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LIFE Project Number

**LIFE13NAT/LV/001078**

**FINAL Report** (*abbreviated*)

**Covering the project activities from 01/08/2016 to 30/09/2021**

Reporting Date

**<30/12/2021>**

LIFE+ PROJECT NAME or Acronym

**LIFE AQPOM**

Project Data

<b>Project location</b>	Latvia
<b>Project start date:</b>	01/08/2016
<b>Project end date:</b>	30/09/2021 <b>Extension date:</b>
<b>Total Project duration (in months)</b>	62 months ( including <b>Extension of 00 months</b> )
<b>Total budget</b>	€ 2 229 719
<b>Total eligible budget</b>	€ 2 088 719
<b>EU contribution:</b>	€ 1 566 496
<b>(%) of total costs</b>	70%
<b>(%) of eligible costs</b>	75%

Beneficiary Data

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## List of abbreviations

BUF – (Microreserve) bufferzone  
CB – Coordinating beneficiary  
EM – Elm Media, associated beneficiary  
LFN – Latvian Fund for Nature, coordinating beneficiary  
LSE – Lesser Spotted Eagle  
LEPFA – Latvian Environmental Protection Fund Administration  
LOS – Latvian Ornithological Society, associated beneficiary  
(AS) LVM – State forest enterprise “*Latvijas valsts meži*”  
MA – Ministry of Agriculture  
MEPRD – Ministry of Environmental Protection and Regional Development  
MR – Microreserve  
NCA – Nature Conservation Agency  
NP – Nature park (“*Kuja*”)  
PSC – Project Steering Committee  
RMF – Ruckas mākslas fonds (Rucka Art Foundation), associated beneficiary, changed name from “*Elm media*”  
SES – State Environmental service  
SFS – State Forest Service  
TA – SIA “*Tīravoti*”, associated beneficiary  
c.a. – around, from Latin *Circa*  
etc. – and the other things, from Latin *et cetera*

## 2. Executive Summary

The project objective was to improve the conservation status of Lesser spotted eagle in Latvia - the key breeding area of species in Europe. Improvements had to be achieved by conservation measures focusing on two threats – loss of breeding habitat and availability and quality of feeding habitats. Project has focused both at Site-related conservation actions inside Natura 2000 site and Species related actions that are not site-related. The planned objectives and actions corresponded to the goals for the species on EU level, as listed in both, national and European Species action plans.

The more specific objectives were:

- 1) To arrange the further coordinated planning of protection by updating of species action plan;
- 2) To interlink the existing Natura 2000 sites and to improve the connectivity of protected nest sites by the use of network of special protected areas, designated especially for the protection of species breeding grounds (so called microreserves). To increase the proportion of national population that is adequately protected by 12,5% (500 pairs), reaching 22,5%;
- 3) To increase the expected longevity of LSE nests, included in this network;
- 4) To improve the feeding habitats in Nature park *Kuja* (restoration of 30 ha of habitats of EU importance, making the area suitable for 5 pairs of LSE) and nature reserve *Lubāna mitrājs* (Lubana Wetland Complex) (establishment of beef cattle grazing operation on 260 ha of grasslands, including restoration of 45 ha of Fennoscandian wooded meadows (6530\*) and Northern boreal alluvial meadows (6450), making the area suitable for 5 pairs of LSE);
- 5) To educate the key stakeholders in the protection of species breeding and foraging grounds;
- 6) To raise the awareness of species conservation demands among general public.

Latvian Fund for Nature acted as Coordinating beneficiary while Latvian Ornithological Society, SIA “*Tīravoti*” and Elm Media (later renamed as Rucka Art

Foundation) acted as associated partners. Project lasted for five years (01/08/2016 - 30/09/2021) and was not extended.

During the project lifetime two amendments to the Grant Agreement were introduced – first contained significant changes in list of beneficiaries as well as Actions and was introduced before the actual start of the Project (modified Project document has been approved by the EC on 02/06/2016 and implementation of the Project was started on 01/08/2016). Another amendment was introduced at late stage of Projects implementation and contained small technical changes as well as shifts between the budget categories (Amendment No 2 to Grant Agreement has been signed by EC and LFN on 26/05/2021).

Generally, the project management system was working as planned. The same applies to the cooperation among the partners - there were no deviations from the arrangements contained in the partnership agreements. The only exception is the change in responsibilities among LFN and LOS – both Partners have signed additional agreement that shifts responsibility for implementation of Actions A.1 and A.3 from LOS to LFN. Description and evaluation of the management system as well as its organigramme is provided.

In Technical part (technical progress, per task, chapter 5.1) activities undertaken and outputs achieved are listed and planned outputs compared with the time schedule. If relevant, it is clearly indicated how actions were modified. Major problems are indicated.

In preparatory Actions all of the planned results were achieved: Lesser spotted eagle Species action plan has been developed and approved by the responsible Ministry - this document is already used in species management and protection works. Existing species protection arrangements were evaluated and recommendations for future work were provided by the scientific publication, prepared by the leading experts on LSE in Baltic countries. Searching of LSE nests has resulted in ca 10% higher amount of found nests than planned and work has been completed one year earlier. In addition to LSE nests, another 1869 nests of unknown ownership (or known ownership other than LSE) were found. Preparatory Actions included as well designing of technical drawings (preparation of technical design) for habitat restoration in Nature Reserve *Lubāna mitrājs* area *Grīvu sala*.

Concrete conservation actions covered two major groups of activities – protection of LSE breeding grounds and restoring and management of LSE feeding grounds. LSE nests were protected by designation of small protected areas – microreserves. All together 526 microreserve proposals were submitted (out of 500 planned) to responsible authorities, with total microreserve area of 3744,82 ha and bufferzone area of 23 814,2 ha. From those, at time of reporting, 468 are approved with total microreserve area of 3277,64 ha and bufferzone area of 20 508,92 ha. Additionally to that, 22 proposals were submitted by State forest company LVM with LFN being the second submitter with all of them being approved later (thus total number of approved MR's reaches 490 with total microreserve area of 3420,16 ha and bufferzone area 21 564,88 ha). 48 proposals are rejected and LFN initiated three court cases against State Forest Service. In protected breeding sites, 50 nests were supported by artificial platforms.

Habitat restoration was carried out in two areas – *NP Kuja* (30 ha of various habitats of EU importance restored/ 30 ha planned) and *Grīvu sala* where grazing system established in 260 ha (as planned), habitats restored in 57 ha (45 ha planned), hydrological conditions in floodplain restored by closing 30 km of drainage ditches and creating of 10 artificial wetlands (both – as planned).

Chapter 5.1.3 on monitoring actions is devoted to the evaluation of impact of project actions. Habitat restoration results were assessed by the vegetation monitoring and monitoring of foraging birds in both *NP Kuja* and *Grīvu sala*. In *NP Kuja* restoration activities (milling of stumps) were completed shortly before the end of the Project, therefore full potential of vegetation recovery will be seen in the coming years. Vegetation monitoring results in *Grīvu*

*sala* showed significant impact of long-lasting floods in year 2017 and drought in summer in 2018. Gradual normalization and return to typical floodplain plant community was observed in last two monitoring years. These changes in vegetation were the most probable explanation on why numbers of foraging eagles in *Grīvu sala* were lower than expected (numbers started to recover in last two Project years). In *NP Kuja* numbers of foraging birds increased even despite the fact that restoration activities were not fully completed during the monitoring periods. Another monitoring activity covered the breeding results in LSE nests, found and protected by the Project. Most important finding was related to the human caused disturbance – ca. 10% of nests, found each year, were in some way affected by forestry activities.

Within the monitoring chapter, the assessment of the socio-economic impact of the restoration actions was carried out as well. The major impacts of the project have been on the private forest owners whose properties were restricted for the species protection, and on the grasslands, restored and managed in LSE feeding grounds.

Chapter 5.2.2 on dissemination actions is devoted to the work with general public as well as two more specific groups – foresters and farmers. Public awareness and dissemination work was using various tools – seminars for foresters and farmers, documentaries about protection and ecology of LSE (seven films produced), webpage and internet broadcastings from LSE nests (more than one million views on YouTube), setting up of information boards near Project sites, producing of poster and booklet, as well as general work with media (TV, radio, papers, social media, internet news outlets).

The project financial report as well as evaluation of project implementation and analysis of long-term benefits is described within separates chapters of the main report. List of technical and administrative as well as financial Annexes is provided at the end of the report.

### 3. Introduction

Latvia is a key breeding area for Lesser Spotted Eagle (LSE) *Aquila/Clanga pomarina* in Europe with 45% of EU population breeding there. This eagle species prefer extensively managed agricultural areas where both forest patches and open meadow areas are well represented. Studies carried out in different sample plots in country shows that breeding density varies between 1.8 pairs/100 km<sup>2</sup> to 33 pairs/100 km<sup>2</sup> (Natura 2000 site *NP Kuja*; monitoring data from sample plot *Žūklis* since 2002), which is also the highest recorded density in the global distribution range of the species. Since the beginning of 20<sup>th</sup> century, national population has declined by ca 15% with possible causes behind that being management practices of both forest and agricultural landscapes.

*The project objective* was to improve the conservation status of LSE in Latvia. Improvement had to be achieved by conservation measures that were focused on two threats – loss of breeding habitat and availability and quality of feeding habitats. Project has focused both at Site-related conservation actions inside Natura 2000 site and Species related actions that are not site-related. The planned objectives and actions corresponded to the goals for the species on EU level, as listed in both, national and European Species action plans.

*The more specific objectives were:* **1)** To arrange the further coordinated planning of protection by updating of species action plan; **2)** To interlink the existing Natura 2000 sites and to improve the connectivity of protected nest sites by the use of network of special protected areas, designated especially for the protection of species breeding grounds (so called microreserves). To increase the proportion of national population that is adequately protected by 12,5% (500 pairs), reaching 22,5%; **3)** To increase the expected longevity of LSE nests, included in this network; **4)** To improve the feeding habitats in *NP Kuja* and nature reserve *Lubāna mitrājs* (*Lubāna* Wetland Complex); **5)** To educate the key stakeholders in the protection of species breeding and foraging grounds and **6)** To raise the awareness of species conservation demands among general public.

*Project was targeting following problems and threats:* **1)** Loss of nest sites due to the high intensity of forestry activities and disturbances caused by forestry activities during the breeding season; **2)** Risk of failed breeding due to the unstable nests; **3)** Lack of awareness among the key stakeholders and general public and **4)** Loss of foraging sites. It was expected that Project will have an influence on local society, especially private forest land owners.

*Expected longer term results of this project were:* **1)** Species action plan is updated and officially approved, implementation of this planning document started; **2)** By creation of network of protected nests sites (interlinking of existing Natura 2000 areas), protection provided to at least 12.5% (500 pairs) of national population and connectivity of protected breeding grounds improved. Protection measures designated individually for each particular nest (combination of zones of different restrictions created), **3)** Longevity of nests ensured by the creation of 50 artificial supports/platforms, **4)** In *NP Kuja* 4 ha of Fennoscandian wooded meadows (6530\*), 23 ha of Northern Boreal alluvial meadows (6450, with small inclusions of *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils, 6410), and 3 ha of Fennoscandian lowland species-rich dry to mesic grasslands (6270\*) restored and proper management ensured in future, **5)** In *Grīvu sala* (nature reserve “*Lubāna mitrājs*”) grazing operation with beef cattle established on 260 ha of grasslands, including 45 ha of Northern boreal alluvial meadows (6450) and Fennoscandian wooded meadows (6530\*) restored within the project, 24 km of drainage ditches cleared of vegetation and closed. The restored area in both *NP Kuja* and *Grīvu sala* will become suitable as a feeding ground for up to 5 pairs of LSE in species core distribution area, **6)** The public awareness on species conservation issues raised.

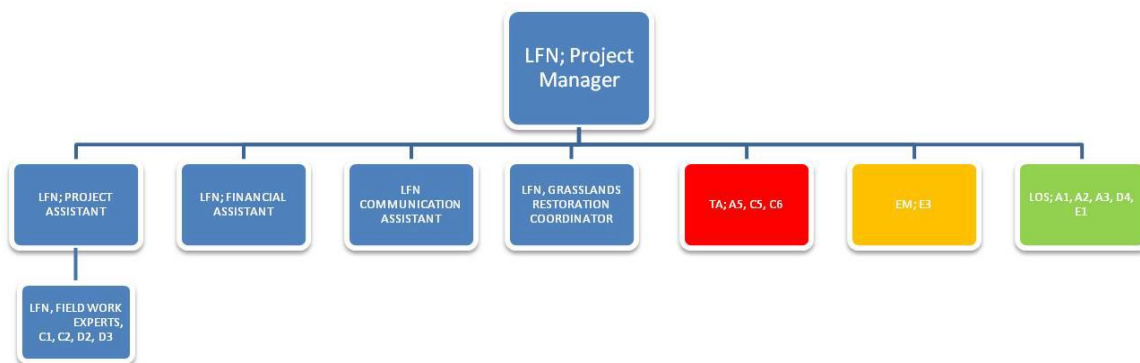
## 4. Administrative part

### 4.1. Description of the management system

Project was implemented by four Partners: 1) Latvian Fund for Nature as a coordinating beneficiary, 2) Latvian Ornithological Society (LOS), 3) Elm Media (EM, name changed to “Ruckas mākslas fonds/ Rucka art foundation” (RMF)) and 4) SIA “Tīravoti” (TA). The management structure of Project has not been changed during the project implementation years. It was organized by the LFN and included Project manager, Project assistant, communication assistant, financial assistant, grasslands restoration coordinator/ monitoring expert, senior experts as well as the responsible employees of the associated beneficiaries. Project’s Partners hold regular contacts via e-mail, phone and meetings to discuss the progress of work (since early 2020 (start of the COVID-19) communication was done increasingly by the online tools). According to the partnership agreements, associated beneficiaries regularly (quarterly) submitted financial and activity reports as well as took part in the Partner meetings. Day-to-day work within LFN, LOS, TA and EM was arranged through regular meetings and indirect communication (via e-mails and phone calls) of involved employees.

Project Steering committee has been established and first meeting held on 07/07/2017. The group consisted of representatives of all beneficiaries, Ministry of Environmental Protection and Regional Development of Latvia, Ministry of Agriculture, State Forest Service, State forest enterprise *Latvijas valsts meži* and Nature Conservation Agency. The first Steering group meeting was followed by four others: on 24/04/2018, 16/10/2019, 04/03/2021 and 28/09/2021.

*Organigramme of the Project unit and the project management structure*



### 4.2. Evaluation of the management system

The Project management system was working in accordance to the plans. The same applies to the cooperation among the Partners.

## 5. Technical part (maximum 50 pages)

### 5.1. Technical progress, per task

#### **5.1.1. Preparatory actions, elaboration of management plans and /or of action plans**

##### **Action A.1: Updating of national species action plan**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2016 – IV/2017	Completed on 04/10/2019 when submitted to the responsible authority NCA	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
Draft Species action plan completed	12/2016	Completed on 01/03/2019
Species action plan completed	12/2017	Completed on 04/10/2019

On 01/03/2019 draft SAP was completed and series of public hearings was started. All together, three such meetings were held: on 14/03/2019, 10/05/2019 and 11/07/2019. Final version of SAP was prepared in early October 2019 and submitted to the responsible authority NCA on 04/10/2019. The official process was completed on 08/01/2020 when SAP was officially approved by the Ministry of Environmental Protection and Regional Development (MEPRD).

##### **Action A.2 Nest site inventories**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: I/2017 – III/2021	Started on April 2017	
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Draft layout of 500 microreserves prepared	08/2021	Draft layout of 526 microreserves prepared.

*Description of work done:* The aim of this action was to find 500 Lesser Spotted Eagle (LSE) nests till the end of the breeding season of 2021. Already in the first three field work seasons of 2017, 2018 and 2019 good progress in nest searching has been achieved – all together 426 LSE nests (out of 500 planned in five years) were found (85% of total planned amount): 110 in year 2017, 178 in 2018 and 138 in 2019. The progress has outpaced the initial plans mostly due to the unexpectedly good breeding results of LSE in year 2018 - in years with high breeding productivity searching for nests is more productive (nests with juveniles are easier to find compared to the nests that are occupied by the eagles but are not productive). Additional input was provided by the species distribution model. This progress enabled completing of this Action one year earlier than planned - in 2020 another 117 nests were found, making the total number of found nests to be 543. Additionally, another 1869 nests of unknown ownership (or known ownership other than LSE, mostly Common Buzzard *Buteo buteo*, Goshawk *Accipiter gentilis*, Black stork *Ciconia nigra*, Honey buzzard *Pernis apivorus* and White tailed eagle *Haliaeetus albicilla*) were found. From found nests 32% were situated in state-owned forests, managed by State forest company AS *Latvijas valsts meži* (LVM), remaining 68% were found in forests owned by other (private or municipality) owners.

Not all of the found nests qualified for the protection by establishing of microreserves (there are special conditions listed in the respective regulations by the Cabinet of Ministers of Latvia) with most typical example being nests that are located in the retention trees. If general situation in nest site was not considered sustainable, designation of microreserves was not initiated.



### **Action A.3 Evaluation of the applied conservation measures**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2019 – III/2020	Completed on June 2019	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
Paper published in international scientific magazine	09/2020	Completed on June 2019

Work on Action A.3 was started already in early 2018. To make geographical scope broader, it was decided to use material from all three Baltic countries and invite as well co-authors from Estonia and Lithuania. Paper has been accepted for publishing on 02/06/2019 in scientific magazine “Forest Ecology and Management” with a title “Nest site selection and turnover patterns in support of conservation decisions: Case study of the lesser spotted eagle in the core area of its global population” (list of authors – Uģis Bergmanis, Ülo Väli, Katrīna Amerika and Rimgaudas Treinys). Study suggests that “*longterm conservation approaches for mature-forest-dwelling raptors should use breeding territory, which contains several nest sites (or suitable stands) spaced at certain distances and covered by temporal buffer, as a target unit in conservation-supporting forestry practices*”. Article bears a reference to the project and LIFE funding.

### **Action A.5 Preparation works for habitat restoration in Nature Reserve “Lubāna mitrājs” area “Grīvu sala”**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2016 – II/2017	Completed on 06/2018	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
Technical designs for restoration works in Grīvu sala area	05/2017	Completed on 06/2018

Implementation of this action was started with preparation of tendering documentation to select the service provider for technical drawings. Permitting procedure in Rēzekne regional branch of SES was completed on 21.05.2018, in May 2018 technical documentation was submitted to the municipality of Rugāji county and in two weeks the building permit for the construction works was received. In course of implementation of this Action the initial technical design was changed to reduce the costs and make the construction works possible with available resources (different and not so cost intensive road reconstruction solutions were chosen). Due to the nature of changes (amount of planned works was made smaller and not opposite) it was not necessary to get another approval from the Construction board of Rugāji municipality.

### **5.1.2. Concrete conservation actions**

#### **Action C.1 Protection of breeding grounds of LSE**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2016 – III/2021	Started on March 2017, completed on April 2021	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>

Microreserve proposals for 500 nests designated and submitted to responsible authority	08/2021	Completed on April 2021, 548 microreserve proposals submitted
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
LSE nest protection works completed	08/2021	Completed in April 2021

Implementation of this action depended on the progress in Action A.2 since large scale designation of microreserves (MR) was possible only after the first field work season was completed. Earlier stages of this work included meetings with most relevant stakeholders: 1) on 03/05/2017 headquarters of state forest company LVM were visited to discuss the future protection of LSE and designation of microreserves for this species; 2) on 22/12/2016 and 04/08/2017 meetings were held in State Forest Service (SFS) to discuss the procedure of obtaining of information, necessary for this Action. During meeting with LVM it was decided to cooperate closely in species protection work – information on nest sites of protected species is of crucial importance for LVM to enable planning of forest management activities and minimize the risk of forest logging being done in areas that are sensitive against disturbance. At the same time Project was interested in obtaining information on nests that are found by experts of LVM. As a result of that, agreement on data exchange was signed between LFN and LVM that regulates the cooperation from both sides: information on nest locations is shared between both parties and experts of LVM are involved in spatial planning of microreserves and bufferzones (BUF) in forests managed by LVM. Furthermore, microreserve proposals that are dealing with strict protection of LSE in LVM forests only, are submitted (signed) by both parties together (this condition does not take place in cases when microreserve covers both LVM and private lands). As a result of that, 141 microreserve proposals are submitted to SFS with signatures of both LFN and LVM in the field of submitting party. It is important to mention that LVM was involved in planning only on the lands managed by the company. Considering the fact that only 32% of nests are located in the state owned forests and large part of those are located close to the border with privately owned forests, the final design of microreserves was often a result of mixed planning done by the experts of LVM and LFN. Even in cases when nest was surrounded by LVM forests only and experts of LVM prepared spatial design for both microreserve and bufferzone, preparing of full microreserve proposal (that includes filling of special form, preparing of expert statement and scheme) was a duty of experts of LFN.

As a result of Project activities, all together **526** microreserve (MR) proposals were submitted to State Forest Service (SFS), or, in several cases – Nature Conservation Agency (NCA), with total MR area of 3744,82 ha and bufferzone (BUF) area of 23 814,2 ha. From those, at time of reporting, 468 are approved with total MR area of **3277,64 ha** and BUF area of **20 508,92 ha**. Additionally to that, 22 proposals were submitted by LVM with LFN being the second submitter (according to the agreement on cooperation and data exchange) with all of them being approved later (thus total number of approved MR's reaches 490 with total MR area of 3420,16 ha and BUF area 21 564,88 ha). 48 proposals are rejected. From the approved proposals (evaluation and approval/rejection of proposals is done by the regional branches of SFS), three were later cancelled by the Central administration of SFS and LFN initiated three court cases against SFS.

Progress in this Action has outpaced the initial plans due to the better progress in Action A.2. Due to this, it was possible to complete this work already in the spring 2021. Information about approved MR's (including geospatial data) is included in the online database, maintained by the NCA (<https://ozols.gov.lv>).

### **Action C.3 Increasing the longevity of Lesser spotted Eagle nests**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: IV/2016 – I/2021	Completed in September 2021	
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Construction of nest supports / artificial nests completed	03/2021	Completed in September 2021

Constructing of artificial nest platforms for LSE was started on March 2018 and completed in September 2021 when last of the planned 50 nest supports were constructed. Artificial nests were built in following situations: natural nest was evaluated as unstable (17), natural nest has fallen down/ was destroyed/ nest tree was logged (16), natural nest was opened/exposed by the forest logging (17). Detailed list of potential sites was compiled after every field work season (Actions A.2 and D.2) when information on the technical conditions of known LSE nests was available.

Out of the 50 nests only in two cases there was no actual new nest (nest platform) built and works were done to improve the stability of existing nest - in one case nearby tree has fallen and hanged in the nest; it was removed and damaged parts of the nest were repaired. In another case, tree trunk that was forming a base for the nest was reshaped to improve the nest stability. In remaining 48 cases artificial nests of various constructions were built, starting from log platforms and ending with copies of natural nests, built without using of artificial fastenings (nails).

From 43 nests that were available to the birds in breeding season of 2021, 15 (35%) were occupied by LSE. Another two nests were occupied by Common buzzard, one unoccupied nest had signs of LSE visits, making the prospect for occupied LSE nest in coming seasons. It can be assumed that percentage of nests occupied by LSE will be higher in coming years as it usually takes some time for birds to get accustomed to the new constructions.

### **Action C.4 Restoration of LSE feeding habitats in Natura 2000 site “Kuja”**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: I/2017 – III/2020	Started on April 2017	
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Restoration activities in NP Kuja started	05/2017	Started on September 2018
Restoration activities in NP Kuja finished	09/2020	Completed in September 2021

In year 2017 expeditions were started to NP *Kuja* to search for suitable sites for restoring of LSE feeding grounds in 6530\* *Fennoscandian wooded meadows*. It turned out that some of the previously considered areas were already managed and bushes cut down on landowner’s initiative shortly before the project was started. To fill the gap in areas suitable for restoration, alternative territories were found in different grassland habitats: 6450 *Northern Boreal alluvial meadows*, 6410 *Molinia meadows on calcareous, peaty or clayey-silt-laden soils* and 6270\* *Fennoscandian lowland species-rich dry to mesic grasslands*. Proposed potential areas were as follows: 6530\*: 4 ha; 6270\*: 3 ha, 6450 (with inclusions of 6410): 23 ha.

<b>Habitat type, planned in GA</b>	<b>ha</b>
6530* <i>Fennoscandian wooded meadows</i>	30
<i>Total</i>	30

<b>Habitat type, modified</b>	<b>ha</b>
6530* Fennoscandian wooded meadows	4
6270* Fennoscandian lowland species-rich dry to mesic grasslands	3
6450 Northern Boreal alluvial meadows	23
6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils	
<i>Total</i>	30

At the end of year 2017 six sites were selected with potential of restoration and search for landowners started. Local authorities (e.g. Prauliena parish administration) provided good support for this process. Individual communications with land owners were started in the end of year 2017 and were mostly successful, although for some sites it was impossible to find owners and due to this reason searching for suitable project sites and communication with landowners continued in 2019 and 2020 until proposed restoration areas were covered. In the summer of 2018 the first three landowners agreed to cooperate. These sites were visited several times by grassland restoration coordinator for detailed inspection with a view to define precise zones of restoration and to map separate trees to be left in landscape as LSE look out posts. In 2019 two more properties were found for cooperation in habitat restoration.

In September 2020, 23.15 ha of meadow habitats in NP *Kuja* were restored forming in total 14.75 ha of 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils and 8.40 ha of 6450 Northern Boreal alluvial meadows. Restoration of 7 ha of 6450 Northern Boreal alluvial meadows was completed later in 2021.

<b>Planned</b>	<b>Completed</b>
6530* Fennoscandian wooded meadows – 4 ha	<i>As planned</i>
6270* Fennoscandian lowland species-rich dry to mesic grasslands – 3 ha	<i>A planned</i>
6450 Northern Boreal alluvial meadows and 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils – both 23 ha	6450 Northern Boreal alluvial meadows – 17 ha
	6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils – 6 ha

**Action C.5 Restoration of LSE feeding habitats in Nature Reserve “Lubāna mitrājs” area “Grīvu sala”**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: II/2017 – II/2020	Started on May 2018, completed in November 2020	
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Restoration activities in Grīvu sala completed	06/2020	Completed in September 2021

This action was a direct follow up of Action A.5. Construction works were delayed by the high water table in *Grīvu sala* meadows in autumn 2019, that left construction machinery submerged in the water and stopped the works till water retreated and meadows dried out in summer 2020. All of the planned works were completed in November 2020.

<b>Planned</b>	<b>Completed</b>
30 km of drainage ditches closed	<i>As planned</i>
2 km of road reconstructed and 8 culverts	<i>As planned</i>

installed	
10 artificial wetlands (ponds) created	<i>As planned</i>

Habitat type	Planned, ha	Modified, ha
6530* Fennoscandian wooded meadows	30	13
6450 Northern Boreal alluvial meadows	15	32
<i>Total</i>	<i>45</i>	<i>45</i>

In total, 13 ha of 6530\* Fennoscandian wooded meadows and 44 ha of 6450 Northern Boreal alluvial meadows were restored during winter of 2019/2020 by removing bushes and small trees as well as removing tree and bush cover and closing ditches in the grazing area. Stump and root tillage works were started in August of 2020 and completed by the end of 2020 with remaining ca 2 ha tilled in September 2021. After tillage process, restored areas are suitable for mowing and grazing and will serve as a feeding site for LSE.

In spring of 2020, at least 9 ha of closed ditches were already recognized as agricultural land by Rural Support Centre and included in agriculture registry system. Overview on results of habitat restoration works is included in the table below:

Planned	Completed
13 ha of 6530* Fennoscandian wooded meadows restored	<i>As planned</i>
32 ha of 6450 Northern Boreal alluvial meadows restored	44 ha of 6450 Northern Boreal alluvial meadows restored

#### **Action C.6. Establishment of grazing operation in Nature Reserve “Lubāna mitrājs” area “Grīvu sala”**

Action implementation time	Action status	
In the project application: III/2016 – I/2021	Started on April 2017	
Name of the Milestone	Deadline	Status
First animals purchased	10/2016	Completed in November 2017
Purchase of animals completed	10/2017	Completed in December 2017

Implementation of this activity was started with purchase of necessary machinery in April 2017 shortly after the Partner agreement was signed. Another major component of this Action was obtaining of grazing animals.

Second half of summer and autumn of 2017 in eastern part of Latvia were extremely wet, as a result of that, vegetation in *Grīvu sala* had to recover from depleted conditions – Project area was under the water for several month. Due to this reason, grazing territories in Project area could not be used in their full potential and not all of the animals were relocated to this place. In late July 2018 60 animals were brought to *Grīvu sala* along with the necessary equipment (corrals, electric fences, water troughs and pumps). Grazing was organized in portable enclosures of electric fence. During night time cattle were kept in temporary enclosure made by metal panels to avoid predators (e.g. wolves). All necessary infrastructure for providing drinking water from river and also for herder’s daily needs were set up. Animals were herded permanently and were left in Project area till late autumn. In total ~100 ha of grazing area were managed by grazing in year 2018. Grazing pressure was regularly monitored by grassland restoration coordinator to avoid over - or under grazing and

ensure the best result for biodiversity. Simultaneously, work on preparing of hay for the winter time was going on, using the technics obtained within this Action. All together in *Grīvu sala* area 500 rolls of hay were prepared.

First grazing season was followed by three others (2019, 2020 and 2021). In year 2019 grazing season lasted until the 7<sup>th</sup> of October (all 80 animals were used), 800 rolls of hay were collected to feed animals during the winter time. In 2020 animals (98 all together, adults and calves) were transported to *Grīvu sala* on 15<sup>th</sup> of June and were kept in the grazing area till October). The grazing season of 2021 turned out to be the most complicated from all: animals were brought to *Grīvu sala* on 10<sup>th</sup> of June (84 animals in total) to graze the area till autumn. However, the plans had to be changed due to the extremely high temperatures (up to +35°C) in July when conditions on site turned out to be unbearable and one animal was already lost to the insect (horseflies) bites. On 20<sup>th</sup> of July animals were brought back to the main base in *Mežvidi* farm and grazing area was managed by the hay cutting later in the summer.

In total 170 ha of grazing area was managed by grazing in years 2019 and 2020 – full initially planned area was not available due to the ongoing habitat restoration works. In 2021 grazing was started in all of the planned 260 ha (habitat restoration was completed, with small exceptions), but full potential was not reached due to the abrupt suspending of grazing season. Grazing pressure was regularly monitored by grassland restoration coordinator to avoid over- or under grazing to ensure the best result for biodiversity.

### **5.1.3. Monitoring of the impact of the project actions**

#### ***Action D.2 Monitoring the breeding success in LSE nest sites, targeted by Actions C.1 and C.3.***

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2016 – III/2021	Started on April 2017	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
First interim report on monitoring results	11/2017	Ready on 11/2017
Second interim report on monitoring results	11/2018	Ready on 11/2018
Third interim report on monitoring results	11/2019	Ready on 11/2019
Fourth interim report on monitoring results	11/2020	Ready on 11/2020
Final report on monitoring results	08/2021	Ready on 09/2021
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Monitoring methodology prepared	09/2016	Completed in May 2017

Monitoring methodology was completed in May 2017 with first monitoring field works started in early July. It was planned that number of monitored nests will be cumulative – it will grow during the project years simultaneously with progress in Activity A.2, reaching the planned number of 500 in last of the project years. Already first of the field work seasons (2017) was more productive than previously planned – all together 110 nests of LSE were visited. This work has been done by the expert of LFN, combining results of nest controls with information that was collected by other experts who supplied field data for Action A.2. From 110 controlled nests 54% were productive (with alive nestling), 20% were unsuccessful (egg was laid and in some cases nestling hatched, but juvenile bird did not left the nest), and 26% of nests were occupied by the LSE but were not productive (breeding was either not started or has ceased in early stages of season). 10% of all nests had been affected by human caused disturbance – either stand was prepared for logging (in four out of five cases when nest tree was located in forest stand prepared for logging, nest tree was not marked as a retention tree, thus violating even the basic rules of forest management), or there were fresh

signs of forest logging in close proximity of nest and no precaution has been taken to avoid harmful impact on the breeding eagles. In one case nest tree was logged down despite the fact that SFS and forest owners were informed about it, and process of designation of MR has been started.

The breeding season of 2018 was first when numbers of monitored nests were cumulative – additionally to extra high numbers of newly found nests (178), all that were found in previous year (110) had to be visited as well, the same as artificial nests built within Action C.3. Breeding results were unusually high – 80% of nests were productive and that could partly explain high numbers of newly found nests within Action A.2. Similarly as in 2017, almost 10% of newly found nests were affected by human caused disturbance. After first two project field work seasons it was possible to assume that this proportion (10% of yearly affected nests) is characterizing entire part of Latvian LSE population that is not covered by protection measures.

In monitoring season of year 2019 both nests that were found in 2019 were checked (n=138) as well as nests that were found in previous years (n=286). Additionally to the nests of LSE, there was a long list of other nests (known from nest inventories in Action A.2) that were visited if the “official” nest was not occupied by the LSE (only nests in distance up to 300 m from original nest were visited due to the limited time resources). Main conclusions from monitoring season of 2019 are: in nests found in 2019 breeding success was on average 0.59 juveniles per occupied nest (59.1% of all occupied nests were productive). From nests found in 2017-2018, 49.3% were classified as occupied by the LSE, number increases to 55.2% if new nests are added (where eagles have resettled). There were disturbing activities recorded even by the nests where establishing of MR’s was initiated – in six cases nest tree was logged down and in one case there were indications that nest was deliberately destroyed.

In 2020 all together 539 nests were checked – both nests found in previous seasons as well as 112 nests that were found in 2020. Out of all nests occupied by LSE (that were found in 2020), 59.4% (n=60) were productive, in 7.9% (n=8) unsuccessful breeding was recorded, thus the total percentage of nests with initiated breeding was 67.3%. There was a similar proportion of disturbed nests as in previous years – at 12.5% of found nests inappropriate activities were recorded: in 10 cases forest stand was prepared for logging (in 6 of those even the nest tree was marked for logging), in four cases recent forestry activity (logging) was recorded in the vicinity of nest.

Last of the monitoring seasons (2021) was most intense as all of the previously found nests had to be visited (567 in total), including 22 nests with primary information coming from LVM. 43.5% of all nests were identified as occupied by LSE, in 24.2% of all nests successful breeding of LSE was recorded. From nests, not occupied by LSE, 41 was occupied by other species – 39 by Common Buzzard, 1 by Honey buzzard and 1 by Goshawk. In territories with initial nests not occupied by LSE, 60 resettlings (alternative nests) were recorded, either in natural (built by eagles) or in artificial nests (Action C.3), 50 of them within the planned microreserves. Considering the occupancy of all nests in the territories of planned microreserves, results are as follows: 48.1% (n=296) of nests were occupied by LSE, 15.8% (n=97) of nests were fallen (or logged) down, and 36.1 (n=222) of nests were not occupied. Breeding success in occupied nests was 0.54 juveniles per occupied nest.

### **Action D.3 Assessment of the socio-economic impact of the restoration actions**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: I/2017 – I/2021	Started on August 2018	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
Socio-economic report finalised	03/2021	Completed in August

		2021
Name of the Milestone	Deadline	Status
Assessment of the socio-economic impact of the restoration actions finalised	03/2021	Completed in August 2021

Implementation of this Action was started when substantial progress in Action C.1 was reached.

In March 2021 a procurement process was started to outsource the provider of this service and one offer was received from company “Ecosystem evaluation”. The suggested methodology included: 1) Estimation of private landowner’s loss of income due to the management restrictions on forested lands around the nesting territories; 2) Evaluation of ecosystem services provided by forest habitat conservation and grassland restoration; and 3) Assessment of economic potential and direct benefits of grassland restoration. In order to carry out the assessment, relevant data was collected with the help of various methods: continuous data collection and liaison with the project management team, collection of official publicly available data, ecosystem services calculations based on scientific literature, and datasheet provided by the management team. Additionally, questionnaires for forest owners, grassland owners and grassland experts were prepared. Unfortunately, we did not receive any replies from forest owners. Due to that, assessment was made based on information provided by the project management team as well as through desktop research. It was focusing in two directions: 1) socio-economic impact and 2) ecosystem services.

Regarding the socio-economic impact (resulting from Action C.1), it was concluded different kinds of income can be gained if forest owners manage their land based on restrictions set by microreserves. On one hand they get the highest state support: 160 EUR / year/ hectare due to the strongest restriction of forest management practices. On the other hand, they can use 10 m<sup>3</sup> deadwood from their property for firewood, meaning that they can spare 250 EUR / property from not buying firewood but using their own. Still, this is a rather moderate income compared with amount that could be gained through the clear cutting, therefore the appropriate compensation scheme is essential. Concerning grassland related stakeholders (Actions C.4, C.5 and C.6), we could reveal a diverse set of socio-economic impacts. An evident positive trend in relation to grassland socio-economic benefits can be observed. Stakeholders could revive traditional land use practices on sites otherwise unused or only partially used. Thanks to the re-established possibilities, land users could receive additional income, which on one hand can be received in the form of additional CAP payment due to the protected status of the site, on the other hand, due to increased product selling of animal and hay products.

In regards to the ecosystem services it was concluded that the average biomass and carbon per hectare amount of the nesting sites is 1,6 times higher than the national average. This could be attributed to the fact that the average age of the forest sites (~80 years) is quite high and many nesting sites are found on a protected area where felling is not allowed. Because of the project activities, not just the biomass amount (and carbon pool) increased on the protected forest sites, but the already accumulated biomass amount was not allowed to be removed from the microreserves (beside the allowed fallen or sapless trees up to 10 m<sup>3</sup> per year), which could contribute to healthier forest ecosystem. In grasslands, a distinct positive trend can be detected in terms of source of income, landscape protection, hay and fodder, game meat and hunting, soil formation, air quality, wild products, heritage and traditions, aesthetic beauty and source of knowledge and protection of rare species. This potentially indicates that the sites’ restoration contributes to the improvement of all types of ecosystem services including provisioning, regulating and cultural ones.



#### **Action D.4 Monitoring of numbers of present birds in restored feeding grounds**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: II/2017 – III/2021	Started on April 2017	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
Monitoring methodology completed	09/2016	Completed in 05/ 2017
First monitoring report on foraging birds	12/2017	Completed in 12/ 2017
Second monitoring report on foraging birds	12/2018	Completed in 12/ 2018
Third monitoring report on foraging birds	12/2019	Completed in 12/ 2019
Fourth monitoring report on foraging birds	12/2020	Completed in 12/ 2020
Final monitoring report on foraging birds	07/2021	Completed in 09/ 2021

The aim of this action was to evaluate the effectiveness of feeding habitat restoration works (Actions C.4, C.5 and C.6) by the means of monitoring numbers of birds that are using this area as a feeding ground. In first two seasons monitoring works provided the background information on situation before the renovation works were started.

On May 31, 2017, monitoring methodology and plan was completed. According to methodology the monitoring in *Grīvu sala* was done in two stationary points (places), eleven times per season (in specific dates) with at least one-week separation between two different surveys.

Due to the bad weather conditions and late spring in first season, monitoring started only with second survey on May 02, 2017. Due to the floods in *Grīvu sala* in late summer 2017, last two surveys couldn't be done correctly. At September 09, 2017, observation of territory was made from boat and no LSE was present due to the overflowing. Monitoring conditions were difficult in first season - long grass, shrubs and ditches made it difficult to oversee the territory and move around. At least one LSE pair used *Grīvu sala* as a feeding ground before actual renovation works.

In spring 2018 conditions in floodplain of *Grīvu sala* were still extremely wet (floods of previous autumn has still not drained from the area) and monitoring was started with second survey on April 29, later followed by others as previously planned (ten in total). Last survey was done on September 02, 2018. Brushes continued to make visibility difficult but at least one (probably the same) LSE pair used *Grīvu sala* as a feeding ground. In 2019, Lesser-Spotted Eagle in *Grīvu sala* was observed in two out of the eleven censuses. In 2017, the LSE was observed 20 times, in 2018 16 times, but 2019 - twice. This decrease can be explained by extremely high water table in autumn of 2017 and following depletion of ground vegetation in coming years. Results of monitoring seasons of 2020 and 2021 showed that numbers of LSE were recovering with positive prospects.

Due to the delay in selection of restoration sites in *NP Kuja* it was not possible to start the monitoring works in first years of the project and the process was delayed till 2019 when censuses were performed five times in five sample plots. In all five censuses, the presence of Lesser-Spotted Eagle was detected. LSE was recorded in three of the five sample plots, and in vicinity of two sample plots. The activity of birds of prey was good throughout the season, but it was highest at the times and places where mowing of grass took place.

A total of eight species of birds of prey (and Black Stork) were observed during monitoring works in *NP Kuja*. The most abundant species of birds of prey was LSE with a total of 149 observations, followed by Common Buzzard with 95 observations. Monitoring clearly showed the positive effect of habitat restoration works (28 observations in 2019, 49 in 2020 and 72 in 2021).

### **Action D.5 Vegetation monitoring in project grassland restoration territories**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: II/2017 – III/2021	To be started on August 2017	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
Monitoring plan prepared	12/2016	Completed in 05/2017
First report on vegetation monitoring	12/2017	Completed in 12/2017
Second report on vegetation monitoring	12/2018	Completed in 12/2018
Final report on vegetation monitoring	07/2021	Completed in 07/2021

Implementation of this Action was started with preparing of Vegetation monitoring programme for planned restoration areas in *Grīvu sala* (approx. 260 ha) and *NP Kuja* (30 ha). This work was done by the grassland restoration coordinator - habitat expert. Monitoring methodology was adapted from guidelines by Nature Conservation Agency of Latvia and customized for project needs, e.g. measuring also some landscape elements such as tall trees in *NP Kuja*. For plant species count, most common - Braun - Blaquet method was chosen. One and the same person - habitat expert - was doing monitoring activities in all project sites to avoid inaccuracies caused by human factors. Specific nature conditions and vegetation structure, also planned restoration works were taken into consideration while choosing sample plots. Due to homogeneous area and overall similar plant communities and abundance, five sample plots were established in *Grīvu sala*. Measurements of plant species and vegetation structures as well as photographing of each sample plot was first done in 2017 and repeated in 2018. Due to the intense floods in late summer and autumn of 2017 in *Grīvu sala*, significant changes in plant species composition and abundance have occurred, therefore, monitoring was continued each year during project implementation, although it was planned to be done only three times: in 2017, 2018 and 2021.

It was planned to establish one sample plot in each restoration site in *NP Kuja*. The search for most suitable restoration sites took longer than planned, with first three project restoration sites confirmed in summer 2018. The final map of sample plots in NP Kuja was prepared and added to Monitoring plan after establishing of all sample plots in early 2019. Another two sample plots were established in 2019, when final list of sites to be restored was confirmed.

Vegetation monitoring results in *Grīvu sala* showed significant impact of long-lasting floods in year 2017 and drought in summer in 2018. Several typical plants of habitat 6450 (Northern Boreal alluvial meadows) disappeared due to flooding and were replaced with different weeds in year 2018. Gradual normalization and return to typical 6450 plant community was observed in last two monitoring years.

No significant changes in vegetation composition were observed in *NP Kuja* although structural differences occurred in all sites where trees and bushes were cut down - tall trees and shrubs were replaced by tree shoots or other vascular plants. Also, vegetation height was differing yearly due to weather conditions: precipitation, humidity and temperatures of vegetation season. More significant vegetation composition and structural changes in sampling plots of *NP Kuja* were predicted to take place after tree and bush stump and root tillage (completed in late summer 2021).

#### **5.1.4. Overall project operation and monitoring**

##### **Action F.1 Project management**

<b>Action implementation time</b>	<b>Action status</b>
In the project application: III/2016 – III/2021	Started on August 2016

First important step in Project implementation was signing of Partner agreements, done on 04/04/2017 with EM, on 06/04/2017 with TA and on 07/04/2017 with LOS (all were attached with Inception report). Delay in this process was caused by the late signing of co-financing agreement with Latvian Environmental Protection Fund Administration – it was done only on 21/03/2017 due to the fact that completely modified project structure required new agreement with lengthy communication before actual signing of this document.

*Project management by LFN:* Regular meetings with Project partners were arranged (at least once every 3 months, some of them – bilateral), starting from already before the signing of Partner agreements. Following employees are involved in the project management:

- Project manager;
- Project assistants;
- Financial assistant;
- Communication assistant;
- Grassland restoration coordinator and monitoring expert;
- LSE expert;
- LSE Monitoring experts.

Project has been visited by Ms Lūcija Kursīte (the representative of External Monitoring Team) on 03/07/2017, 28/06-29/06/2018, 30/06/2020 and 14/10-15/10/2021. There was one visit of EC representatives held on 20–21 June 2019.

*Project management by LOS:* besides Project coordinator for LOS Actions and Financial assistant, there were two groups of employees: Senior experts (involved in searching of nests and monitoring activities), and junior experts (involved in monitoring activities):

*Project management by TA:* Following employees were involved in the project management:

- Technical coordinator;
- Financial assistant;
- Tractor drivers and beef herders.

*Project management by Rucka Art Foundation (EM):*

- Producer;
- Film's director;
- Soundman;
- Project assistant;
- Cameraman;
- Project manager.

### 5.1.23 Action F.2 *Project steering committee*

Action implementation time	Action status	
In the project application: III/2016 – III/2021	Started on April 2017	
Name of the Milestone	Deadline	Status
Project Steering committee assembled and first meeting held	01/2017	First meeting held on July 2017

Implementation of this activity was delayed due to the late signing of Partner agreements – first PSC meeting was held on 07/07/2017. The group consisted of representatives of all beneficiaries, Ministry of Environmental Protection and Regional Development of Latvia, Ministry of Agriculture, State Forest Service, State forest enterprise "Latvijas valsts meži" and Nature Conservation Agency. First meeting was used for Project introduction to the SC members and for the discussions on protection system of dispersedly breeding bird species. Second SC meeting was held on 24/04/2018 to inform SC members about progress in Project implementation. Third SC meeting was held on 16/10/2019 and project implementation progress (and problems in protection of dispersedly breeding bird species that were exposed by the Project) was discussed. Fourth meeting was held on 04/03/2021 already under the Covid-19 conditions – remotely in Zoom platform, and representatives of all involved parties participated. At that time good evidence was accumulated about the shortages in existing mechanism of protection of dispersedly breeding bird species and it was discussed between the Project team and representatives of state institutions. Last of the SG meetings was arranged shortly before the end of the Project on 28/09/2021. Full overview about the Project achievements was presented and latest findings in the species protection problems discussed. All together there were five meetings arranged and that fell just short of planned six. In 2020 no SG meetings were held due to the Covid-19.

### 5.1.24 Action F.3 *Networking with other Life projects and activities, related to the conservation of A.pomarina*

Action implementation time	Action status	
In the project application: III/2017 – III/2021	Started on April 2017	
Name of the Milestone	Deadline	Status
First study visit arranged	10/2017	First visit arranged on March 2018
Second study visit arranged	05/2018	Postponed and later cancelled due to the COVID-19
Closing conference held	09/2021	Online conference held on 09-10/09/2021

First networking event was arranged in autumn 2017 when Project manager participated in International Conference on the Lesser Spotted Eagle in Burgas, Bulgaria, on 11-14 October 2017. During this event good contacts with Bulgarian LIFE project were established and agreement made to organize experience exchange groups visit from Latvia to Bulgaria in spring 2018.

Trip to Bulgaria was first of the planned two study trips abroad. Event took place in March 2018, it was organized for project staff, representatives of project partners, stakeholders and media representatives. Group consisted of Project manager, Project communication assistant, two representatives of EM, one representative of LOS, LVM and SFS, as well as one journalist from Latvian National Radio. The goal of experience exchange

trip was to visit a country with a strong LSE population where effective conservation measures have been carried out. Additional argument for choosing this country was in its importance as a migration stop-over site for LSE. The study tour from Bulgaria side was hosted by Bulgarian Society for Protection of Birds (BSPB) – organization implementing the project “LIFE for Eagle Forests”.

Second study trip abroad was planned for March 20 – April 3, 2020. We had agreed with project Life SCHREIADLER in Germany about the study trip schedule, purchased flight tickets and booked a guesthouse, as well as formed a group of participants from LFN, SFS, LVM, partners and media. However, the trip had to be cancelled due to the Covid-19 situation. Trip was postponed initially to the autumn 2020 but was cancelled later since situation with pandemic had not improved to make such trip safe for participants.

Another of the events under this Action that was affected by the pandemic was a closing conference. Initially planned as a four day event in *Madona* (E part of Latvia, close to *NP Kuja*) for 40-50 participants, it was organized as an online event in 09-10/09/2021. There were 49 registered participants from 14 countries (Bulgaria, Croatia, Estonia, France, Germany, Hungary, Iran, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia and Turkey). Covered topics included Ecology, habitat use, foraging and breeding; Telemetry; Population size, status and trends; Species Identification; Migration and Species conservation and habitat management. Project LIFE AQPOM was represented by four presentations: 1) LIFE+ project “Conservation arrangements for Lesser Spotted Eagle in Latvia” goals and results (by Jānis Ķuze, LFN); 2) The accomplishment of an ambitious task - finding 500 nesting sites of the Lesser Spotted Eagle (by Andris Dekants, LOS), 3) Species action plan for Lesser Spotted Eagle in Latvia (by Uģis Bergmanis, LVM), 4) Legal aspects of Lesser Spotted Eagle protection on a national level in Latvia (by Jānis Ķuze, LFN). Full video recording of the conference is available here: <https://youtu.be/N9rduBqw1jY> (day one), <https://youtu.be/snAYY7azTs8> (day two).

#### 5.1.25 Action F.4 Project audit

Action implementation time	Action status	
In the project application: III/2021 – III/2021	Not started (according to the project schedule)	
Name of the Deliverable	Deadline	Status
Project audit prepared and delivered with report	12/2021	Audit report delivered with Final report

Project audit has been carried out at the final stage of Project implementation.

#### 5.1.26 Action F.5 After-LIFE Conservation Plan

Action implementation time	Action status	
In the project application: II/2021 – III/2021	Not started (according to the project schedule)	
Name of the Deliverable	Deadline	Status
After-LIFE conservation plan prepared and delivered with Final report	09/2021	Delivered with Final report

After-LIFE Conservation plan is attached as Annex F.5 to this report.

## 5.2. Dissemination actions

### 5.2.1. Objectives

To address one of the Project objectives (to raise the awareness of species conservation demands among general public), dissemination part of the project included various communication tools:

- Regional seminars for stakeholders of forestry and farming sector – 20 in total, 10 targeted at forest sector related stakeholders and 10 at farmers (Action E.1);
- Booklet and poster about LSE (Action E.2);
- Documentary film about ecology and protection of LSE (plans were changed later to the seven shorter films, targeting different audiences; Action E.3);
- Work with general public - introducing LSE in to media (TV, radio, papers), Action E.4;
- Creating and maintaining of projects web page (Action E.5);
- Providing of internet broadcastings of webcam materials from LSE nests (Action E.6);
- Setting up of information boards in project territories in Natura2000 sites “Kuja” and “Lubana mitrajs” (Action E.7);
- Preparing of Laymans report (Action E.8).

### 5.2.2. Dissemination: overview per activity

#### **Action E.1 Regional seminars for stakeholders of forestry and farming sector**

Action implementation time	Action status	
In the project application: II/2019 – IV/2020	Started on February 2019	
Name of the Milestone	Deadline	Status
First 10 seminars arranged	12/2019	10 seminars for foresters arranged until 11/2020
Arranging of planned seminars completed	12/2020	Completing of this action was interrupted by Covid-19

There have been 10 seminars arranged in different locations for stakeholders of forestry sector (216 participants in total), in February 2019 - November 2020 (27/02/2019, 02/03/2019, 07/03/2019, 15/03/2019, 20/03/2019, 29/03/2019, 26/10/2019, 16/11/2019, 30/10/2020 and 04/11/2020).

Seminars consisted of theoretical and practical parts. Practical part was held if potential nests to be visited were located close enough and if seminar was held outside of the LSE breeding season (to avoid human caused disturbance at nest). If seminar was held during the LSE breeding season, theoretical part included additional video materials from the project webcams (Action E.6). One of the seminars was arranged during the annual meeting of LOS members (many of them being forest owners themselves).

Further implementation of this Action was impacted by Covid-19 that heavily restricted meetings in presence. Due to this reason, there were only three seminars for farmers arranged on 10/12/2020, 05/08/2021 and 19/08/2021 (all of them online) with 58 participants in total.

During the seminars for farmers, requirements for maintaining of LSE feeding habitats were discussed with main emphasis on the management of grasslands.

### **Action E.2 Booklet and poster “Lesser Spotted Eagle”**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2016 – I/2019	Started on April 2017	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
Project poster published	12/2016	Poster published on February 2018.
Project booklet published	02/2019	Booklet ready on 06/2020, printed on the need.
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Project poster ready to be distributed among the key stakeholders	12/2016	Ready to be distributed on February 2018
Project booklet ready to be distributed among the key stakeholders	02/2019	Booklet ready on 06/2020, printed on the need

The content of the poster was prepared in consultation with LSE expert. A thorough selection of LSE photographs was carried out in order to select one that is both visually attractive and informative regarding the species.

The content of the poster covers the following areas: appearance of LSE, the main aspects of species ecology, protection requirements and timeline of breeding, as well as includes a call to report a found nest. The poster includes also brief information about the Project, its Partners and financial sources and contact information.

We conducted public procurement process to select a third party provider that could provide design and printing services for booklet and poster. We combined these two items in one procurement as the design should be consistent. The main aim in the design was to create a visually attractive layout with clear and easy to understand messages. Also it was important to create the design that is in line with the design of the webpage thus the project would have a consistent visual identity and consistent messages on all informative materials and channels. The poster was printed on February 2018 in 500 copies (size A1) in full colours and is in Latvian. The poster is also available for download on projects webpage <http://mazaiserglis.lv/uploads/materials/mazais-erglis-plakats.png>.

The idea and concept of the booklet was developed together with the creative agency. Booklet had to include main information about LSE, its ecology and protection requirements. Therefore the idea was to create accordion type booklet in line with the design of poster and webpage and add also an interactive feature to the information – a colouring page with LSE. It was decided to create electronic version of booklet that can be printed on a needed basis in small amounts. The booklet is available on project webpage <http://mazaiserglis.lv/uploads/materials/buklets-bez-uzlaidem-samazinats.pdf> and accessible for everyone.

### **Action E.3 Documentary film about ecology and protection of Lesser Spotted Eagle**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2016 – II/2019	Started on April 2017	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
Project documentary film produced	06/2019	Completed in December 2020

During work process and discussions project partners Elm Media and LFN have agreed that it would be more efficient to split 45 minutes in seven different films, each one focused on particular target audiences (TV audiences, landowners, social network users etc.).

It was decided to create a 26 minute film to be shown in public TV (26 minutes is standard length for TV program). In addition, it was decided to create one 10 minute and five 2 minute films. The content of the films was different and aimed at different target audiences:

- 26 minute film “Lesser spotted eagles in Latvia”: A documentary on LSE's life in Latvia - it's nesting and feeding behaviour, habitats, their importance and conservation. Film strongly emphasizes the role of Latvia as a country with highest breeding density of LSE and thus - a highly important area for the species' existence. Film follows LSE’s life throughout the year between migrations and uses project's activities as best practice examples of habitat restoration. The film was prepared in Latvian and English (voice over and subtitles).
- 10 minute film “Lesser spotted eagle friendly management”: educational film for policy makers and landowners on best practices for land management (forests, alluvial meadows and other types of agricultural land) best suited to preserve LSE and other species. Published on LFN YouTube channel on May 2020 (<https://www.youtube.com/watch?v=-Ylu8VfxuZg>). Until the end of the project the video has 2682 views.
- 2 minute film “Shortly about lesser spotted eagle”: short and intriguing facts about LSE used to capture the attention of general audience in social media, online news articles and so on. Published on LFN YouTube channel on March 2020 (<https://www.youtube.com/watch?v=docq7dkb2K0>). Until the end of project the video has 1980 views.
- 2 minute film “Microreserves”: short educational film for landowners on forest micro reserves for LSE - how they are made, benefits they provide. Published on LFN YouTube channel on March 2020 (<https://www.youtube.com/watch?v=aj0cxMXtfSU>). Until the end of project the video has 1220 views.
- 2 minute film “Silence period”: short educational film on the importance of halting logging and other forestry activities during the spring breeding season of LSE and other nesting birds. LSE used as a case to highlight the considerable problem of forestry destroying of nests of various bird species as well as creation of disturbance during the period when birds are extremely sensitive against it. Published on LFN YouTube channel on March 2020. Until the end of project the video has 1375 views (<https://www.youtube.com/watch?v=TPLNjOtNaYU>).
- 2 minute film “Grīvu sala”: short film on restoration activities of alluvial meadows in Grīvu sala. Published on LFN YouTube channel on March 2020 (<https://www.youtube.com/watch?v=70oVG9UoPHo>). Until the end of project the video has 1196 views.
- 2 minute film “Nature park Kuja”: shortly on restoration activities of Fennoscandian wooded meadows in NP Kuja and the role of wooded meadows as an important feeding habitat for LSE. Published on LFN YouTube channel on March 2020 (<https://www.youtube.com/watch?v=CbGhpASjs0g>). Until the end of project, the video has 912 views.

We agreed with national streaming service LMT Straume and LMT Smart television to stream the 26 minute film in their channels. It was launched in May 7, 2021 and will be available on streaming service for undetermined time. According to data provided by LMT, the film received 2010 views. The film is available here: <https://viedtelevizija.lv/skaties/lv-mazie-ergli>.

We also agreed with the national television to broadcast the film in the first channel of Latvian television (LTV1) and their internet platform replay.lv. The film was premiered on August 28, 2021, and is available here: <https://ltv.lsm.lv/lv/raksts/28.08.2021-tv-pirmizrade->



[mazie-ergli-latvija-dokumentala-filma.id228025](https://www.youtube.com/watch?v=dvn2_L5x2xE). According to data provided by Latvian television, the audience reached by film screening on LTV1 was 60 363, and there were 992 unique page views on ltv.lsm.lv and replay.lsm.lv. Since 13/11/2021 film is available as well on the LFN YouTube channel ([https://www.youtube.com/watch?v=dvn2\\_L5x2xE](https://www.youtube.com/watch?v=dvn2_L5x2xE)).

Total audience reached by all of the films prepared during the project in all the above described channels was 73 000. Films are available on YouTube channel of Latvian Fund for Nature, website [www.mazaiserglis.lv](http://www.mazaiserglis.lv) and also 1000 copies of USB flash drives have been produced.

#### **Action E.4 Introducing Lesser Spotted Eagle in to media (TV, radio, papers)**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2016 – III/2021	Started on August 2016	
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Introducing LSE in to media (TV, radio, papers) completed	09/2021	Completed in 09/2021

Within this action we carried out regular introduction of LSE to media. Media relations had two main objectives. First, to introduce general public with the species and to raise the awareness of importance of conservation. Second, to foster discussion about adequate compensations for forest owners on the lands where microreserves are being established.

During the project, we provided regular information to media about the project activities and events in life of LSE – launch of Project webcams, spring migration of LSE, results of webcam season, and results of bird nest inventory. In addition, we integrated the message about conservation problems of LSE in LFN’s communication, for example, when talking about issues in nature protection and activities of LFN, we mentioned LSE protection and necessity to improve compensation systems for landowners. It should be noted that the project received also a share of negative publicity, mostly related to establishment of microreserves.

In total, there were 240 publications, TV stories and radio stories in national and regional media that mentioned Project activities, LSE conservation problems and species ecology. The tone of the publications was mostly positive (137), however there were also 61 negative publications. 41 publications were neutral in tone.

<b>Type of media</b>	<b>Number of publications</b>
Internet portals (regional and national), news agencies	111
Magazine (printed)	5
Newspaper/national	33
Newspaper/regional	33
Radio	44
TV	14

#### ***Social media publications:***

Although social media communication was not stipulated by the project, we have communicated about the project on LFN Facebook, Twitter and Instagram accounts. During the project there had been 59 social media posts about LSE and project that together reached audience of 369 449 (Facebook reach, Twitter impressions, Instagram likes).

### **Action E.5 Creating and maintaining of projects web page**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2016 – III/2021	Started on April 2016	
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Project webpage ready	10/2016	Webpage launched on June 2017

The website [www.mazaiserglis.lv](http://www.mazaiserglis.lv) was programmed and functional in June 2017. During the project, 35 news articles were published on the website. In summer 2018, we started to provide the internet broadcastings from two LSE nests in *Zemgale* region (central/western part of Latvia) that continued until 2021. We also published the short films, as well as booklet and poster on the website.

The average number of visitors of the website was 160 users per month, in total it had 10 858 users and 29 000 page views. Information in webpage is provided in both Latvian and English. The section about project activities and progress was updated on a regular basis.

### **Action E.6 Providing of internet broadcastings of webcam materials from Lesser spotted eagle nests**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: IV/2016 – III/2021	Started on October 2017	
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Both project webcams operational	04/2017	Both webcams operational on April 2018

*Description of work done:* implementation of this action was possible only after the first field work season when results of nest searching were known and list of nests to choose from was available. In winter 2017/2018 two nests were selected in *Zemgale* region. In April 2018 both webcams were operational and reference to the project (project number) was included in the bottom data line of camera window. Streams were available through LFN's Youtube profile and were embedded as well in the Projects webpage. First system was located at nest built in the spruce tree. Unfortunately it was discovered during the webcam installation works that there are remains of juvenile LSE in the nest, indicating unsuccessful breeding in the previous season. That was a probable explanation of why eagles did not choose this nest for breeding in 2018 – there were only occasional visits of solitary bird recorded.

Second webcam system was installed at nest built in the birch tree. This camera provided a good insight in to occupied, but not productive LSE nest – during the spring and early summer this nest was visited by both eagles, but breeding was not started. Total number of Youtube views of both cameras this season was 80 680.

In autumn 2018 first webcam system was dismantled and was relocated to another nest in spring 2019 (located in spruce as well). This year breeding in one nest (in spruce) was successful and one chick was raised. A pair formed in the other nest, too, but the egg was not productive.

In 2020 the nest in spruce was occupied and successful, two chicks hatched, and one of them survived. Breeding in the other nest (in birch tree) was not started, although nest was visited by eagles.

In season of 2021 one nest (in birch tree) was occupied by a pair of LSE, one egg was produced, but it was damaged by the Great spotted woodpecker shortly before the hatching

and therefore the breeding was not successful. In another nest (in spruce) the breeding was successful and one young bird was raised.

The webcams were very popular and were viewed by visitors not just from Latvia, but all over the world. They also served as a source of positive publicity and provided opportunity to introduce LSE to public. During the project duration both webcams in total gained 1 165 991 views on YouTube.

#### **Action E.7 Setting up of information boards**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: III/2016 – II/2019	Started on April 2017	
<b>Name of the Milestone</b>	<b>Deadline</b>	<b>Status</b>
Four information boards set up at NP Kuja	08/2018	Three boards set up at early September 2021
One information board set up at NR Lubana mitrajs	08/2018	Two boards set up at early September 2021

In summer of 2021 the stands were set up in three location in proximity of *NP Kuja* (*Sarkaņi, Cēsvaine* and *Prauliena*) and two in *Grīvu sala*.

#### **Action E.8 Preparing of Laymans report**

<b>Action implementation time</b>	<b>Action status</b>	
In the project application: IV/2020 – II/2021	Started in January 2021	
<b>Name of the Deliverable</b>	<b>Deadline</b>	<b>Status</b>
Laymans report prepared	06/2021	Completed in September 2021

Laymans report was prepared in summer 2021. The format – horizontal A5 booklet, 12 pages in Latvian and English, 250 copies in Latvian and 250 copies in English. Laymans report is published as well on project website.

## 5.4 Analysis of long-term benefits

### 5.4.1. Environmental benefits

The project objective was to improve the conservation status of LSE in Latvia – the key breeding area of Bird’s Directive’s Annex I species in Europe – by conservation measures that are focused on two threats – loss of breeding habitat and availability and quality of feeding habitats.

During the Project implementation years official protection to new forest sites in Latvia was arranged only by the help of designation of microreserves and this work was done mainly by NGO’s, with LFN and LIFE AQPOM project being the main contributor. This effort resulted in the environmental benefits that can be clearly seen – additional **490** breeding sites of LSE are officially protected in Latvia with **3420,16** hectares of forest being strictly protected (with only minor forestry activities allowed outside of breeding season) and further **21 564,88** hectares included in the bufferzones with only seasonal restrictions in forestry activities. Most of the newly designated protected sites are located outside of Natura 2000 network, thus interlinking the larger protected territories (e.g. the nature reserves). Each of the protected sites was individually planned to include the forest stands most important for the breeding of eagles, and – as far as it is possible – to reach compromise with commercial interests of forest owners. Designation of protected sites had an important added value since LSE was not the only species benefiting from this process – with newly designated territories other species of national and EU importance, as well as protected habitats of EU importance, are protected. Information on the geospatial distribution of microreserves was compared to the data available in the online database, maintained by the NCA (<https://ozols.gov.lv>). All together nine habitats of EU importance are represented in microreserves with total area of **678 ha** – eight forest habitats and one fen habitat. Largest area (218,8 ha) is covered by habitat 9050 - Fennoscandian herb-rich forests with *Picea abies* – this dominance can be explained by the fact that 49,4% of all nests are located in the spruce trees. Full list of habitats, covered by the microreserves designated primarily for LSE, is included below.

Habitat code	Habitat	Area, ha
7220*	Petrifying springs with tufa formation (Cratoneurion)	0.8
9010*	Western Taiga	189.1
9020*	Fennoscandian hemiboreal natural old broad-leaved deciduous forests (Quercus, Tilia, Acer, Fraxinus or Ulmus) rich in epiphytes	121.9
9050	Fennoscandian herb-rich forests with <i>Picea abies</i>	215.8
9080*	Fennoscandian deciduous swamp woods	52.4
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	9.2
9180*	Tilio-Acerion forests of slopes, screes and ravines	19.1
91D0*	Bog woodland	24.6
91E0*	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)	45.1
<b>Total</b>		<b>678.0</b>

In addition to the habitats, established microreserves provide protection as well to the other officially protected bird species. Largest of established microreserves (51,6 ha) is designated for LSE as well as one pair of White-tailed eagle *Haliaeetus albicilla*, and one pair of Northern goshawk *Accipiter gentilis*. Information on presence of other species was

obtained from several sources – NCA database, expert statements, as well as recorded observations of Project staff. All together 102 cases of records were listed (see table below) with woodpeckers (five species) being especially well represented.

Name	Scientific name	Number of sites
Hazel grouse <sup>1</sup>	<i>Tetrastes bonasia</i>	26
Black woodpecker <sup>1</sup>	<i>Dryocopus martius</i>	23
Grey headed woodpecker <sup>1</sup>	<i>Picus canus</i>	13
White backed woodpecker <sup>1</sup>	<i>Dendrocopos leucotos</i>	12
Three toed woodpecker <sup>1</sup>	<i>Picoides tridactylus</i>	8
Stock dove	<i>Columba oenas</i>	8
Middle spotted woodpecker <sup>1</sup>	<i>Dendrocoptes medius</i>	5
Northern goshawk	<i>Accipiter gentilis</i>	4
Pigmy owl <sup>1</sup>	<i>Glaucidium passerinum</i>	2
White tailed eagle <sup>1</sup>	<i>Haliaeetus albicilla</i>	1
<b>Total, all species combined</b>		<b>102</b>

Species marked with “<sup>1</sup>” are listed in the Annex 1 of Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds

### **Relevance for environmentally significant issues or policy areas: *compensations***

*Background information:* the ambition of this Project was to arrange protection for 500 nests of LSE in Latvia by creating microreserves. In 2016 (before the Project was started) there were 2387 microreserves in Latvia, mainly created for protection of breeding sites of various bird species. As a result of the Project, the number of microreserves in Latvia has grown by 20%, which is a significant increase. In addition, Latvia was undergoing the process of habitat inventory that could possibly result in changes of protected areas in Latvia.

*Problem:* the planned increase in number and territory of microreserves increases the tension between nature protection organizations and forest owners as the latter hold a view that there are already too many restrictions on economic activities. The process of simultaneously implemented national scale EU importance habitat inventory (not related to the project) also reinforced the negative attitudes amongst land owners and their organisations. The institutions responsible for creating microreserves – SFS and NCA have a quite rigid process for approval of microreserves, and many landowners feel left out of the process and discussions. The land owners can receive an annual compensation – up to 160 EUR per ha of restricted areas, but many of them consider these compensation not adequate. This situation around microreserves created negative attitudes towards nature protection and also hindered the achievement of nature protection goals. In some cases, it resulted in deliberate removal of nests in order to avoid restrictions.

*Proposed solution:* System of microreserves is a cornerstone in protecting of dispersedly breeding bird species in Latvia, and it was as well an essential part of this project. It is very important to have positive and supportive attitude in society in order to achieve our goals. We have formed opinion on the possible solution to the above described problem. Before 2008 it was possible to grant a one-time compensation for all the area where economic activity was restricted due to the creation of microreserve. We are confident that it is necessary to renew this system to provide adequate compensations to forest owners thus motivating them to cooperate in nature protection. The compensations should include one-off compensation in accordance with the market value of the forest or possibility to sell the land to state. Also the process of microreserve establishment should be improved, making it less bureaucratic and formal and providing far more intensive inclusion of owners.

*Our actions:* since the beginning of 2017 we have been lobbying this issue in responsible institutions. The compensation issue was included in the letter of Latvian environmental NGOs to government forming parties and members of parliament with a call to make the government declaration greener, November 2019. As a result, MEPRD established a working group on 30/01/2019 to evaluate the existing compensation mechanism and offer the improvements. On 18/12/2020 working group has come up with report on the potential changes – it is proposed to 1) increase the yearly payments, 2) introduce the full compensation of market value of timber in the restricted areas (to be paid out in parts).