



The nature of business

LIFE-Stymfalia Layman's Report

LIFE+ Project NATURE AND BIODIVERSITY



LIFE-Stymfalia project

Project title: Sustainable Management and Financing of Wetland Biodiversity - The case of Lake Stymfalia

Project code No: LIFE12 NAT/GR/000275

Project duration: 5 years

1 October 2013-28 September 2018

Coordinating Beneficiary: Piraeus Bank

Associated Beneficiaries: 1. Piraeus Bank Group Cultural Foundation, 2. Municipality of Sikyonion, 3. OIKOM Environmental Studies Ltd, 4. Society for the Protection of Prespa, 5. Centre for Renewable Energy Sources and Saving (CRES)

Project area: Stymfalia, Region of Corinthia

Total project budget: € 2,013,290

Project funding: The LIFE-Stymfalia project was 50% co-funded by the LIFE+ funding instrument of the European Commission (€ 1,006,646)

Project website: <http://www.lifestymfalia.gr/>

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The nature of business





LIFE: The LIFE programme is the EU’s funding instrument for the environment (Regulation EU/1293/2013). The general objective of LIFE is to contribute to the implementation, updating and development of EU environmental policy and legislation by co-financing pilot or demonstration projects with European added value.



Natura 2000: TNatura 2000 is an EU wide network of 27,500 protected sites that covers 18% of EU land territory and 7% of EU marine areas. Combining nature protection with sustainable land use and economic activity, the aim of the network is to protect and enhance Europe’s natural heritage, securing the long-term survival of Europe’s most valuable and threatened species.

The ecological value of the Stymphalia wetland...

Lake Stymphalia is located in the mountainous area of the Regional Unit of Corinthia, 145 km from Athens. According to Greek mythology, that was where Hercules confronted the Stymphalian birds.

The area of Stymphalia is surrounded by the mountains Zireia, Oligyrtos, Mavrovounio, and Gavrias, while the lake is located at an altitude of approximately 626 m above sea level. Lake Stymphalia is considered to be the largest mountain lake in the Peloponnese, covering an area of 350 to 400 hectares, while it is also the southernmost mountain wetland of the Balkans.

The wetland’s flora and fauna are particularly rich, while the wetland also constitutes a refuge for rare bird species. The area is included in the European Network of Protected Areas Natura 2000 as a Special Protection Area (SPA) for birds as well as a Special Area of Conservation (SAC) for the protection of species listed in Annex II and types of habitats listed in Annex I of the European Council Directive 92/43/EC, which corroborates its ecological value. One hundred and fifty (150) different bird species (breeding species, migratory species, and winter visitors) have been recorded in the lake and in the surrounding area.



...and the threats it faces

Despite its importance and uniqueness, the lake has been degrading during the past few decades. The reduction of water inflows, climate change, and the increased quantities of fertilisers that leach into the lake have caused a significant expansion of the existing reed bed. The resulting impact is significant on wildlife, water quality, as well as tourism. The lack of protection and management measures leads to a loss of valuable habitats for bird and fish species inhabiting the lake.



The aim and objectives of the project

The aim of LIFE-Stymfalia project is the restoration of the wetland and the long-term protection and management of Lake Stymfalia, connecting biodiversity with business.



THE OBJECTIVES OF THE PROJECT WERE TO PROMOTE:

1. The conservation and enhancement of the status of target species and of their natural habitats.

Target species include three bird species (Ferruginous Duck, Purple heron, and Little Bittern), two bat species (Lesser and Greater Horseshoe Bat), as well as an endemic fish species (Stymfalia Minnow or Daska).



2. The double identity of the area: As a protected wetland and a cultural landscape



3. The engagement of the local community, especially farmers, in the sustainable management of the lake.



4. The creation of jobs deriving from the innovative initiatives of the project and sustainable entrepreneurship.



LIFE-Stymfalia project, after 5 years of action, has managed:

A. Scientific work - New data

→ 1. For the first time, a Management Plan for the protected area “Lake Stymfalia”, as well as Special Action Plans for the management of the reed bed, the regulation of the water level fluctuation, the various avifauna species, and the fauna species (fish and bat species) were elaborated and submitted to the Ministry of Environment and Energy.

Management Plan Objectives:

- a) Regulation of the water level fluctuation to that of a natural hydroperiod.
- b) Restoration of the wetland to its 1960-1970 status (50% reed bed, 25% water surface, and 25% seasonally flooded meadows).

One of the main objectives of the Management Plan is the maintenance of the annual fluctuation of the lake’s water level at 1 to 1.2 m. This is the desired fluctuation in order to ensure the conservation of protected bird species and habitats, as well as the water supply to surrounding areas and irrigation of local crops.

Significant findings

The **bottom of the lake** was mapped for the first time in the context of the project. The deepest point of the lake is at 605.71 m above sea level.



2 new habitats included in Annex I of Directive 92/43/EC were identified within the protected area in the context of LIFE-Stymfalia

Habitat Type 6420 (Mediterranean tall humid grasslands of the Molinio-Holoschoenion)



Habitat Type 92AO (Salix alba and Populus alba galleries)

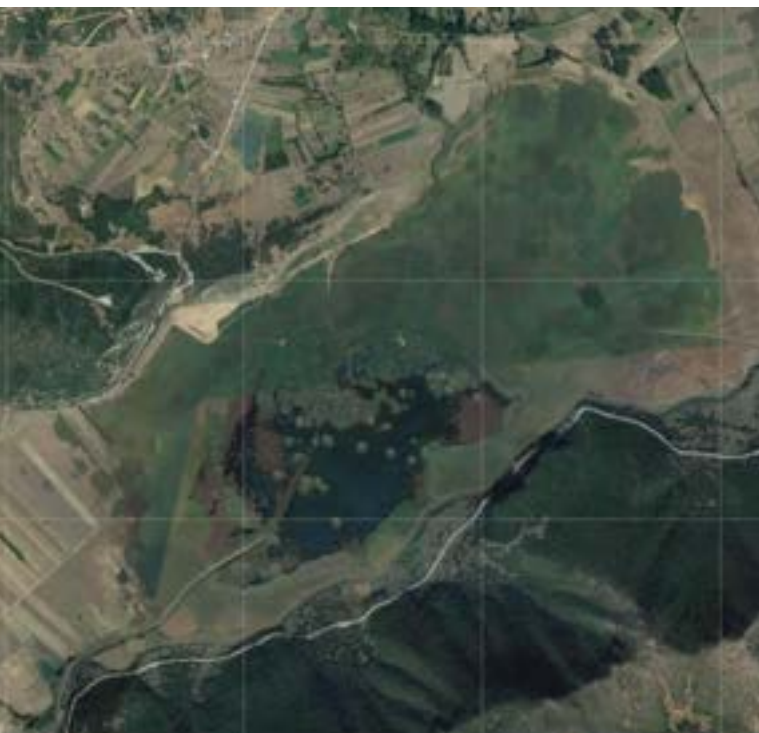


Ten new **bat species** were discovered, The presence of threatened mammals, i.e. jackal and otter, was documented in the area.





→ 2. A Monitoring Plan was elaborated for the monitoring and surveillance of the wetland's ecological characteristics.



→ 3. A digital application was developed to monitor changes in the natural landscape of Lake Stymphalia in real time, through automated satellite image processing.

→ 4. Environmental Impact Studies were submitted regarding the protection and management initiatives implemented to protect important habitats.

→ 5. Studies were elaborated and pilot applications were implemented for the use of reeds as solid biofuel (pellet) and soil-improver (compost).



→ 6. A study was conducted for the economic evaluation of ecosystem services, explaining that ecosystem services are rare and that their devaluation or degradation entails a considerable cost. The total value of ecosystem services in Lake Stymphalia amounts to € 6,563,864, based on current estimates.

B. Management initiatives

1. Reed bed management

Four reed bed cuttings were implemented for research purposes on a total surface of **give the figure in ha**, based on the scientific reed bed cutting plan. After the reed bed cuttings, additional space was available for protected species to move, breed, and nest.



2. Water management

A hydrological gauge was placed to monitor water level fluctuations in the lake, following the mapping of the bottom of the lake. Based on available data, a study was conducted on the regulation of the water level, particularly during droughts, using small-scale technical inflow-outflow infrastructure.



3. Protected species restoration

Habitats were created (land islets, shallow lakes, passageways) for bird and fish species inhabiting the lake. Especially for bats, for the first time in Greece, 26 bat boxes were placed in selected trees around the lake.

4. Operation of Local Management Unit (LMU)

The Local Unit, consisting of three locals, monitored and patrolled the area during the entire course of the project, coordinated the reed bed cuttings, and updated the local community on the progress of the project.



C. Information and awareness among interested parties for the protection of the lake

1. Creation of the Farmers' Network of Stymphalia and promotion of sustainable farming entrepreneurship and innovation

- The Network includes more than 160 members, all of whom are local farmers.
- Nine training seminars took place - workshops and field trips for local farmers, aiming to inform them about the benefits of organic farming and integrated farming management.
- “Stymphalia my Home”: The logo was specially designed for the Farmers' Network of Stymphalia. Twenty-six (26) member-beneficiaries of the Network already use the logo on their packaging, adding value to their local products.

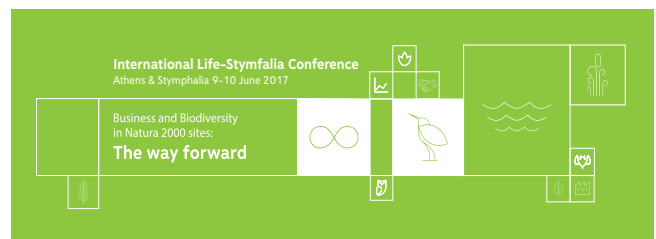


2. Information Days and International Conference

The project, through numerous information days and events that took place at the Environment Museum of Stymphalia:

- Spread the message, both nationally and on a European level, about the need to restore Lake Stymphalia and showcase the area.
- Raised awareness among the local community to promote their engagement in the efforts to protect the lake.
- Inspired initiatives relating to sustainable development and innovative economic activities suited to Natura 2000 protected areas.

The two workshops and the international conference raised the issue of financing the protected site's management through sustainable entrepreneurship.



The conference's concluding remarks were included in the **LIFE-Stymphalia Statement**: The loss of biodiversity constitutes one of the greatest threats faced by our planet. Now more than ever, businesses and the private sector should take initiative, suggest solutions, and implement programmes that will positively affect biodiversity. Natura 2000 sites provide opportunities for sustainable development that favours the protection of biodiversity.

3. Environmental education for children

- In total, 3,000 activity books “Get to know Lake Stymphalia” were distributed to around **50 schools** and to the young visitors of the Environment Museum of Stymphalia.



- **Environmental suitcase “Mission... Stymphalia”.** Educational activities encourage primary and junior school pupils to discover the unique features of the wetland and come up with solutions to save the lake! So far, **520 pupils** in Corinthia have completed activities from the portable educational kit.



- Within the framework of “World Wetlands Day”, educational events took place every year. In total, **120 students** participated in the events.



4. Environmental and cultural interpretation path: “Man and Nature on the Paths of the Time”.

The path leads visitors from the Environment Museum to Ancient Stymphalos and the lake. On an elevated site there is a bird observatory built specially to serve the visitors. More than **5,000 visitors** have explored the path, including large groups, such as schools, scouts, NGOs, mountaineering clubs, etc.

The path was among the European **Natura 2000 Awards** finalists for 2018 and also among the top five initiatives in the category “Communication”.



5. Exhibition “The 6th labour”.

An alternative interpretation and environmental approach to the labour of Hercules; the exhibition includes unique music and artwork to present the objectives and progress of the project. Over **90,000 people** have visited the exhibition.



6. Multimedia in the Environment Museum of Stymphalia.

Though a human-computer interface, the visitor is familiarised with the entire energy cycle, from the reed cutting until the operation of the boiler using the biomass produced from the reeds. An integral part of the simulator is an interactive digital game, which puts visitors in the “driver’s seat” of the amphibian machine and allows them to “cut” the reeds and follow the process of pellet formation to heating homes.



35,600 leaflets (distributed to 423 Piraeus Bank branches)

3,000 pamphlets

6 Information Signposts

40 articles and 20 press releases in major Greek newspapers

3 videos

3 Technical Manuals: Reed Bed Management, Species and Habitats, Sustainable Financing

20,400 Visitors to www.lifestymfalia.gr



D. Promotion of the project

Participation in more than 25 events in Greece and Europe. For example:

- Presentation of the project in Green Week 2014.
- Green Week 2015: Exhibition kiosk “Connecting nature with culture”.
- One of 15 LIFE projects presented during the European Ecosystem Services 2016 conference. Signing of the Antwerp Declaration.

Awards:

- European Business Awards for the Environment in the category “Business & Biodiversity” 2016.
- 2017 Bravo Sustainability awards of the QualityNet Foundation.

Thanks to the experience acquired during the project, Piraeus Bank participates:

- In the IUCN “Incubator for Nature Conservation” initiative, aiming to promote business opportunities in order to enhance financing for protected areas and
- In the EU Business and Biodiversity platform (EU B@B Platform)

E. Discovering the business potential of Lake Stymphalia

1. Utilisation of biomass from reed cuttings and farming residues in the area:

The reeds from the summer reed bed cutting were collected, chopped, and transported to a composting plant, where they were mixed with other materials. Compost was made for the first time using the reeds of the lake as the main raw material. The soil-improver was distributed to the Stymphalia Farmers’ Network, as well as local schools and other local bodies.

Collection of materials from the winter reed bed cutting. The reeds were transported to a local pellet production unit. Following comminution, they were submitted to testing. The first pellets produced from reeds and wood were submitted to endurance testing by CRES, with promising results for commercial use.



2. Business Plan:

For the first time, the comparative advantages of the protected area were recorded and business opportunities were assessed, taking into consideration the environment and the lake’s unique biodiversity.

Potential financing sources:

- Income from business activities (biking, archery, horse riding trips, small tourist businesses, recreation area, enrichment/improvement of existing path, creation of a strong brand name)
- Income from Renewable Energy Sources (e.g. biomass power plant, small hydroelectric plants, small wind generators)
- Income from the promotion of traditional local products

The future of the lake

The protection of the lake should be a continuous and collective effort.

To ensure the long-term protection and sustainable management of the lake, it is necessary to secure adequate financial resources.

We build a solid basis...

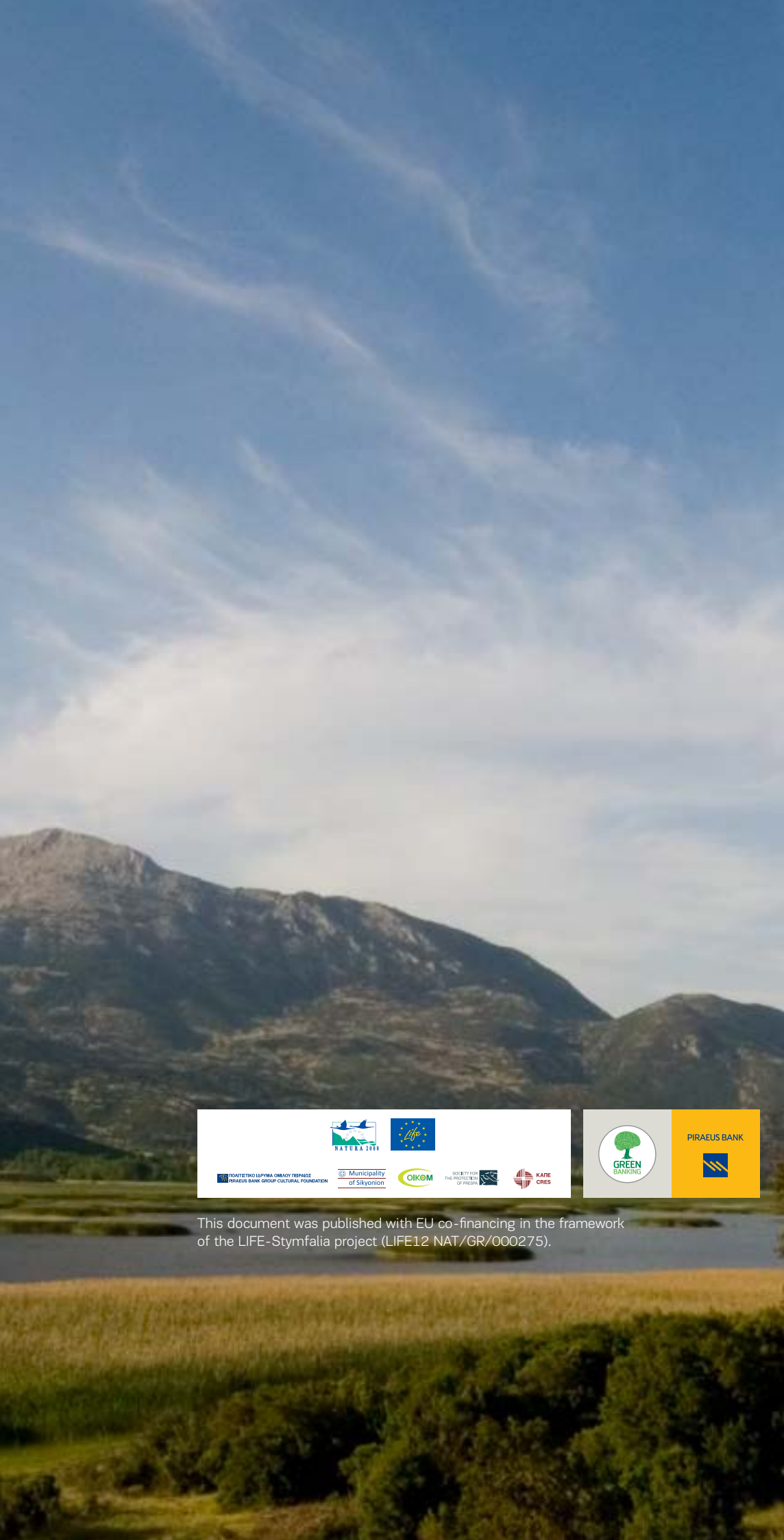
LIFE-Stymfalia, by delivering a Management Plan and a Business Plan, lays the foundations and passes the torch over to competent authorities to continue restoring the lake.

and keep going.

According to the new law 4519/2018, the management of Lake Stymfalia is under the authority of the Management Body of Parnon, Moustos, Mainalo, and Monemvasia. Its scope of responsibility includes:

- the implementation, monitoring, assessment, and updating of the Management Plan
- the securing and exploitation of financing tools (e.g. Regional Programmes) to promote conservation and promotion of new local development opportunities.





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This document was published with EU co-financing in the framework of the LIFE-Stymfalia project (LIFE12 NAT/GR/000275).