



## **After- LIFE Conservation Plan for Oroklini Lake as part of the project LIFE10NATCY716 - Oroklini**



**Game & Fauna Service  
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LIFE10NATCY716 –Oroklini**



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**[www.orokliniproject.org](http://www.orokliniproject.org)**

**Photographs: Game & Fauna Service, Ministry of Interior, 1453, Nicosia, Cyprus**



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## 1. INTRODUCTION

The present document is the last deliverable (Action E.5) of the LIFE project “Restoration and Management of Oroklini Lake SPA (CY6000010) in Larnaca, Cyprus” (LIFE10NATCY716), prepared as foreseen by European Commission and the project’s proposal. This AfterLife report is largely based on actions drawn from the Action Plan produced during the LIFE Oroklini project.

The main reason for the preparation of this plan was to set out how the conservation actions taken during the LIFE Oroklini project will continue to be implemented (and estimate their cost) in order to safeguard the long-term management of the site under a Favorable Conservation Status. Also this deliverable defines who is responsible for overseeing the implementation of each action. The abovementioned project was implemented within the framework of the LIFE program of the European Union.

### I. LIFE Oroklini project

The LIFE Oroklini project (LIFE10NATCY716) for the restoration, conservation and management of the Oroklini wetland was implemented between 2012 and 2014, to address restoration and conservation issues, pressures and threats such as lack of water management and hydrological balance for the needs of the ecosystems and species, disturbance, restoration of an area where an illegal flea market (bazaar) used to operate, eradication of Invasive alien species (IAS) of flora and lack of public awareness through a combination of research, direct conservation work and public awareness initiatives.

Oroklini lake (area of 57 ha) has been classified as a Special Protection Area (SPA: CY6000010) under the Birds Directive (2009/147/EC; Fig. 2) for two Annex I bird species that nest in significant numbers: the Black-winged Stilt, *Himantopus himantopus*, (for which Oroklini Lake is usually the most important nesting site in Cyprus) and Spur-winged Lapwing, *Vanellus spinosus*, (for which Cyprus has more than 50% of the EU breeding population).

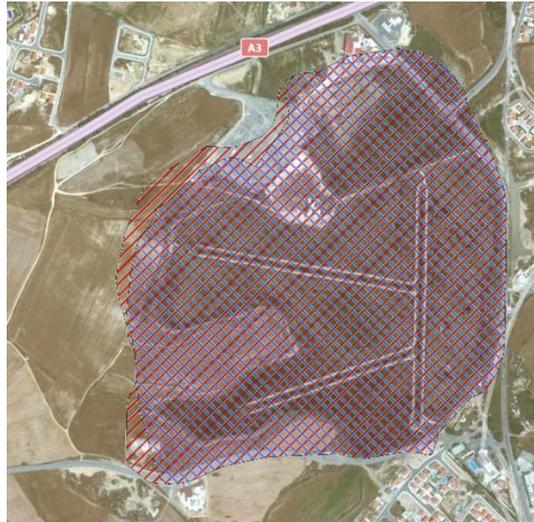


Figure 1. The areas included within the Special Protection Area (red) and Site of Community Importance (blue) at Oroklini Lake.

The Annex I species Stone curlew (*Burhinusoedicnemus*), Kentish plover (*Charadriusalexandrinus*), Common tern (*Sterna hirundo*) and Little tern (*Sternula albifrons*) also breed, or have bred at the site. In addition to these, 58 Annex I species visit during migration (in spring or autumn) or overwinter at the site, and there are also a 36 regularly occurring migratory species not on Annex I, especially waterbirds. In total, about 190 species have been recorded at the site. Red-crested Pochard *Netta rufina* nested successfully between 2009 and 2013; these were the first nesting records for the species **on the island**. Cattle egret nested successfully for the first time in 2014, with a colony of around 45 nests present in spring 2014. A slightly smaller area (53 ha) is also designated as a Special Area of Conservation (SAC: CY6000011) under the Habitats Directive for its halophytic marsh vegetation (Fig1. – adopted from Action Plan for Oroklini SPA) and especially the protection of 5 different habitats types as well as the rare halophytic flora species *Suaeda aegyptiaca* and other species that depend on the wetland ecosystems.

## II. Conservation objectives(adopted from Action Plan for Oroklini Lake, 2014)

1. Maintain Special Protection Area (SPA) in favourable conservation status through maintenance of suitable breeding habitat for qualifying species and other key breeding species
2. Maintain presence of migratory and wintering populations of Annex I and non-Annex I species and maintain 53ha SCI halophytic marsh communities in favourable condition
3. Maintain presence of European eel (*Anguilla anguilla*) in open water areas
4. Build and maintain support for Oroklini Lake within the local community and with visitors

## 2. PROSPECTS AND NEEDS OF “AFTER-LIFE CONSERVATION PLAN”

### I. Management of the wetland ecosystem will assure the future conservation of the ecosystem as a whole and their targeted species / habitat types.

The objective of the “*After-LIFE Conservation Plan*” is to describe the way in which the partners of the LIFE Oroklini project are planning to continue to develop the actions that have been initiated throughout the project’s duration. Hence, the ultimate purpose of the implementation of the plan presented here is the management of the wetland, the maintenance of its ecological function and structure and also the assurance of the long-term conservation of the targeted species / habitat types. The “*After-LIFE Conservation Plan*” illustrates:

- The foreseen *After-LIFE* actions.
- The beneficiary who is responsible for the implementation of each *After-LIFE* action.

All efforts and actions implemented following the project’s completion should be solid and responsible, as were all activities during the project’s implementation. For the conservation and management of Oroklini Lake, the “*After-LIFE Conservation Plan*” consists of three parts:

- A. Administrative part.
- B. Monitoring and management part.
- C. Dissemination and public awareness part.

#### A. ***Administrative part***

The implementation of critical administration activities regarding Decrees of the SPA and SAC. Hence, the administration needs are the following:

*Enforce the legal status of SAC and SPA*: Based on the Decree, designation of the area as Special Area of Conservation (SAC) and implementation of management plans for the conservation of biodiversity of the wetland. The Department of Environment (DE) and Game & Fauna Service (GFS) are the responsible authorities for implementing Nature Directives.

*Responsible Beneficiary*: DE& GFS

*Timeline*: **Implementation within five years.**

*Management of the wetland’s infrastructure*: The establishment of actions was carried out in different phases during the project’s implementation. These elements (fencing, signs, pathway, bird hides and notice boards) which define the site need to

be maintained after the end of the project. For this, the maintenance of the pathways, notice boards and signs must be carried out once every year.

*Responsible Beneficiary:* DE and GFS

*Timeline:* **Implementation for five years.**

### **B. Monitoring and management part**

The implementation of specific monitoring and management measures will ensure and further improve the conservation status of the targeted species and habitat types. The long-term monitoring and management measures are due to contribute towards conservation in the long term, after the end of the project.

All monitoring and management activities will be carried within SPA and SAC sites (all management/conservation/monitoring actions are shown in table in Annex I).

### **C. Dissemination and public awareness part**

The promotion of greater public awareness on the importance of the conservation of targeted species and habitats and on the EU conservation policies. Besides, one of the most important aspects of the role of protected area is to show the necessary conservation work itself, the information and the results produced from this work should be communicated to large parts of the society. The LIFE Oroklini project adopted this approach through numerous activities in this direction, such as: printing of information material and distributing this to several target groups, organized workshops and participating in scientific conferences. In addition, the project encouraged the participation of local people and other stakeholders in the design and implementation of conservation activities. Both dissemination and public awareness activities are implemented during the *After-LIFE* period, through:

**Public information:** Dissemination of project's objectives and their results will continue to be presented in the project's website which will be active for at least five years after the project's end date (<http://www.orokliniproject.org/en/home>). The website has been operating since the beginning of the project (July 2012) and has been constantly updated. This website will keep operating for up to five years (following the LIFE+ program completion) and it will be a significant dissemination tool for the project's results and deliverables. In this way, these results and deliverables will be available for future research related to the wetland ecosystem concept and for the conservation issues of target species and habitat types.

**Public awareness and environmental education:** An important achievement of the project is its link with the academic and education system of the island. Thus, an Educational Kid was developed. A visitor information flier was produced and was promoted through Cyprus Tourist Organization (CTO) to tourists and visitors.

Visitations from schools increased significantly since the beginning but also after the completion of the LIFE project.

Activities will be continuous, in order to increase the public awareness on nature conservation and issues on biodiversity in Cyprus.

*Responsible Beneficiary: DE*

*Timeline: Implementation for five years.*

## **II. Priorities of application of *After-LIFE* Conservation actions and measures**

For an SPA site to be considered to be in a favourable conservation status, the bird species of Annex I of the Birds Directive, or regularly occurring migratory species in that site, must achieve a predetermined 'favourable reference value' (FRV). In order to achieve FRVs for the target species at Oroklini Lake SPA, the following conservation measures and monitoring actions must be carried out and utilized: 1. Bird monitoring that includes monthly counts and nesting waders monitoring where annual productivity will be estimated; 2. Predator control on fox and hooded crow numbers (for years 2015-2016), combined with monitoring of nest success with wildlife cameras; 3. Monitoring of water control features in order to ensure their proper function; 4. Monitoring water levels for the benefit of birds, and the whole ecosystem's hydrological balance for the favourable conservation status of the habitats and the species; and 5. Monitoring the Ichthyofauna of Oroklini with special attention on eel population. In addition to the above, infrastructure monitoring and regular maintenance will be carried out (For the birdwatching hide and Information kiosk, fence and gates, water control structures - signs of illegal entry and vandalism, poaching, keep record of visitors). The wetland ecosystem will be maintained for its habitats types and will be monitored every 2 years, thus restored habitats (islets features) will be maintained in such a way to ensure that the target species favorable conservation status will be achieved. Potential threats such as bird collisions with electricity wires, dumping of refuse, regeneration of IAS will also be monitored and controlled.

## **III. Climate change adaptation strategy in relation to wetland habitats**

Cyprus climate, the extreme Mediterranean type with long dry periods and unpredictable rainfall with a downward trend, necessitates the planning of a water management strategy regarding the conservation of the very few, existing wetland habitats and the species they support. Prior to 2012, Oroklini wetland faced a number of threats especially related to water management and hydrological balance of the ecosystems structure and function. Through the LIFE Oroklini project the S3 compartment (north) of the wetland is able to hold water for a longer period and

especially throughout the most important for breeding waders' season: spring-to early summer. Water management allows control of extreme events, especially with regards to spring flooding. Proper operation of water control structures allows drawing down water levels to avoid destruction of nests, as it was well documented in the past. These flooding threats have been dealt with through water management actions implemented during the LIFE Oroklini project. The relevant works carried out during the project's duration (mainly the restoration of the weir, part of the embankment, installation of 2 water control structures, creation of islets and ditches to increase safe nesting sites and feeding areas for waders) will safeguard the existence of the optimum quantity of water at such level in order to meet the conservation objectives for improved nesting of the target species at the highest degree possible (in order to achieve FRVs). In case of extreme drought the action plan prepared as part of OROKLINI LIFE project, provides for a study to investigate the feasibility of using treated or other water as currently the inflow cannot be controlled, i.e. cannot be increased in case of drought.

#### **IV. Monitoring under the objectives of the Water Framework Directive (WFD)**

Compartment S3 of Oroklini Lake has been included in the water bodies monitored by the Water Development Department (WDD), under WFD. This will be carried out once a month by the WDD. The other compartments (S6 and S7) have not been included because they are seasonal.

#### **V. Project Contribution to NATURA 2000 Network**

Oroklini project, mostly through its conservation actions can be a Model project for other important wetlands.

The project, through its many actions has raised awareness for the NATURA 2000 Network in the active community of Oroklini, which actively participated in project actions.

The project contributed significantly in the conservation of 2 important wader species, Oroklini being one of the most important breeding sites of *V.spinosus* and *H.himantopus*.

**Estimated budget € 115.550 for the next 5-year period (Annex I for detail breakdown)**

## ANNEX I - Financial Outlook

Action	Time frame	estimated annual cost	estimated cost for a 5-year period	Beneficiary
<b>Action 1: Vegetation management</b>				
1.1 control of reeds from expanding to the detriment of native vegetation and breeding waders' nesting habitat	once annually	€ 800	€ 4.000	Environment Department/ BirdLife Cyprus
1.2 Preservation of embankment through rotational removal and trimming of Tamarisk	once annually	€ 500	€ 2.500	Environment Department / BirdLife Cyprus
1.3 Conservation of small dam and removal of blocking vegetation	Once every 2 years	€ 500 every 2 years	€1.000	Environment Department / BirdLife Cyprus
1.4 Removal of vegetation from islets, canals and ditches	once every 5 years	-	€ 1000	Environment Department / BirdLife Cyprus
1.5 Reed management and control in catchment area	once annually	€800 annually	€ 4.000	Environment Department / BirdLife Cyprus
1.6 Removal and control of IAS of flora	once every 2 years	€1000 every 2 years	€ 2.000	Forestry Department
1.7 Conservation and management of native vegetation planted along the fenced perimeter of the lake	once every 2 years	€1000 every 2 years	€ 2.000	Forestry Department

<b>Action 2: Water management</b>				beneficiary
2.1 Maintenance and operation of water control infrastructure	twice annually and when needed	€ 500	€ 2.500	Environment Department / Game & Fauna Service / BirdLife Cyprus
<b>Action 3: Conservation and protection of avifauna</b>				beneficiary
3.1 preservation of small ponds, ditches with water	Once annually	€ 500	€ 2.500	Environment Department / Game & Fauna Service / BirdLife Cyprus
3.3 Removal of garbage from the lake area	once annually	€ 1.200	€ 6.000	VCC
3.4 a. Production of pollution prevention protocol  b. Staff training in dealing with hazardous situations such as reaction and containment of oil spills in the lake  c. community awareness for minimizing risks of potential chemical/oil pollution and fertilizer run-off in the lake			€ 5.000	Environment Department
<b>Action 4: Monitoring</b>				beneficiary
4.1 Monitoring of avifauna	once annually	€ 770	€ 3.850	GFS & BirdLife Cyprus
4.2 Productivity estimation of key waterbird species breeding at the site and predation impact	Once annually	€ 5.000	€ 5.000	GFS & BirdLife Cyprus
4.3 Monthly waterbird counts, monitoring of conservation actions (including bird collisions on electricity cables crossing the wetland) monitoring	monthly for 5 years	€6500 annually	€ 32.500	GFS & BirdLife Cyprus

4.4 Monthly monitoring of predators (nocturnal and diurnal)	monthly for 5 years	€ 2.640 annually	€ 13.200	GFS
4.5 Water level and salinity monitoring	5 years	€500 annually	€ 2.500	Environment Department &WDD
4.6 waterqualitymonitoring	4 times annually for 5 years	€600 annually	€3000	Environment Department and WDD
4.7 Mapping/updating habitat map and vegetation monitoring	once every 2 years	€ 1.000	€ 2.000	EnvironmentDepartment
<b>Action 5: Research</b>				<b>beneficiary</b>
5.1 Feasibility study for the possibility of using treated or other water in extended drought periods and in years with extreme drought		€ 5.000	€ 5.000	Environment Department and Water Development Department WDD
5.2 Study of the possibility of releasing the native fish species <i>Aphanius fasciatus</i> in Oroklini wetland		€ 4.000	€ 4.000	Environment Department
5.3 Study on the impact of potential agrochemical flow from nearby agricultural areas			€ 3000	Environment Department
5.4 Study on the potential impact of mosquito spraying in the wetland			€ 4.000	Environment Department
<b>Action 6: Public awareness</b>				
6.1 Infrastructure maintenance (fence, birdhides)	Once a year	€ 1.000	€ 5.000	VCC
6.2 Public awareness campaigns (bird watching events, volunteer wetland area cleanup, etc)	variable	-	-	All project partners