

## LIFE15 NAT/GR/000936 – Prespa Waterbirds

Bird conservation in Lesser Prespa: benefiting local communities and building a climate change resilient ecosystem



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LAYMAN'S REPORT

# The wetlands of Lesser Prespa Lake

Surrounded by high mountain peaks, Lesser Prespa Lake is found at an altitude of 850 m and is separated by a small strip of land from the larger Great Prespa Lake, which lies to the north. The **Prespa lakes basin is shared by three countries**: Greece, Albania and North Macedonia. This relatively small area is home to rare bird species, more than **1,500 species of plants, 9 endemic fish species and 48 habitat types**. Prespa's rich and unique biodiversity has seen the area protected by international agreements, as well as by national and European legislation.



*Lesser Prespa Lake in SE Europe*



*Wet meadow habitat by Lesser Prespa Lake*

Lesser Prespa Lake is widely known for its mixed colonies of Dalmatian and great white pelicans, and hosts **the largest colony of Dalmatian pelicans in the world, with more than 1,200 pairs**, while many other important waterbird species also breed in the area. When the wet meadows around the lake flood in spring, they become breeding areas for amphibians and fish, as well as feeding grounds for herons, cormorants and glossy ibis. The deeper parts of the vast reedbeds provide a safe haven for breeding pelicans, cormorants and herons, while ferruginous ducks frequent the open shallows between the reedbeds to feed. **The heart of the wetlands of Lesser Prespa is this living mosaic of habitats, the conservation of which requires continuing, co-ordinated vegetation management.**

# The challenges



*Lesser Prespa lakeside and the Koula channel in 1964 and today*

In the past, **local communities cut the reeds and used them as building material or animal fodder**. Through mowing and grazing they maintained large shallow areas around the lake and wet meadows free of reeds, suitable for the needs of waterbirds and fish. Gradually these practices died out, however, and the reedbeds expanded to cover these wet meadows and shallow areas, affecting fish breeding and

bird feeding. In addition, fires that spread to the reedbeds, mainly at the end of winter or the beginning of spring, can negatively affect bird nesting, either by destroying their nests or causing birds to abandon them. Droughts prolonged over several years, as a result of climate change, keep the lake water level low, **creating the ideal conditions for fires to spread throughout large parts of the reedbed**.

**Diseases are a further threat to waterbird populations.** Botulism and bird flu are highly contagious diseases that endanger the waterbirds of Prespa, as their populations move between many wetlands in Macedonia and Thrace. Particularly in the case of bird flu, wild birds such as Dalmatian pelicans are often symptomless carriers of the disease, thus increasing its transmission. Cases in Greece and the Balkans have increased in recent years, making co-ordination with the local authorities essential.

**As part of the LIFE Prespa Waterbirds project, a “Co-ordinated Action Plan” was drawn up by the Management Body** for the Prespa National Park, the Municipality of Prespa and the Society for the Protection of Prespa, in order to ensure effective collaboration and the support of the local veterinary services in the event of an outbreak that would affect populations of pelicans and/or other waterbirds in Prespa. This action plan was shared with other authorities in Greece, as well as in the transboundary area, aiming to inform them and strengthen co-operation should there be cases of disease amongst waterbirds in the cross-border region of Prespa.



*The co-ordinated action plan and two additional leaflets were shared with stakeholders, aiming to strengthen co-operation*

# The LIFE15 NAT/GR/000936 – Prespa Waterbirds project



*Dalmatian pelican*



*Great white pelican*



*Great white egret*



*Little egret*



*Squacco heron*



*Black-crowned night heron*



*Ferruginous duck*



*Pygmy cormorant*



*Glossy ibis*

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**CO-ORDINATING BENEFICIARY:** Society for the Protection of Prespa

**PARTNERS:** National Observatory of Athens  
Fondation Tour du Valat

**PROJECT AREA:** Prespa lakes basin, Western Macedonia, Greece

The goal of the project was to conserve and protect the biodiversity of Lesser Prespa, focusing on nine rare waterbirds in particular. Using an integrated approach to important issues affecting how the ecosystem functions overall, one of the basic objectives was to bring benefits to the local community, while the critical issue of climate change was investigated for the first time, examining the effects it is expected to have on the ecosystem and how we can adapt to them.

# How the activities were planned and designed

The first stage of the project included a set of activities that established the guidelines for the management of reedbeds, the adaptation of management to climate change and for the use of biomass, in preparation for the main conservation management work.

The wetland forms a dynamic ecosystem, which is constantly changing, and for its effective management it is essential to regularly review the work being carried out and adapt accordingly. Based on the initial guidelines, an annual operational plan was drawn up each year, following this adaptive management approach.



## Waterbirds, fish and other species

Before management could start it was important to study the main elements of the biodiversity of Lesser Prespa Lake, in order to design conservation measures appropriately, excluding interventions with negative effects and giving priority to particular areas. So, the first crucial step was to make a detailed record of the condition and situation of the nine target species, **which showed that work should be focused on the northern and eastern parts of Lesser Prespa, where most of the breeding populations of these birds are concentrated**, as well as on strengthening fire protection through interventions in the reedbeds and selected drainage channels.

In addition, **as some endemic fish species of Prespa reproduce in the streams around the lake, it was important to ensure a continuous flow of water from these streams into the lake**, with no vegetation overgrowth in the stream beds to impede fish movement, while these places also make suitable feeding grounds for birds, too. In order to improve breeding conditions for fish, the project planned to clear and restore the mouths of two important streams at Mikrolimni and Lefkona, using a mixture of technical works and vegetation management. Recognising that many other equally important creatures live in the dynamic and complex wetland system, studies on otters, amphibians, small mammals and passerine birds were also carried out, so that the project measures would not affect their populations, or would affect them positively. Based on the results of the studies, management exclusion zones were created for the protection of these species.



## Vegetation

In the preparatory phase Tour du Valat carried out pilot mowing in the reedbeds, in order to determine what the effects of cutting and fire would be, whether or not the mowed areas were subsequently flooded. **The experiment confirmed that mowing and/or grazing in the summer and autumn, followed by an increase in the water level of the lake, would favour the creation of wet meadows.**

Further investigation also determined which season and which method (cutting reeds below or above the water level) would be best, in order to achieve the aims of restoring wet meadows and creating firebreaks, as well as for encouraging reedbeds to potentially expand into areas dominated by lesser bulrush, a plant which doesn't provide a good base for waterbirds to build their nests. In addition, satellite imagery was tested as a tool to help monitor fires, in combination with ortho-photo maps produced from drone images, in order to better understand how vegetation develops after fires.

## Climate Change

Fluctuations in the water level of Lesser Prespa Lake affect the entire ecosystem, as they determine the extent of flooding that creates wet meadows each spring. The National Observatory of Athens studied the vulnerability of the wetland to climate change, in order to design measures for the conservation and adaptation of the ecosystem to the new conditions that may be created in the light of future climate change scenarios. Based on this work, it was proposed to extend vegetation management to deeper parts of the lake, in order for wet meadows to be created even in years with low water levels, as well as for perpendicular firebreaks to be made in the reedbeds around the lakeshore, as the main measure to limit the spread of fires in drought conditions.



## Benefits of the use of biomass

The vegetation management foreseen in the project required the removal of cut reed from the wetland and depended on the potential use of this plant material, also known as biomass. The quality and quantity of the cut reed determines how it can be used, as well as the possibility of collaboration with stakeholders in order to ensure the economic sustainability of the management. **At the beginning of the project, the LIFE Prespa Waterbirds team examined three alternative solutions for how to use the biomass produced.**

Studies carried out by the Department of Agriculture at the University of Western Macedonia showed that summer reed is the most nutritious fodder for cattle, whether cut for use **as winter feed or grazed on the spot**. Furthermore, after an experiment in collaboration with three of the area's farmers, the same research group also showed that this reed could also **be used as a conditioner to improve soil** in fields that have a low nutrient content.

Dry reed that is cut during winter has a lower moisture content, making it more useful as a heating material. For this reason a feasibility study was prepared on the use of **reed biomass as a heating material**, in combination with other available biomass from the Prespa National Park, such as bean support canes and the plant material left over from bean growing.



Transporting cut reed biomass



An amphibious machine can be used in the lake, streams and flooded ground. Reeds can be cut above or below the water surface, in order to create firebreaks and openings in the reedbed in deeper areas, as well as to clear stream mouths.



Tractors can only be used on dry, moderately wet ground. With the right accessories, reed biomass can be cut, gathered and removed from the wetland and from stream banks.

## Choice of equipment

Large-scale vegetation management required the appropriate equipment, that could successfully respond to specific circumstances. Cutting reeds in the wetland, clearing streams, biomass removal and creating firebreaks all added up to a landscape of challenges that needed specialised tools. As part of the project the SPP procured machinery that could cover a wide range of different ground conditions and water levels.

# Management activities

**At the core of the project were the management activities**, which were all carried out on the basis of the initial guidelines and annual operational plans. The restoration, conservation and protection of Lesser Prespa Lake's mosaic of important habitats for fish and birds required wetland vegetation to be mowed and removed, grazing around the lakeshore and in the area's streams, and vegetation in deeper parts of the reedbed and drainage channels to be cut, while the restoration of the water flow in one stream was also necessary.



## Cutting reeds around the lakeshore

At its annual meeting, the Wetland Management Committee (WMC) reviewed the progress of vegetation management and gave guidance on how it should be carried out each year, in accordance with the annual operational plan submitted by the SPP and proposals from local producer groups. Following the approval of the decisions of the WMC by the MBPNP's Board of Directors, management in the priority areas of Lesser Prespa lakeshore began, carried out by local stockbreeders, the project team and MBPNP personnel.

**The first mowing work under the LIFE Prespa Waterbirds project was carried out in the autumn of 2018**, a year in which the lake water level was high and so management could only be implemented to a limited extent. During the following year, the water level was low, allowing the mowing to go ahead in larger areas and during the summer months.



## Stream restoration

The main objective of this activity was to **improve fish breeding areas and waterbird feeding grounds in the mouths of two streams**, through a combination of restoring water flow and vegetation management.

The removal of vegetation in the stream mouths began in November 2018, with the main technical works being carried out using the specialised amphibious machinery. Work to restore the flow of water was especially needed in the Mikrolimni stream, which also saw the replacement of a culvert at the existing road crossing. The restoration and vegetation removal activities were also continued in the remaining years of the project, maintaining access for breeding fish and feeding waterbirds.



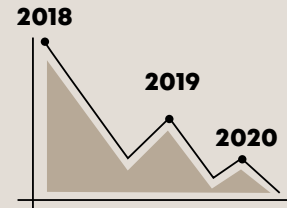


Areas of wetland vegetation cut during the LIFE Prespa Waterbirds project

### Protection from fires

One of the key aims of the project was to protect important waterbird colonies from fires, so firebreaks were made around these colonies, by cutting into the deeper parts of the reedbed with the special amphibious machinery to create open areas which would prevent the spread of wildfires. Corresponding firebreaks were also made at the points where selected drainage channels joined the reedbed, in order to prevent fires from passing into the wetland from the agricultural zone.

#### LAKE WATER LEVEL

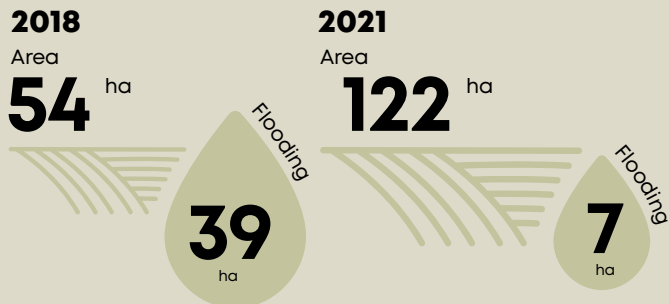


#### FIRES AND FIREBREAKS

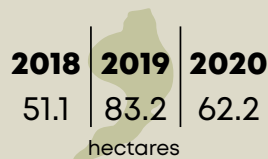


### Wetland vegetation management in numbers

#### EXTENT OF WET MEADOWS



#### AREA MOWED



The protection of the area and the wetland from wildfires has long been a concern of the local authorities and organisations, and a permanent fire station was established in Prespa following pressure from the MBPNP, the SPP and the municipality. The fire station ensures the area is largely protected from fires, and also provides significant specialised support for preventing and fighting fires in the reedbeds.



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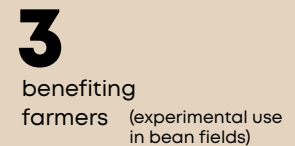
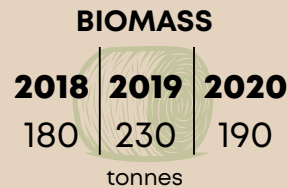
Grazing in the wetland

## Use of biomass

The cut reed biomass produced by vegetation management was **distributed free of charge to the area's stockbreeders on a pilot basis and also used as a soil conditioner in bean farming**, in order to see the potential interest in its use. The participation of stockbreeders in the management actions was catalytic for the project, as wetland management was completed with their contribution to the mowing, collection and use of reed biomass as animal fodder, as well as with the increase in grazing by the lakeside.

## Grazing at the lakeside

Increasing grazing by the lakeside was one of the objectives of the project, as another important tool for maintaining the wet meadows. The vegetation management carried out by the project in 2018 and 2019 opened up more of the lakeside area to grazing, **so more stockbreeders soon wanted to bring their herds to graze there**. In addition, two solar-powered electric fences were installed, in order to enclose herds in areas where it was useful to increase grazing, thus further helping to conserve wet meadows.



# Communications

## Presplorers

**Presplorers, the group of Prespa youngsters formed under the project, carried out a series of environmental education activities**, getting to know the target species and understanding why wetland management is so important, through outdoor games and bike trips. They became young scientists, studying and recording the changes in the lakeside, monitoring waterbirds and recording their new knowledge and experiences in an art diary, a photography exhibition and a short film.



*Presplorers out and about in nature*



*Presplorers created a short film, "People and Naiads, Myths and Truths"*



*Presplorers showed their photography in an exhibition, "Our changing landscape"*



*Training in the field*

## Summer Schools

One of the project priorities was training and encouraging an exchange of views between scientists, students and conservation professionals. For this purpose, **three educational events were organised on the subject of wetland management and monitoring**, with around 40 conservation scientists working in Greek management bodies for protected areas and research institutions, management authorities and organisations from transboundary Prespa attending, as well as 14 students from Greece, Albania and North Macedonia. Due to the restrictions imposed by COVID-19, a specially designed immersive virtual environment was created in order to support moving a transboundary summer school fully online. In their evaluations of the three activities, the participants highlighted how useful they were and expressed their keen appreciation for the new knowledge they had gained. The educational material produced for the three summer schools was collated together and adapted for an online [Wetland Management and Monitoring Toolkit](#).

## Print and digital media

In order to disseminate the work of the project and at the same time raise public awareness on the protection of the wetlands, a variety of means were employed, each adapted to different audiences. A series of **print media** were released, including a leaflet, calendar, four newsletters for the local community and information boards for visitors to the area. In terms of digital media, since the start of the project **a dedicated website and the birdwatching app Prespa Wings have been created.**



Shooting the documentary, "Wings: Wetlands and People"

## Documentary

The documentary, **"Wings: Wetlands and People"**, by the Spanish director **Francisco Márquez**, presents the course of collaboration for the wetlands of Lesser Prespa, through 30 minutes of wonderful images from the unique landscapes of Prespa, as well as the stories of people who live in the area and have participated in the project activities. The documentary tells us the story of the wetlands of Lesser Prespa, showing the balance in the reedbeds and how the area is an example of harmony and the co-existence of man and nature. The film was shown online on the SPP's YouTube channel and since its release has enjoyed very positive reviews.

# Monitoring and results

For many years the SPP has implemented a long-term programme for monitoring of the wetland, waterbirds and other abiotic parameters related to the ecosystem, such as meteorological data and the fluctuation of the lake water level, as they are important factors for maintaining the balance of the ecosystem. During the project, the activities and their impact on birds, fish and vegetation were also monitored on an ongoing basis, using additional specialised indicators. Through this annual monitoring it was also possible to directly evaluate the work of the project, giving feedback with up-to-date data and results, allowing adaptation of the operational plan each year.

## The following results arose from the analysis of the monitoring data:

- Mowing and increased grazing had a positive effect on lakeside vegetation, despite the dry years and low water levels
- The area of wet meadows by the lakeside has doubled
- Populations of the target species have remained stable
- Firebreaks significantly limited the spread of fires
- Firebreaks also functioned as feeding grounds for waterbirds
- Six fish species, including three of the area's endemic fish, used the two cleared stream mouths in order to reproduce
- The stream mouths also functioned as feeding grounds for waterbirds



## Benefits for the local community also arose from the work of the project:

- Increased interest from stockbreeders for participating in management
- The large area of reedbed that was cut for wet meadow conservation, created highly suitable conditions for grazing
- The use of biomass for fodder further enhanced the benefits for stockbreeders
- All of the project's management activities had a positive socio-economic impact

## After the project



**The wetland is the source of life for Prespa**, intimately connected to people and their activities like no other part of this important place. With the signs of the climate crisis all around us, the wetlands of Lesser Prespa seem more fragile than ever and the need for their protection is intensifying. In the LIFE Prespa Waterbirds project together we expanded vegetation management and made it more specialised with studies and new tools, we increased grazing, cleared vegetation from the mouths of streams and created firebreaks to protect waterbirds and help fish. The challenges are growing and a joint transboundary effort is the only way to meet them, an overriding concern is for co-ordinated wetland management to be continued after the end of the project. **We will continue to closely monitor changes in the climate and how they affect the area, in combination with other developments**, such as the works being carried out to install a drip irrigation system in Prespa, in order to plan the corresponding conservation management actions, always guided by the principle of collective effort, which the project has shown time and again to be the only way to achieve the sustainable future we all hope for.

# Collaboration for the wetland

In order to achieve the objectives of the project, stakeholders needed to come together to carry out the actions each year. With ongoing technical support from the **Society for the Protection of Prespa (SPP)**, the **Management Body for the Prespa National Park (MBPNP)** oversaw all the necessary management work, **from the planning stage through to implementation and monitoring**. Aiming to ensure dialogue and

the participation of all the Prespa stakeholders, the MBPNP annually convenes the **Wetland Management Committee (WMC)**, in accordance with whose decisions wetland interventions are organised and evaluated, for their environmental benefit and the boost they give to biodiversity, as well as for their socio-economic interactions, benefits and impacts.



*Wetland management was carried out by the project team and local farmers*

In addition to the key contribution of the MBPNP and the members of the WMC to decisions on wetland management and organising the project activities, the consent and support of other services was also essential: Public Real Estate Service of Florina; Department of Topography, Settlement and Land Reclamation of the Florina Directorate of Agricultural Economy and Veterinary Science; Department of Environment and Water Economy of the Florina Directorate of Environment and Spatial Planning; Florina Forestry Department; Florina Ephorate of Archaeology.

For the technical preparation of project interventions, the SPP set up a Steering Committee, in which the WMC authorities and organisations participated, together with the General Directorate of Forests and Rural Affairs of the Decentralised Administration of Epirus and Western Macedonia, and Professor Vasilis Papanastasis of the Aristotle University of Thessaloniki.

The transboundary dimension of wetland management has been an integral part of the project, with a Transboundary Wetland Management Technical Group (TWMTG) being set up in order to strengthen collaboration between the three neighbouring countries. Representatives from the Albanian and Greek Prespa National Parks participated in the TWMTG, alongside representatives from Galičica National Park and the Municipality of Resen from North Macedonia, as well as representatives from the environmental organisations MES (North Macedonia) and PPNEA (Albania). Other projects for the protection and management of wetlands that are active in the area also periodically attended TWMTG meetings, such as the Transboundary Biosphere Reserve Prespa. Through these meetings it was possible to exchange opinions and share methods, practices and know-how. Transboundary collaboration was strengthened through the project, particularly on issues of managing and monitoring of wetlands, and the prospects for further co-operation between the bodies that work on the protection of Prespa's wetlands were also investigated.

# Organisations and people involved in the project

**Participating in the WMC:** Ministry of Environment and Energy; Directorate of Environment and Planning of Western Macedonia (of the Decentralised Administration of Epirus and Western Macedonia); Directorate of Waters of Western Macedonia (also of the Decentralised Administration); Municipality of Prespa; Society for the Protection of Prespa; Prespa Local Land Reclamation Service; local stockbreeders association and two local fishing associations

The successful completion of the project is due in no small measure to the constructive collaboration of:

**Management Body for the Prespa National Park**

**Municipality of Prespa**

**Prespa Local Land Reclamation Service**

**Prespa Public Library**

**The schools of the area**

**The stockbreeders, farmers and fishermen who participated in the actions**

We warmly thank these organisations as well as all the people who contributed to achieving the aims of the project.

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**Collaboration with other projects:**





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