, disturbed in wetlands, searching breeding places and looking for food. The Tyruliai bog is not an exception. Once being a bog complex with the largest fen in the country later it became the biggest peat mining field nationally. Thus, previously the biggest Lithuanian fen with its characteristic communities of plants and endangered animal species were eradicated, unrecognizably changing the world of wetlands, full of life. The impaired bog became a huge source of carbon emissions leading to a negative impact on climate change in the course of many years.

Having ceased the peat extraction works, due to a high ground water level, the collapsing drainage system erected by humans and beavers' activities, the natural bogging processes started. Seeking to speed up the natural restoration processes in the Tyruliai bog that may have taken up several centuries, the Coordinating beneficiary – the Lithuanian Ornithological Society, together with a partner Joint-stock company "Didysis Tyrulis" implemented the Project dedicated for restoration of the largest destroyed peatland in Lithuania. The Project ***"Demonstrative restoration of the Tyruliai bog as a part of the initiative of the re-wetting of Lithuanian peatlands" ("Tyruliai – Life", LIFE12 NAT/LT/001186)*** started in mid-2013 and was fully implemented in November 2017, with the Project period – over 4 years.

Since 2004, the Tyruliai bog was designated as Special Protected Area for conservation of three bird species – breeding Great Bittern* (*Botaurus stellaris*) and Spotted Crake (*Porzana porzana*) as well as migratory Common Crane (*Grus grus*).

This is why **the main aim of the Project** was improvement of the conservation status of the three above mentioned trigger bird species in the Tyruliai bog. Favourable conservation of these species was to be achieved through:

1. improvement of the habitats' condition and increasing their capacity in the bog area of 500 ha;

2. restoration of the hydrological regime in the area of 600 ha of this Natura 2000 site;

3. support to natural bog regeneration and succession of the sedge-grass communities;

4. monitoring of the Project results and their effectiveness;

5. reduction of the bird disturbance;

6. maintaining the fire prevention scheme; and

7. raising public awareness concerning restoration possibilities of the destroyed bog.

The specific objectives were as follows:

- to contribute to ensurance of long-term sustainability of the Tyruliai bog and its habitats;
- to support favourable conservation status of all protected plant and animal species, including birds of the Community Importance;
- to ensure reducing of the carbon emission, thus contributing to the climate change.

What has been done by the Project?

In the Project period, 24 initially planned activities were implemented, including 1 - preparatory, 7 - practical conservation , 2 - monitoring and 8 - public awareness raising.

The preparatory activities ***(devoted for successful implementation of the practical conservation activities):***

- the Project for restoration of a favourable hydrological regime in the Tyruliai peatland.

Practical conservation activities (for conservation of natural values and reduction of climate change):

- 53 dams were constructed using local materials, wood and peat, and specially designed rabbets;
- woody vegetation on dry peatland fields, 278 ha, was cut out, where a favourable hydrological regime was restored within the Project framework ensuring formation of open wetland habitats;
- 4 m wide open belts (32 ha in total) of the 200 ha reed stands in the shallow peat ponds were cut, making the extended reed field fragmented; thus, favourable conditions for breeding waterfowl species were provided;
- in cold seasons bushes and new reeds were cut off twice in boggy areas of 200 ha in total, establishing favourable conditions for formation of open wetland habitats and their further management;
- in vegetation seasons bushy areas and reeds were removed in wet peatland areas, 113 ha, and in addition the area was mowed two times, seeking to exterminate reeds occupying wetland habitats providing favourable conditions for formation of open wetland habitats and their further management;
- closure of 4 local roads was introduced aiming at reduction of bird disturbances in sensitive periods;
- local roads, 9,6 km, were repaired used for fire prevention and extinguishment, practical nature protection and monitoring, inspecting purposes.

Impact monitoring

- ex ante and ex post monitoring programme for vegetation and birds was prepared;
- in 2014-2017, monitoring of vegetation and birds in the Tyruliai bog was carried on a regular basis;

- the interactive Arc-Gis map including the monitoring data was produced;

- the Project monitoring report on the impact of the natural values and socio-economic conditions and ecosystems of the Tyruliai bog was prepared.

Information and publicity activities

- Project website *www.tyruliai-life.lt* presented all important Project information including Project achievements;

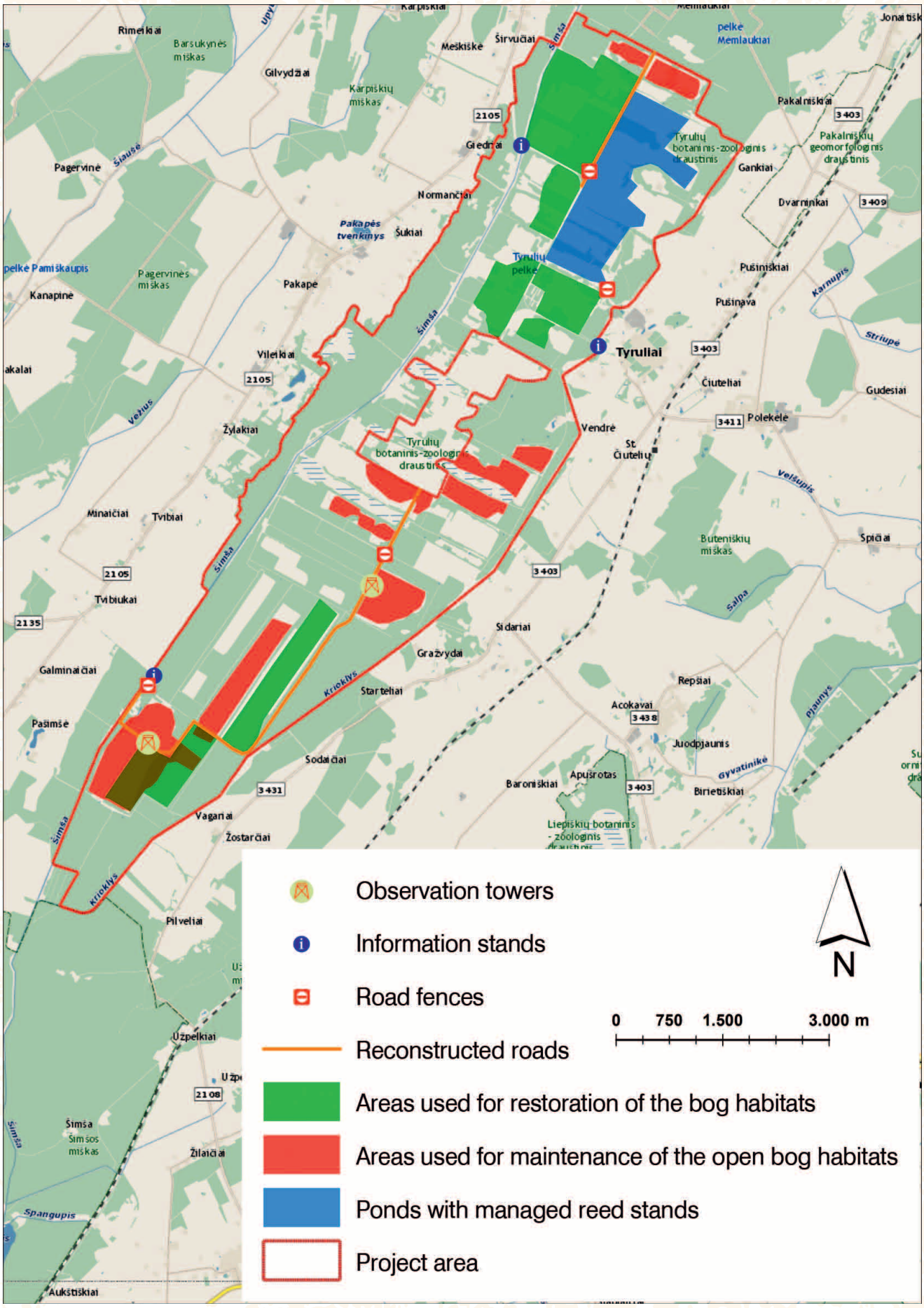
- publications about values of the Tyruliai bog and nature management works in progress were issued and widely distributed among relevant stakeholders: 2 leaflets, a brochure about the Tyruliai bog and its values, 5 informative and well-illustrated wall calendars;

- A film "The Rebirth of Tyruliai Bog" about natural values of the Tyruliai bog and its restoration actions was produced, widely broadcasted and distributed among the public;

- 5 notice boards and 2 observation towers for area visitors were erected in the Project area;

- A workshop for relevant stakeholders about experience in restoration of damaged bogs in Lithuania and neighbouring countries was organized and special publication of delivered presentations was issued;

Over 10 events were organised for the local community and general public.


Observation towers
Information stands
Road fences
Reconstructed roads
Areas used for restoration of the bog habitats
Areas used for maintenance of the open bog habitats
Ponds with managed reed stands
Project area
N
0 750 1.500 3.000 m
Tyruliai
Giedrai
Šukiai
Pakapė
Vilelkiai
Žylakiai
Vendrė
Čiuteliai
Gudesiai
Polekėlė
Pušiniškiai
Pušinava
Gankiai
Pakalniškiai
Dvarninkai
Tyrulių botaninis-zoologinis draustinis
Pakapės tvenkinys
Tyrulių pelkė
pelkė Memlaukiai
Pagervinė
Kanapinė
Pagervinės miškas
Normančiai
Šimša
Minaičiai
Tvibiai
Tvibiukai
Galminaičiai
Pašimšė
Startėliai
Graužydai
Sidariai
Buteniškių miškas
Spičiai
Repšiai
Acokavai
Juodpjaunis
Apušrotas
Baroniškiai
Birietiškiai
Sodaičiai
Vagarai
Žostarčiai
Pilveliai
Užpelkiai
Šimšos miškas
Žilaičiai
Aukštiškiai
Spangupis
Krioklys
Gyvatinikė
Pjaunys
Salpa
Velsupis
Karnupis
Striupė
Veršius
Šiaušė
Upytė
Barsukynės miškas
Gilvydžiai
Karpiškių miškas
Meškiškė
Širvučiai
Rimeikiai
2105
3403
3409
3411
3438
3431
2135
2108

What are the main Project achievements?

Having implemented the technical project on the restoration of the favourable hydrological regime in the Tyruliai peatland and by the help of constructed 53 dams, formation of wetland habitats was accelerated in a previously heavily drained area, 600 ha.

Having implemented three target activities when woody vegetation was removed and reeds were cut in the area, 600 ha, conditions were produced for restoration of open wetland habitats that are of particular importance for a number of threatened birds including key protected species of the Tyruliai bog SPA. In the Project implementation period, formation of wetland communities was observed in the major part of the area. Furthermore, having cut bushes and reeds in the former marshy areas conditions for their further adequate management were produced using capacities of land managers, the State Forestry Enterprises.

Facilitated by open belts of fragmented extending reed fields many shallow water bodies in the Tyruliai peatland became attractive to breeding waterfowl. Thus, conditions were provided for a bigger number of protected waterfowl, in particular, the trigger bird species of the Tyruliai bog SPA – Whooper Swan, Eurasian Bittern*, Little Crake, Spotted Crake as well as country-wide threatened Red-necked Grebe.

Due to performed works in relation to restoration of the hydrological regime and wetland habitats, in areas of the former Tyruliai peat mining area new wetland habitats started to form including those of Community importance: *7140 Transition mires and quaking bogs, 7230 Alkaline fens, 7120 Degraded raised bogs still capable of natural regeneration and 7150 Depressions on peat substrates of the Rhynchosporion*).

The populations of target bird species of this SPA increased significantly:

- Eurasian Bittern* (*Botaurus stellaris*) from 20 calling males in 2014 to 33 in 2017;
- Spotted Crake (*Porzana porzana*) from 12 calling males in 2014 to 13 in 2017;
- Little Crake (*Porzana parva*) 6 calling males were found in 2014, 14 in 2017;
- Whooper Swan (*Cygnus cygnus*) from 3 pairs in 2014 to 6-7 pairs in 2017;
- migrating Common Crane (*Grus grus*) from 1200 individual birds in 2013 to 1800 in 2016; and more than 4000 individuals in 2018!

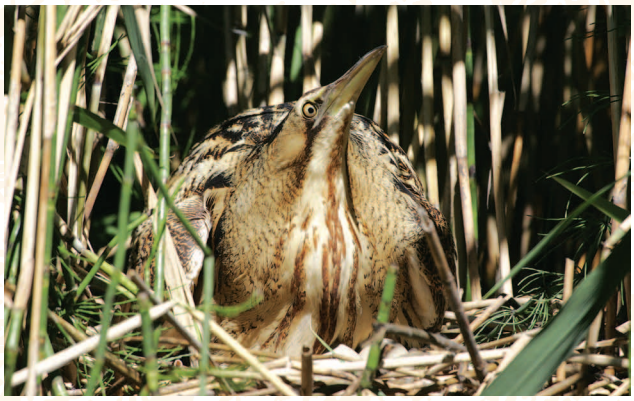
The roads repaired in the implementation of the Project provide good conditions for fire protection. Nature observers use them in their observation activities, and general public has a perfect opportunity to get a closer acquaintance with biodiversity of the Tyruliai bog, wetland formation processes and the performed nature management works. For environmental institutions the roads facilitate their inspection work ensuring adequate protection of the area. The closures on repaired roads enable to regulate visitor flows in seasons sensitive for wildlife.

Besides, in the Project period, for the first time in the country evaluation of ecosystem services, namely of the bog, was conducted showing that the value of natural areas is considerably higher than that of its resources – the price of peat or timber. Such valuations are customary and understandable among general public in many European countries, though it is an innovatory attitude in our country.

All activities of the Project were widely publicized aiming at providing information about the importance of such initiative to the public, the achieved results and future nature conservation perspectives. Most of the restored sites requires recurring management to maintain and further improve habitat quality. In order to ensure favourable species conservation status, some areas require annual mowing, others – less frequent. And this should be an important follow up activity.

This After-LIFE conservation plan reviews current situation of the Tyruliai bog and its habitats, which are important for the trigger bird species of this SPA, as well as for other threatened birds; also foresees further conservation priorities and estimates a budget required for it.

More information about the Project achievements could be found in the Project Layman's report available at a separate section of the Project website: *www.tyruliai-life.lt*



Assessment of the current situation after Project implementation

Assessment of the current situation with following conservation of the Tyruliai bog SPA and its trigger bird species has been made based on the S.W.O.T analysis methodology.

STRENGTHS

1) **The most important open habitats and hydrological regime in the large area of the Tyruliai bog SPA have been restored to the condition suitable for the trigger bird species of the Project area and can be further maintained by regular recurring management practice**.

The performed habitat restoration currently allows to access the Project area and perform regular maintenance activities concerning open bog habitats (even in wet conditions in some cases) in the sites – big amounts of reed have been removed, as well as bushes and trees.

2) **Special agri-environmental measures, which are focused on proper maintenance of the open wetland habitats are included into the National Rural Development Programme.**

The measure provides compensations for boggy habitat maintenance according to conservation needs of the trigger bird species of the SPA, as well as providing opportunities to get a one-time investment for habitat restoration (as part of a separate measure of non-productive investment).

3) **The national legal environment allows the land manager of the Tyruliai bog SPA, i.e. the State Forest Enterprise, to continue proper maintenance of the habitats, which were restored during the Project implementation.**

The land manager of the Tyruliai bog SPA, i.e. the State Forest Enterprise, according to the national legislation and individual statute of the enterprise, has an opportunity to continue maintenance of the restored habitats after the Project end.

4) **Baseline data on hydrological conditions and conditions for regeneration and structure of the bog habitats, which are important for trigger bird species of the Tyruliai bog SPA was collected during the Project implementation period.**

The gathered baseline data allow to analyze the habitat and hydrological conditions change dynamics in the Tyruliai bog and further natural regeneration processes.

5) **The land manager of the Tyruliai bog SPA has necessary capacity to continue proper management of the Project area**.

After completion of the Project, the main land manager, namely the State Forest Enterprise, is able to perform recurring management of the area. The missing or poor quality road infrastructure was repaired, the manager is equipped with efficient machinery capable to perform mowing and further restoration of the habitats, which are in bad condition in the Project area.

6) **Favourable awareness among the most important stakeholders towards importance of the damaged bog has been reached by the Project**.

The Project communication strategy was to get all relevant stakeholders informed of the restoration importance of the damaged bogs. By doing so and involving, high awareness and interest were achieved concerning restoration of the abandoned formerly explored peat fields in terms of conservation of the protected species, their habitats and reduction of the carbon emission, thus having significant positive impact on the climate change.

7) **The responsible authorities support efforts to amend the list of the trigger bird species of the Tyruliai bog SPA, as well as to designate the Tyruliai bog a Site of Community Importance (pSCI).**

Such opportunities were discussed during the Project Steering Committee meeting with participation of the representatives of relevant authorities.

8) **Private business companies exist, which have interests to use the Tyruliai bog for paludiculture, which supports favourable conservation status of the trigger bird species.**

Two private companies engaged in reed harvesting were invited to visit the Tyruliai bog and found good prospects for the future in terms of reed harvesting in the Project area.

9) **The Administration of the Tytuvėnai Regional Park is obliged legally to conduct monitoring of the trigger bird species of the Tyruliai bog SPA on regular basis.**

The Administration of the Tytuvėnai Regional Park is obliged by the State Service for Protected Areas under the MoE to implement the State Monitoring Programme, which includes monitoring of the trigger bird species of the Tyruliai bog SPA.

WEAKNESSES

1) **The hydrological regime has been restored only in a part of the drained Tyruliai bog area**.

Because of implementation of a wide scale drainage system in the bog in previous decades (due to peat extraction) the hydrological situation in rather large part of the Tyruliai bog is still in unfavourable conditions.

2) **Still existing reed vegetation in the both, restored and non-managed open Project areas**.

Though reed beds were exterminated to a rather large extend during the intensive habitat restoration process, however, reed vegetation still occur in the sites and can come back to the restored breeding areas of the trigger bird species of this SPA. Elimination of large dense reed stands from the Project areas performing mowing, requires a more extended period of time than the Project duration. Therefore, it is important in such location to continue regular mowing.

3) **Fire risk in the dry areas of the Tyruliai bog still exists**.

The hydrological regime was not restored in the whole area of the Tyruliai bog because this requires a more extended period of time than the Project duration. In addition, a part of the Tyruliai bog (an area of app. 200 ha) is still used for peat mining with dry peat fields. Such areas area especially dangerous in terms of potential fires.

4) **No legal obligations exist for the land manager to continue further. maintenance of the restored open habitats in the Project area on a short-term pattern.**

Although the main land manager – the State Forest Enterprise – is able to perform recurring management of the restored bog area, this is solely an opportunity, but not a clear obligation.

5) **The site management plan has not been elaborated yet.**

The site management plan was foreseen to be elaborated during the last 10-year period, however, the process has not started yet. Because of the plans of responsible authorities, such action was not included into the Project application. Thus, the land managers do not have a clear planning document, which defines consistent and regular essential management of this Natura 2000 site.

6) **The installed woody infrastructure for visitors and restored local roads have limited expire time.**

The nature friendly infrastructure for visitors, which was produced of wood materials usually serve a limited time period. The local roads also require recurring maintenance because of boggy soil conditions as well as beavers' activities.

7) **Part of the Tyruliai bog is still used for peat extraction.**

App. 200 ha of the Tyruliai bog are still used for peat extraction, which had been permitted for 30 years period ten years ago. The problem arises that no legal preconditions are found to reject this permission without large compensation payments for the peat extraction company.

OPPORTUNITIES

1) **Available funding (as compensation payments) for maintenance of the open bog habitats in the Lithuanian Rural Development Program**.

As a special agri-environmental measure for conservation of open bog habitats is included into the Lithuanian Rural Development Plan for 2014-2020. It provides an essential opportunity to maintain open bog habitats and even restore new areas within the given period in the Project area.

2) **Reed harvesting is profitable business for private companies.**

The private companies are working on reed harvesting for production of roofs enjoying good markets in Western Europe. This creates the preconditions that those companies will be interested in reed harvesting especially in the restored areas of the Tyruliai bog, where woody vegetation has been exterminated.

3) **Maintenance of the restored habitats in the Natura 2000 sites is among the duties of the State land manager.**

The main land manager – the State Forest Enterprise - has a duty to perform recurring management of the restored habitats in the Natura 2000 sites. However, the week point is that this obligation is not defined in terms of time tables, and restored habitats can be lost because of natural succession processes.

4) **Developing machinery and technology to access the Project area in wet conditions**.

Currently, existing machinery is available to perform relevant habitat management in wetlands (even flooded areas) without harming the habitat structure. A number of different prototypes are developed as well as new machine modifications enter the market. Development trends lead towards higher efficiency of machinery as well as creating less soil pressure. This will create more possibilities of machinery combination and eventually reduce costs for managing the areas.

5) **Lithuania is currently facing reforming of the network of the protected areas system as well as the forestry sector, which supports continuously proper management of the Project area.**

Depending on the outcomes of the restructurization process, in particular, in the state forestry system, it can lead to increasing competencies and capacities as well as additional funding opportunities to finance management of important natural areas for conservation.

THREATS

1) **The drainage system is still in operation in part of the Tyruliai bog because of continued peat extraction.**

App. 200 ha of the Tyruliai bog are still used for peat mining, which was permitted for 30 years period ten years ago. Because of technological particularities, areas, which are used for peat extraction, should be heavily drained. The drainage, although being local scale, might have an impact also on the neighbouring areas of the Tyruliai bog, which are designated as Natura 2000 site.

2) **Low capacity of the Administration of the Tytuvėnai Regional Park to organize proper habitat management and species monitoring as well as maintenance of the installed infrastructure for visitors.**

Currently, the administration of the Tytuvėnai Regional Park has too little staff, is without relevant experience to perform activities necessary for restoration and further maintenance of the damaged Tyruliai bog. There is also lack of specific skills and competencies there.

3) **Lithuania is currently facing restructurisation of the network of protected areas' administrations as well as the forestry sector.**

Being it an opportunity, at the same time it is also a potential threat. Depending on the outcomes of the restructurization process (e.g. in case of reduced staff in the region), it can lead to even higher decrease of capacities to perform necessary conservation actions, as well as relevant monitoring and supervision work.

4) **Fire can destroy restored habitats.**

Potential fires are always important threats in dry peatland areas including potential cases of the serious destroying of the already restored bog areas of the Project site.

5) **Restored local roads will be damaged because of beavers' activities.**

Damage of the dams including road dams is common both in the Tyruliai bog and other wetland areas with numerous beaver populations.

After-LIFE objectives and methodology

- To ensure maintenance of already restored habitat respecting conservation needs of the protected bird species and to further improve its habitats;
- To stimulate restoration of more habitat sites with proper hydrological regime in dry peatbog areas with long-term goals to create adequate areas and distribution of suitable habitats important for trigger bird species of the Tyruliai bog SPA;
- To stimulate regular harvesting of reed stands in order to reach in practice economically viable takeoff of the biomass from the Tyruliai bog area respecting regeneration of the open bog habitats;
- To ensure relevant fire protection measures in the Project area;
- To elaborate the Site Management Plan for the Tyruliai bog SPA on an urgent basis;
- To designate the Tyruliai bog as a Site of Community Importance for conservation of the species and habitats of EU Importance;
- To implement continuous and detail monitoring of the trigger bird species as well as their important habitats and hydrological conditions in the Tyruliai bog SPA on a regular basis;
- To keep up attractiveness of the Project area for nature visitors.

Conservation priorities

To ensure the durability of the Project results and to achieve or maintain the favourable conservation status for trigger bird species of the Tyruliai bog SPA and their breeding habitats, conservation management actions should be implemented during the period of upcoming five years, as follows:

1. To elaborate the Site Management Plan of the Tyruliai bog Natura 2000 site. Large scale habitat restoration actions as well as restoration of the hydrological regime were implemented in the Tyruliai bog and new data on the distribution pattern of the protected bird species in this SPA was collected during the Project implementation period. Based on the new knowledge and habitat situation in the Tyruliai bog, a Site Management Plan (MP) must be elaborated in order to highlight further steps for protection of this Natura 2000 site and its protected species. The MP should also justify the experience gathered by the Project.

2. **To maintain and further improve the restored important bird habitats by performing regular mowing of the open bog areas**. This can be achieved through participation in the national agri-environmental scheme and applying for payments to implement special measures on wetlands' restoration and further maintenance. Not all areas require annual management including mowing. However, maintenance of the restored open bog habitats as well as restoration of new areas in the Tyruliai bog must be organized on a regular basis applying three year repetition within a 5-year period. This can be achieved applying a pattern of different plots in different years.

3. **To restore more areas with potential habitats for trigger bird species of the Tyruliai bog SPA**. This can be achieved also applying for payments to implement special measure for wetlands' restoration from the National Rural Development Programme (RDP) also including measure 4 of the RDP – non-productive investments, activity focused on restoration of formerly open bog areas overgrown with reed and bushes. The Project area also can be restored initiating other conservation projects.

4. **To maintain the restored local road and installed infrastructure for visitors in the Project area.** This is related with further maintenance of the restored local road in order to have an opportunity to use it for fire prevention, nature conservation inspection as well as habitat maintenance and monitoring for a long term period. Maintenance of the infrastructure for visitors (mainly observation towers) require regular repairs because of limited use of wood structures.

5. **To create preconditions for harvesting re-grown reed fields in the managed area for paludiculture.** This conservation priority is most important to be applied in the restored open areas of the Tyruliai bog, which provide favourable conditions for regeneration of the productive reed stands and which are important breeding habitats for the Great Bittern*. It could be achieved with help of interested private producers of reed products as well as the local renewable energy sector, which uses biomass for energy production.

6. **To update the technical hydrological project of the Tyruliai bog and implement its solutions**. It is extremely important to ensure further restoration of the damaged hydrological regime of the bog during the peat extraction period. Within the Project framework a wide scale scheme on the restoration of the bog hydrologigal regime was implemented. However, having in mind different excavations of the peat layers, beavers' activity and other factors (including damage of the already constructed dams), the technical project, which was prepared during the Project implementation period, should be updated with the information on the latest situation. Its solutions of the updated technical project should be implemented in order to ensure favourable hydrological conditions in the bog. This is extremely important both for the maintenance of the habitats of the protected bird species as well as reduction of the carbon emission.

7. **To amend the list of trigger bird species for theTyruliai bog SPA by including breeding Whooper Swan, Little Crake and Grey-headed Woodpecker as well as to designate of the Tyruliai bog as Site of Community Importance (pSCI) for conservation of Otter, Pond Loaches and identified natural habitats of Community importance: 7140 Transition mires and quaking bogs, 7230 Alkaline fens, 7120 Degraded raised bogs still capable of natural regeneration and 7150 Depressions on peat substrates of the *Rhynchosporion*.** This will support effective conservation of the natural values of the EU importance. The Ministry of Environment of the Republic of Lithuania, based on the Project proposals, can amend the list of trigger bird species of the Tyruliai bog SPA by including as follows: Whooper Swan, Little Crake and Grey-headed Woodpecker. The Tyruliai bog SPA is among the most important sites for this species in Lithuania. Besides, the breeding populations of the above birds exceed the national threshold for designation of a Special Protected Area (SPA). Also, it is expected the Tyruliai bog shall be designated as a Site of Community Importance (SCI) due to a numerous population of Otter, Pond Loaches and identified natural habitats of Community importance: 7140 Transition mires and quaking bogs, 7230 Alkaline fens, 7120 Degraded raised bogs still capable of natural regeneration and 7150 Depressions on peat substrates of the *Rhynchosporion.* The main attention should be paid to the Pond Loaches – the species with very few finding places in the country.

8. **To continue regular monitoring of the trigger birds of the Tyruliai bog SPA as well as other protected birdsand habitats of EU Importance**.

This is extremely important for evaluation of the conservation status of the bird species, which are protected in the Tyruliai bog SPA in order to monitor effectiveness of the management actions, which are continuously implemented in the Project area.

Financial outlook of conservation priorities

Summary of After-LIFE conservation actions, their costs, potential and/or responsible institutions, expected due dates and possible funding sources are presented in the Table below.

Activity	Estimated budget, Eur	Involved institutions	Due date	Possible funding sources
Elaboration of the Site Management Plan of the Tyruliai bog Natura 2000 site	12 000	SSPA, Tytuvenai RP, LOD	2019	National funding (MoE), EU Structural Funds, LOD own capacity
Maintainance & further improvement of the restored open bog habitats and flooded reed stands (400 ha)	160 000 per year	SFE	2019	National Rural Development Programme (MoAgr)
Maintenance of the restored local road in the Project area	5 000 per year	SFE	2019	National funding (MoE), EU Structural Funds
Maintenance of the installed infrastructure for visitors	20 000	SSPA, Tytuvenai RP, LOD	2021	National funding (MoE), EU Structural Funds, LOD own capacity
Further restoration of the formerly open bog habitats (400 ha)	160 000	SFE, Tytuvenai RP	2020	National funding (MoE), EU Structural Funds
Harvesting of the re-growing reed stands for paludiculture (app 100 ha)	40 000 per year	Private business companies	2019	National Rural Development Programme (MoAgr), Private funds
Update of the technical hydrological project of the Tyruliai bog	15 000	SFE, Tytuvenai RP	2021	National funding (MoE), EU Structural Funds
Implementation of the solutions of the updated technical hydrological project	App. 50 000 (depending on the solutions of the technical project)	SFE, Tytuvenai RP	2022	National funding (MoE), EU Structural Funds

Amendment to the list of trigger bird species for the Tyruliai bog SPA by including proposed breeding Whooper Swan, Little Crake and Grey-headed Woodpecker	0	SSPA, LOD	2019	National funding (MoE)
Designation of the Tyruliai bog as Site of Community Importance (SCI) due to a numerous population of Otter, Pond Loaches and identified natural habitats of Community importance: 7140 Transition mires and quaking bogs, 7230 Alkaline fens, 7120 Degraded raised bogs still capable of natural regeneration and 7150 Depressions on peat substrates of the *Rhynchosporion*	5 000	SSPA	2019	National funds (MoE)
Update of the Tyruliai bog SPA monitoring programme (prepared by the Project) with new trigger bird species	2 000	SSPA, LOD	2019	National funds (MoE), LOD own capacity
Continuation of the regular monitoring of the trigger birds of the Tyruliai bog SPA as well as other protected birds	10 000	Tytuvenai RP, LOD	2019	National funds (MoE), LOD own capacity

Tytuvenai RP – Administration of the Tytuvenai Regional Park
LOD – Lithuanian Ornithological Society
MoE – Ministry of Environment of the Republic of Lithuania
MoAgr – Ministry of Agriculture of the Republic of Lithuania
SFE – State Forest Enterprise
SSPA – State Service for Protected Areas under the MoE

Ongoing/planned follow up initiatives to address conservation priorities in the specific Project areas

The implemented Project reached the main goal – increase in numbers of the breeding populations of the trigger bird species of the Tyruliai bog SPA – the Great Bittern* and Spotted Crake as well as staying migratory Common Cranes there. This was achieved restoring the most important habitats for these species in ca. 800 ha of the Project area. This sets out crucial precondition for further perspectives of ensuring favourable conservation status for the trigger species in the Tyruliai bog SPA in a long run.

However, further maintenance of the target species habitats of the Project area is necessary, it is important to maintain good quality of the habitats and improve them by means of continuous suppression of reed and woody vegetation. The Project succeeded in achieving that all target areas of the Tyruliai bog will remain managed after the Project implementation. As horizontal stimulus for all sites in Lithuania, it facilitates an opportunity to apply agri-environmental measures focussed on proper maintenance of open wetlands.

The future plans are related to the maintenance of restored open wetland habitats. This may be ensured only by regular (at least twice a year) maintenance of the restored Project open wetland areas by grass and reed mowing. Currently, upon authorisation by the Government, the works must be carried out by the present manager of the territory (the major part of the Tyruliai bog covers state forest land) – the State Forestry Enterprise. It is expected that this institution, subordinate to the Ministry of Environment of the Republic of Lithuania, will adequately perform its obligation. It should engage in further maintenance of the repaired road being very important for fire prevention, as blazes always cause danger for dry peat fields.

It is expected the Ministry of Environment of the Republic of Lithuania, based on the Project proposals, will amend the list of trigger bird species of the Tyruliai bog SPA by including as follows: Whooper Swan, Little Crake and Grey-headed Woodpecker. The breeding populations of the above birds exceed the national threshold for designation of a Special Protected Area (SPA).

Also, it is expected the Tyruliai bog shall be designated as a Site of Community Importance (SCI) due to a numerous population of Otter, Pond Loaches and identified natural habitats of Community importance: 7140 Transition mires and quaking bogs, 7230 Alkaline fens, 7120 Degraded raised bogs still capable of natural regeneration and 7150 Depressions on peat substrates of the *Rhynchosporion.*