



**Project Life Environment**  
**"Living Lakes - Sustainable Management of  
Wetlands and Shallow Lakes"**



***Society for Protection of Nature and  
Ecodevelopment - EPO***



*This Project is co-financed by the EU Life Programme*



EPO is a non-profit, non-governmental organization, founded in 1988. EPO promotes integrated nature conservation **and** eco-development and is working especially for the wider Nestos Area, carrying out programmes with simultaneous conservation management and sustainable development measures.

EPO organises and carries out many environmental projects:

- o For protection and management of biotopes and rare species,
- o For environmental education, information campaigns and training programmes,
- o For sustainable tourism development,
- o For the careful production, exploitation, manufacturing and marketing of regional products,
- o For organic farming in protected areas and the reintroduction of old animal breeds (water buffaloes, cows) and their use for biotope management and food production,
- o Scientific research about rare species of plants, animals and habitats, in the sense of nature conservation and management.



*Spur-winged Plover symbol and logo of EPO*

In the past EPO has cooperated on many occasions with various Greek Ministries, regional and local authorities, universities and institutes.



*Salt marshes in the Nestos Delta*

In 1998 the lakes and lagoons of the Nestos Delta were included into the worldwide Living Lakes programme with EPO as partner organization



### What is Living Lakes?

Living Lakes is a network of 25 partner lakes/wetlands, 13 associated lakes and 1 honorary member represented by more than 46 organisations worldwide. Living Lakes was initiated by the Global Nature Fund (GNF) in 1998 - GNF is an international non-profit, non-governmental organisation for environment and nature.



Living Lakes mission is to enhance the protection, restoration and rehabilitation of lakes, wetlands, other freshwater bodies of the world and their catchment areas. It aims to promote sustainable development in lake and wetland areas for improving the quality of life of the local communities (Agenda 21) and supports educational programmes towards conservation of biodiversity and the dissemination of information relevant to these ecosystems.

[www.livinglakes.org](http://www.livinglakes.org)

### What is the EU Life Project?

The LIFE Programme was set up by the EU Department for Environment in 1992. The aim of LIFE is to financially support exemplary projects in the three sectors LIFE-Environment (demonstration projects), LIFE-Nature (in Natura 2000 areas) and LIFE-Third Countries for adjacent countries. LIFE will help to improve and implement EU's environmental policy and the projects of good environmental practice will be repeated by other industries, NGOs and public bodies.

[http:// europa.eu.int/ comm/ environment/ life/ home.htm](http://europa.eu.int/comm/environment/life/home.htm)



*La Nava Lake was one of the biggest steppe lakes of the Iberian Peninsula. It was drained in the 1940s and 50s, and its basin was dedicated to new agricultural farming lands. Since 1990 Fondo Global Nature has restored a part of this important wetland in Spain*



**Functions and Values of Wetlands**

Wetlands and shallow lakes are among the most productive, important and threatened ecosystems on earth. They are a precious part of the cultural and natural heritage of every country. They provide a rich diversity of animal and plant life and they offer opportunities for leisure and recreation. Furthermore they play an important role in filtering and cleaning water.



*Flamingos live in shallow lagoons & lakes*

**Wetlands in Danger**

Since the beginning of the 20<sup>th</sup> century over 60% of the European and 75 % of all wetlands in Northern Greece have been lost due to engineering construction works, draining and reclamation to arable land, over-abstraction of ground and surface waters and dumping of refuse. Many of the remaining are imminently threatened by nutrient enrichment and water abstraction.

**Our Life Project: “Living Lakes Sustainable Management of Wetlands and Shallow Lakes”**

In 2001 an EU-funded **Life Environment Project** was started to preserve and better manage the important wetlands of La Nava and Boada in Spain and the Nestos Lakes and Lagoons in North-eastern Greece. The project focuses on the management, development and restoration of these wetlands, which are in many way typical for a great number of wetlands and shallow lakes in Europe.

**The Key Elements of the Project:**

- o The elaboration and implementation of management plans for the two representative wetlands as “good practice guidelines” so that other wetlands can benefit from the experience gained during the project.
- o The installation of buffer zones around wetlands and creation of vegetated filter strips to reduce nutrient loading and stabilize favourable water conditions.
- o The raising of the public awareness about wetland conservation with information campaigns environmental education and a broad stakeholder involvement

[www.livingwetlands.org](http://www.livingwetlands.org)







*Water lilies at Nestos Lakes*

**Nestos Lakes and Lagoons**

The Nestos Delta in North-eastern Greece has been evaluated by the European Commission as one of the 10 most important wetlands in Europe. The delta is 550 km<sup>2</sup> large, but today only about 80 km<sup>2</sup> of natural biotopes and wetlands have remained including:

- 18 freshwater lakes and ponds near Hrysoupolis with many rare water plants surrounded by dry meadows, small woods and extensive farming areas,
- 8 brackish lagoons with large salt marshes and reed beds,
- a coastal sand dunes strip of 50 km along the Aegean Sea,
- the largest Greek riparian forest ecosystem in the Nestos river bed.

Here in the delta live about 40% of the Greek populations of Golden Jackals and Otter and Wild Cat have about their best in the hole country.

More than 320 species of birds have been recorded of which 110 are breeding, including many rare ones like White-tailed Eagle, Lesser spotted Eagle, Spur-winged Plover and Mediterranean Gull.



*The Golden Jackal is a very shy mammal*

In 1996 the delta was declared a National Park together with the adjacent eastern wetlands of Vistonis - Porto Lagos and Ismarida lakes; and Nestos is a Ramsar Site since 1974 and is listed under the EU Natura 2000 and the European Birds Directive.



*The Masked Shrike is a rare forest species*





*Impact areas of the Management Plan in the Nestos Delta: with pink the Western lagoons and yellow-orange the lakes North of Hrysoupolis.*

An important goal of the Life Project is the elaboration and official signature of a demonstrative management plan for parts of the Nestos Delta. The plan is to support direct and indirect measures of sustainable development and nature conservation. It comprises activities like biotope and water management, wetland restoration, agricultural extensification and sustainable tourism. It includes buffer zones around the lakes to reduce nutrient influx, guidelines for ecological farming and animal husbandry, habitat and landscape care and visitor management with a network of nature trails and proposals to optimize tourism services and infrastructures.

### Management Plan

Purpose	Surfaces Lakes	Surfaces Lagoons	Total Surfaces
Nature Conservation Areas	252 ha	246 ha	498 ha
Areas of Agri-Extensification	1,321 ha	2654 ha	3,976 ha
Planted Buffer Strips	4 ha	6 ha	ca 10 ha

*The Table shows all areas involved in the management plan and the planted buffer zones and filter strip in Nestos Delta*



*Active involvement of all stakeholders in the office and the "field" was an important step in the direction of accepting of the management plan*

### Realisation

The realisation of the plan depends on human and financial resources that can be provided only by the official authorities. Therefore it was an important precondition to involve the local, regional and national agencies and services in the development of the plan.



**The map shows the land distribution after the finalisation of the land reclamation scheme where all green areas are set-a-side; the orange zones are specially for the protection of lake shores.**

### **Concept for extensification**

A concept for the extensification of 4.000 ha agriculturally used land around the wetlands is integrated into the management plan and concrete measures are being proposed as agri-environmental extensification scheme. The area around the lakes is under an ongoing land reorganisation

scheme, where areas of low agricultural value will be set-a-side for conservation, offering the unique opportunity to create natural biotope bridges between the different small lakes. At the lagoons intensively farmed land is proposed to be involved in extensification measures with financial incentives for farmers.



An important practical measure of the Life programme was the creation and planting of a vegetated filter strip of 6 ha at Vassova Lagoon in order to remove nutrient loads from inflowing agricultural drainage canals. This constructed wetland was planted with more than 50,000 native water plants (*Typha angustifolia*, *Typha latifolia* and *Phragmites* sp.) in three adjacent basins. In the phase of remodelling landscape it was necessary to construct a field path to get access to the area with heavy machinery and more than 770 m of old drainage canals were filled in with earth to guarantee controlled water flow in the three constructed successive basins. Between the basins, earth-gravel filters were installed in order to regulate the flow velocity. Between the last basin and the lagoon, an overflow in combination with an additional earth-gravel filter was constructed. The used water comes from one of the main drainage canals and remains for about 2-3 days inside the filter system. Continuous water quality monitoring has testified the good functioning of the plant-filter removing large percentages of the phosphorus and nitrogen loads which cause eutrophication in lakes and lagoons.



*Vassova Lagoon*

*Cleaning of canals provide the plants for the filter  
Planting 50,000 water plants by hand*





The filter system showed rapid positive results and generated a high interest for the future installation of additional filter strips at other lagoons. Fishermen of the local co-operatives and members of the water management board, involved in the realisation of this measure, recognize the opportunity to solve longterm eutrophication problems in the lagoons and salination of adjacent fields.

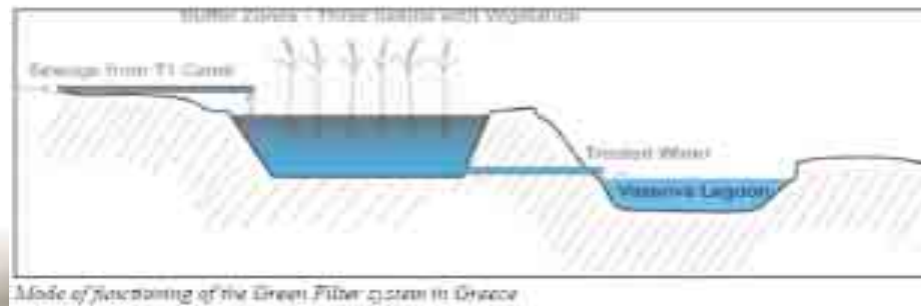
A very important side effect of the installation of the filter was its function as freshwater marsh, positive for biodiversity. Already in the first spring, four different amphibian species reproduced in incredible numbers in the filter. Hundreds of waders were feeding, and even very rare birds like the Glossy Ibis stayed here for several days during migration. Also in summer, the new reed beds host important numbers of egrets, herons, waders and warblers.



Installing Pipes for the inflow into the filter



Constructing the outflow gravel filter



In rural areas agriculture is the main source of Nitrate and Phosphate reaching lakes and lagoons. Therefore practical demonstration management measures were part of the **Life** programme, including the creation and plantation of buffer zones between agricultural fields and the wetlands.

At the Nestos Lakes several hectares of buffer zones close to the shores were planted with different local tree species for erosion control and non-point agro effluents. The buffer zones had to be fenced to prevent damage by grazing herds. At the same time these zones function as "biotope bridges" for wildlife species reconnecting the different lakes with natural habitats.



*Fencing and preparing the planting of trees in the buffer zones around the lakes*





There were several congregations of litter and rubble in the area of the lakes, lagoons and at the coast. Small garbage and litter were eliminated in the course of different summer camp activities in 2002 and 2004 and with school classes. In total more than 130 young participants were involved and about 19 ha of biotopes were cleaned.

Additionally enormous amounts of rubble was removed with the financial assistance of the municipality of Hrysoupolis and a local enterprises at a small lake close to Hrysoupolis. With heavy machines more than 120 truckloads were removed. In total an area of 5.8 ha was cleaned, the old banks of the lake were restored. Another restoration activity reconnected two parts of the lake by cleaning out the natural connections (yellow restoration areas on the Map).



A study with focus on the potential of these regions as tourism and recreation areas and especially for environmental education is being compiled by EPO.







The results of environmental education with children and young people can indeed be spectacular if environmental education projects fulfill basic principles of integrated projects such as:

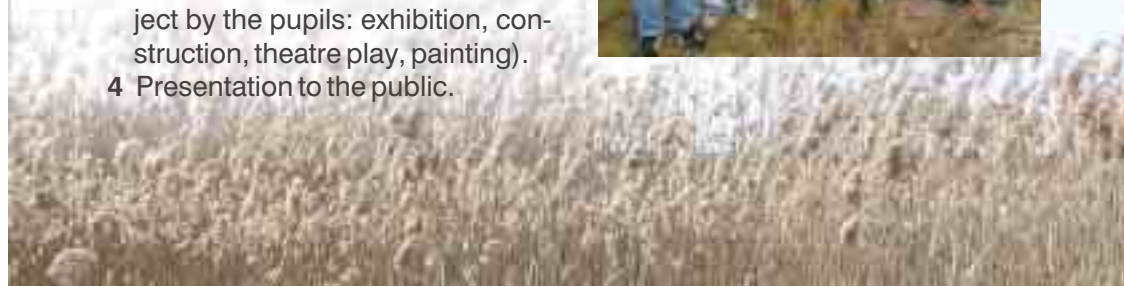
- To attract and keep the interest of the children by stimulants,
- To provide knowledge,
- To secure active participation,
- To give possibilities for further activity and publicity of the subject.

Practical contact of children with nature has direct and better results than any theoretical lesson. Hence the EU project consist of four parts:

- 1** Presentation of the project with slide shows of Nestos Delta and the wider area, videos, information leaflets, posters, photos.
- 2** Guided tours to the biotopes of the Nestos Delta.
- 3** All works done relative to the subject by the pupils: exhibition, construction, theatre play, painting).
- 4** Presentation to the public.

For successful implementation of any EE Project the collaboration, except for the schools, also with relevant bodies and services is very important. EPO collaborates with many institutions on national (Ministries of Education and Youth) and the departments of first and second level of education in the prefect-ures of Xanthi & Kavala, basic schools, high schools and universities, national welfare organizations and NGOs.

During the LIFE Environment Project 52 schools have been visited for presentations and 2,073 pupils plus 119 teachers have participated in the presentations and excursions. In 50 schools events have been carried out with final presentations of the work of the classes.





During the time of the Life Programme EPO organized 4 youth work camps in the field of environmental sensitisation and activities. Up to now 31 work camps were carried out in Greece and together with other partners in Germany, Great Britain and Spain. Over 700 young people participated from Greece, Spain, UK, France and Germany

A nature trail at the Nestos Lakes showing the different biotopes and activities was drafted and discussed with representatives of the local authorities, as the town intends to create recreation facilities close to some of the lakes. An intensive coordination of all measures is crucial to avoid conflicts and overlapping

*Observation tower built during the work camp*

*Tree planting with participants from England*

*Roads signs for the nature trail*

*EPOs new mobile exhibition was in-augurated by the Prefect of Kavala during the international workshop in Hrysoupolis in October 2003*



In autumn 2003 a regional workshop was organized about Nature Conservation and Ecodevelopment with more than 130 participants, including speakers from six countries of Living Lakes partner lakes. In the course of the workshop two field trips took place to wetlands and action sites of the programme. Similar workshops took place in the Broads (UK) in September 2003 and in January 2004 in Spain.



An important tool to demonstrate and spread good practice of wetland management were the four training courses (2 at lake Constance, 2 in the Broads). The main focus of these courses was on management and rehabilitation of wetlands, small technical treatment plants, sustainable tourism and good agricultural practice. More than 100 international participants could learn in many ways about wetland management aspects.



After a short theoretical introduction of crucial topics (e.g. agriculture, visitor management, etc.) those sites where innovative measures are applied were intensively visited.

The dissemination of all activities and results were practiced on a website, many leaflets and a multilingual DVD / Video. The publication of a 134 page Manual (in 4 languages) as Guidebook for the preparation of Management Plans for wetlands is a great success of this Life Programme



[www.livingwetlands.org](http://www.livingwetlands.org)



**"Management of Habitats and Raptor Populations in Nestos Gorge and Delta"**

With the experience of the Life Environment Programme EPO could set up and participate in an other large Life Nature Project with the title: "*Management of Habitats and Raptor Populations in Nestos Gorge and Delta*". The project is carried out by The Prefectural Authority Drama-Kavala-Xanthi as Beneficiary and five other partners besides EPO.

The actions of this programme take place in the Nestos Gorge, in the riparian forest and at the lagoons:

- Re-connection of 4 old Nestos river branches with the main stream,
- Natural re-forestation with natural riparian forests of an area of 60 ha on former agricultural fields inside the Nestos flood dams,
- Construction of 3 nature trail with 6 observation hides,
- Construction of 8 breeding islets for terns and roosting waterbirds,

The project compiles a wide range of actions for public awareness like: Promotion of the area for ecotourism, production of information materials, photo-albums, CD, video, exhibitions, website (*www.nestos.gr*), media work, participation in tourism

fairs, training courses, seminars, events, workshops and networking with other LIFE programmes.

*Construction of breeding islets for Terns  
2 Feeding places for vultures in the Gorge  
Re-connection of old Nestos branches*



## Project Areas



### **Nestos Lakes and Lagoons; Greece** **Society for Protection of Nature & Ecodevelopment - EPO**

7<sup>th</sup> Merarchias 3 PO Box 124 GR-64200 Hrysoupolis,  
Phone +30-2 591-02 31 44 Fax +30-2 591-04 70 09  
E-mail: Ecoconsult-epo@kav.forthnet.gr



**Development Agency of the Prefecture of Kavala**  
Ethnikis Antistaseos 20 P.O. Box 1392 GR - 65110 Kavala  
Phone: +30 - 510-291284,291285 Fax: +30 - 510-291286  
E-mail: aenak@otenet.gr



**Laguna La Nava; Spain**  
**Fundacion Global Nature Espapa**  
Corro del Postigo, 1 E-34337 Fuentes de Nava, Spain  
Phone +34-979-84 23 98 Fax +34-979 84 23 99  
www.fundacionglobalnature.org



**Ayuntamiento de Fuentes de Nava**  
Plaza Calvo Sotelo, 1 E-34337 Fuentes de Nava, Spain  
Phone: +34-979-84 24 11

**Ayuntamiento de Boada de Campos**  
Plaza Jost Antonio, 1 E-34305, Spain  
Phone: +34-979-11 80 08



**Project Coordinator**  
**Global Nature Fund (GNF)**  
Fritz-Reichle-Ring 4 D-78315 Radolfzell, Germany  
Phone +49 7732 99 95-80 Fax +49 7732 99 95-88  
E-mail: info@globalnature.org  
www.globalnature.org, www.livinglakes.org



**Project Partners**  
**Lake Constance; Germany, Switzerland, Austria**  
**Lake Constance Foundation**  
Fritz-Reichle-Ring 4 D-78315 Radolfzell, Germany  
Phone +49 7531 90 98-0 Fax +49 7531 90 98-77  
E-mail: office@bodensee-stiftung.org  
www.bodensee-stiftung.org



**Norfolk & Suffolk Broads; United Kingdom**  
**The Broads Authority**  
18 Colegate, Norwich Norfolk. NR3 1BQ, Great Britain  
Phone +44-1603-6107-34 Fax +44-1603-7657-10  
E-mail: broads@broads-authority.gov.uk



This Project is co-financed  
by the EU Life Programme



We thank Unilever Hellas  
for the important support  
and collaboration in this project



We thank WTW Weilheim Germany  
for the donation of a MultiLine F Set 3  
for scientific water analysis

