

Management of Posidonia, vernal pools and halophytic wetlands in Natura 2000 sites – CY

1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space

2. Key Approaches

- Ecosystems based approach
- Technical

3. Experiences that can be exchanged

The measures required to protect and manage unique coastal habitats.

4. Overview of the case

The elaboration of management plans and management works in two coastal areas as part of a larger initiative to manage Natura 2000 sites.

5. Context and Objectives

a) Context

Cyprus has proposed the acquisition of a management planning tool for its SCIs and SPAs, as well as implementation of urgent actions in five threatened SCIs, two of which cover unique Mediterranean, coastal habitats. These are situated in the south east of the island being Kavο Gkreko (Posidonia and vernal pools) and Alykes Larnakas (halophytic wetlands). A number of factors are exerting pressure on these SCIs due to past and present human activities, including recreation, fisheries, wildfires, water management, exotic species plantations and expansion of cultivations. These factors have been degrading and/or shrinking the extent of these priority habitats viz. Posidonia beds, vernal pools and halophytic wetlands.

Posidonia oceanica beds constitute a typical Mediterranean landscape whose beds constitute an important part of the Mediterranean marine ecosystem. Mediterranean vernal pools are temporary, shallow (up to 20 cm deep), small, water ponds. They are characterized by specialised, amphibious, often dwarf plants, which emerge just as the pools start to dry. They later disappear and are succeeded by other species. The main ecological characteristic of the habitat is that the wet, water eco-phase (autumn/winter) is followed by the dry terrestrial eco-phase (spring/summer) and the plant species are adapted to this “life between flooding and drought”. Indeed, certain species require the alternation of conditions in order to complete their life cycle and they do not appear otherwise. Their sporadic distribution, their very small size and the brief appearance of the plants, besides the degradation of the habitat due to draining and cultivation all over Europe, have rendered the vernal pools rare. In Cyprus, the vernal pools occur frequently in karstic, rain water fed depressions of hard limestone, named kafkala, and more rarely in shallow soil depressions. In the National Park of Kavο Gkreko, both types of vernal pools occur at three locations, scattered at the openings of phoenicean juniper shrub. The shallow pools are more widespread and their characteristic flora appears in February. The wetland ecosystem of Alykes Larnakas is one of the four large coastal halophytic wetlands of Cyprus. It includes the large hyper-saline lake Alyki and the smaller brackish lakes Soros, Orphani and Limni Aerodromiou which are interconnected. Salinity and depth of water fluctuate seasonally as well as annually in all the lakes and especially in Alyki.

b) Objectives

The main objective was the implementation of immediate actions in order to secure a favourable conservation status for the natural habitats and wild species in the sites. In parallel, these actions would create a base of important experience and set standards for the management of Natura 2000 sites in Cyprus.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

The Environment Service of the Ministry of Agriculture is responsible for administrating overall control and co-ordination of the protection and preservation of the environment. It covers legal and regulatory issues concerned with the implementation of the Habitats Directive in Cyprus.

b) ICZM tools

Preparatory actions included studies pre-requisite for the implementation of other actions as well as broad range actions concerning the future management of the Natura network. The preparation of guidelines for the elaboration of management plans was followed by the actual elaboration of management plans for Kavö Gkreko. Technical specifications were set for certain actions and environmental impact assessment studies were made for others. Monitoring plans for the targeted habitats and species were elaborated and a database was created for recording the resulting data and assessments. Also, a data information system was created for all the Natura sites in Cyprus. Non-recurring interventions in the SCIs were carried out to have immediate impact on their conservation status. GIS tools were introduced for recording data on all the protected areas of Cyprus. Complementary to, and integrated into, the management plans, eleven monitoring plans were prepared for targeted habitats and species of flora and fauna.

Within the framework of habitat monitoring, a photographic survey of the sea bed at the Kavö Gkreko site was performed, permanent sampling quadrates (with frames) were established, and density measurements were made (leaf bundles/m²) at a depth of up to 15 m. Moreover, since Posidonia has been proposed as a biological element of water quality at European level, parameters such as the deepest limit of its occurrence, the density of the bed at 15 m depth, and the average leaf surface per bundle at the same depth were estimated. The comparison of the results with the respective reference values proves that the ecological quality of the waters at the site of Kavö Gkreko is high. The values of the parameters estimated in Kavö Gkreko are higher than the reference condition values of the South Aegean and comparable to the ones of Zakynthos Marine Park. This is the rationale for suggesting the values of Kavö Gkreko as reference values for the area of the Ionio-Levantine Sea. At the site, exotic species were removed and native Zizyphus lotus planted. An anchoring system for vessels was installed at Kavö Gkreko (Konnos). The aim was to improve the conservation status of Posidonia beds and their protection from uncontrollable anchoring of recreation boats, especially during summer. A technical study for positioning the three anchorages as well as the required environmental impact assessment study was elaborated. Finally, the anchorages were signposted with mooring buoys equipped with lights.

The distribution of the vernal pools was mapped in detail and the maps were distributed to all the bodies involved, in order to facilitate their monitoring by the administrative personnel of the park and avoid any disturbance of the habitat. The three vernal pool locations were de-limited and signposted with wooden poles and, apart from that, an informative sign board was set up. Moreover, floristic composition of the plant communities was recorded.

A 3-year monitoring of biological and physico-chemical parameters of the water was implemented at 10 stations in the wetland ecosystem of Alykes Larnakas. The results demonstrated the problems of water quality and determined the elaboration of a continuous monitoring plan. A variety of halophytic habitats, actually all types identified in Cyprus, are found in Alykes Larnakas, despite human pressures. These habitats were preliminarily studied and mapped. The characteristic species of the habitat include the tiny shrimps Artemia salina and Branchianella spinosa (which are the flamingo's main food resource). The pilot restoration of halophilous vegetation was attempted in two ways. The first was to expand the halophilous vegetation. The alien-invasive species Acacia saligna which had displaced the halophilous vegetation was cleared at the margins of Alyki in an area of 500 m² at the eastern and an area of 100 m² at the southern part. Acacias were felled by mechanical means or by hand where necessary. Experimental cutting of the underground part of the trunks, instead of simple cutting, and chemical means for the control of acacia regeneration were applied at various locations of the felled area. Five acres in these areas were ploughed and subsequently 150 Tamarix saplings were planted with a special material for retaining and gradually

releasing water. Secondly, works were implemented for the alleviation of the pressures causing degradation of the halophytic habitats. In order to restrict access to, and avoid trampling of, the vegetation a channel was constructed and fencing was established with informative and prohibitory boards at two locations at the NW part of Alyki. Garbage was cleared from vulnerable areas as well as from the NW part of Alyki and from locations along dirt roads in order to improve the quality of abiotic elements. Constant maintenance and surveillance of the area and information of the public are required for the success of the above actions.

7. Cost and resources

The total budget for all five sites was €2,551,277 of which Life contributed €1,530,766.

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

It succeeded in implementing conservation and protection measures in both coastal Natura 2000 sites and in establishing the agreements and developing the capacity necessary for their long-term management. It marked an important step forward in Cyprus' nature conservation story.

9. Success and Fail factors

The major success of the project was that it established management plans for the Kavro Gkreko site as well as three of the other sites. These were approved by the central authorities in June 2008. The co-operation of eight partners, including three from Greece was also important.

10. Unforeseen outcomes

The management plans, monitoring plans and the data on priority habitats, species and aquatic parameters recorded in a new system during the project all contributed to building the capacity of the competent authorities to manage the entire Natura 2000 network in Cyprus.

11. Prepared by

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12. Verified by

It has not been possible to verify this case.

13. Sources

- “Conservation management in NATURA 2000 sites of Cyprus” (2008) LIFE Nature Project Layman's Report LIFE 04 NAT / CY/ 000013 NATIONAL & KAPODISTRIAN UNIVERSITY OF ATHENS



LIFE 013 laymans report (4.77 MB)

