

Good Practice Cases in Sustainable Tourism Destinations

The construction of an artificial wetland at Bramiana, Ierapetra (Greece)

ITEMS		DESCRIPTION	PICTURES
Name of the organization submitting this practice case	Name	Coastal and Marine Union EUCC and the Municipality of Ierapetra	     
	Contact	research5@qualitycoast.info ; secretariat@qualitycoast.info ; info@ierapetra.gr	
Name (in EN) of the destination	Ierapetra		
Administrative Organizations and country	Ierapetra is municipality located in the southeast of the island of Crete, Greece.		
Tourism Organizations	Municipal Tourism Committee, Hotel Union of Ierapetra and Southeast Crete		
Surface	551 km ²		
Resident population	27,602		
Tourism Arrivals	117,000		
Tourism nights	1,200,000		
WHO	Name	The Municipality of Ierapetra, the Natural History Museum of Crete and the Mediterranean Agronomical Institute of Chania.	
	Website	http://www.ierapetra.gr http://www.nhmc.uoc.gr/wetlands	
WHY	The reason for action	The artificial lake of the Bramiana dam represents a significant source of fresh water for agriculture and human consumption purposes, and it has become in the most important aquatic environment in South Greece, serving as permanent habitat for a diversity of birds throughout the year. However, the stresses on the existing water resources, mainly caused by agricultural intensification and tourist development, have led to a reduction in water resource availability and to wetland loss and degradation. In order to improve the efficiency and sustainability of current water uses, improve the ecological functions and biodiversity in the reservoir as well as its aesthetic, recreational and ecotourism value, Ierapetra has taken part in a multiple-objective management programme for wetlands at Bramiana lake.	
	Issues and challenge	The objective of the project was the development of an integrated and multiple-criteria approach for regional planning, concerning wetlands and water reservoirs, for the optimisation of reservoir site selection alternatives, as well as the biodiversity and the local human population. The main challenge was to keep the balance between the role of Bramiana as a major wetland and an important habitat	

		<p>for a diversity of birds, and the other uses of its water for agriculture and human consumption. During the implementation of interventions several issues emerged that needed to be addressed. The main problem was the large fluctuations in the water level which made difficult to check the behaviour of the artificial wetland. Furthermore, some intense flooding in the past years and the increasing erosion due to deforestation and intensive cultivation of the land upstream resulted in the filling of some parts of the wetland with debris. For this reason, a dredging by removing the excess material was necessary. In addition, the construction of floating platforms and small islets faced some stability issues as their position was quite vulnerable to the wind (usually very strong in the area). Moreover, the frequent wind prevents the continuous use of the platforms by the birds. Another serious problem is the behaviour of certain species of birds that occupy rafts for a large part of the day not allowing other species to visit them. Finally, although plantings were made in a few places close to public access, some of these were unsuccessful due to poor nutrient soils in the perimeter of the lake and despite the systematic watering and care.</p>	
<p>HOW</p>		<p>As part of this programme different restoration measures were carried out including the establishment of an artificial wetland in the reservoir, aiming to ensure a stable water level and a favourable wetland habitat, and the construction of floating platforms and small islets to provide undisturbed habitats for wildlife. The restoration programme also included native plant revegetation. In addition, interpretation facilities such as information kiosks and boards were installed allowing visitors to identify the most significant flora and fauna that can be found in this nature reserve. Other recreation facilities that were created include bird observatories, viewing sites, paths and seats.</p>	
<p>RESULTS</p>	<p>Benefits</p>	<p>The wide variety of restoration measures of this programme has generated substantial environmental and social benefits in the area. Bramiana reservoir has evolved to one of the most important wetlands of Crete and a major new attraction for bird watchers. The construction floating platforms and artificial islets has led to the creation of new habitats. This has resulted in a considerable increase of water birds breeding and resting in the Bramiana reservoir. Furthermore, the establishment of native plant species has helped to prevent the encroachment of invasive species. Introducing new facilities and infrastructure of recreation around the reservoir, has offered an innovative and sustainable development of the area. This has helped to improve the lives of the residents and make the area more attractive for visitors and locals. Schools visits and bird festivals are organised in the Bramiana reservoir throughout the year. Since the completion of the programme, more than 3,000 students and 2,000 teachers and citizens have visited Bramiana following the educational actions of the Environmental Education Centre of Ierapetra & Neapolis.</p>	

	Recognition and Awards	QualityCoast Gold Award 2012-'13	
REFLECTION	Multiplier effect and transferability	Other management plans, aiming to broaden the existing reservoir roles and functions, have been implemented in other basins of the island of Creta such as the reservoirs of Gergeri, Amourgelles-Arkalochori and Livada – Thrapsano. A “Good Practice Guide for the planning and management of small multiple objective water reservoirs” was published and it can be used by managers and users of the small-sized reservoirs in Crete, as well as in the rest of Greece and other sites in the Mediterranean region. ¹ The method of assessment of the small artificial and the natural wetlands that the project involved has already been transferred to an action of assessment for the small Aegean wetlands from WWF Greece.	
	Lessons learned and critical success factors	A critical factor for the success of the project is the permanent monitoring of the wetland status. It is important to monitor the changes in water level (especially after long periods of aridity) and see how they affect the biodiversity in the reservoir. It is also necessary to complete some unfinished interventions. The Municipality of Ierapetra should ensure the maintenance of all the facilities, such as information kiosks and boards, bird observatories, viewing sites, paths and seats. Actions to prevent human activities that may disturb life in the wetland are also required. For the success of the project it is essential to communicate the importance of the environmental value of the wetland, and to include the people from Ierapetra into the project making Bramiana accessible and attractive not only for tourists, but also for local residents. Educational actions already implemented at the site by the Environmental Education Centre of Ierapetra should continue in the future including more groups from the society as well as visitors interested in ecotouristic activities.	

*Pictures courtesy of the Natural History Museum of Crete, the Environmental Education Center of Ierapetra & Neapolis, and the Municipality of Ierapetra.

¹ “Mediterranean reservoirs and wetlands. A demonstration of multiple-objective management in the island of Crete.” (November 2005) LIFE – ENVIRONMENT LIFE00 ENV/GR/000685. LEYMANS REPORT. Natural History Museum of Crete. Retrieved April 3, 2013 from http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.showFile&rep=file&fil=LIFE00_ENV_GR_000685_LAYMAN.pdf