

LIFE Nature projects for transitional water management in Italy

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Among transitional environments, the Habitat directive recognizes the habitat "Coastal lagoons" (habitat 1150), either natural or artificial, as one of the most important habitats, with priority of conservation.

LIFE Nature Projects in Italy have been focused on the safeguard of both natural lagoons (Laguna di Venezia, Stagno di Santa Gilla, Stagno di S'Ena Arrubia, Laguna di Orbetello, Stagno di Cabras, Valli di Comacchio, Piasa della Baiona, Le Cesine) and artificial lagoons (Saline di Trapani e Paceco, di Tarquinia, di Comacchio). In many of these areas, a Management Plan was also prepared. The main problems tackled are the erosion of the most sensitive habitats, the disappearance of water bodies, the reduction of water circulation, the attenuation of conflicts with human activities, such as hunting and presence of electric lines. The Lagoon of Venice is the biggest natural Italian lagoon, and it has been recognized as an area of the utmost importance for its naturalistic values since 1939. The most typical geomorphological features are the saltmarshes. They are currently in strong regression: during the last century the lagoonal surface covered by saltmarshes has moved from 25 to 8%. This decrease is due to sediment reduction, and it is partially caused by the erosion of waves produced by high velocity boats. The project Saltmarshes: protection and restoration with naturalistic engineering techniques (Magistrato alle Acque di Venezia, Centro di Ricerca sulle Coste del Ministero dell'Ambiente della Bassa Sassonia, Università Tecnica di Berlino, Comune di Venezia) has tackled the problem of saltmarsh and associated species disappearance. The main objective was the restoration of saltmarshes and mudflats in specific areas. The project was carried out between 1999 and 2002, and several naturalistic engineering interventions were experimented in order to increase sand sedimentation without modifying ecological, morphological, hydrodynamic and landscape characteristics of the saltmarshes. The interventions were differentiated according to the factors affecting the area (waves, depth, erosion level). Among the tested techniques:

- *placement of "buzioni" structures (low erosion) and of "burghe" structures (high erosion) in the frontal saltmarsh channel, to protect from erosion and control the sediment input;*
- *creation of sedimentation areas in the saltmarsh backward area, close to the mudflats, in order to create a zone of still waters that enhance the development of pioneer halophytic plants that favour sedimentation;*
- *fixing of an anti-erosion structures on the bottoms in the proximity of the saltmarshes, constituted by a net with floating elements that enhance bivalve and algal growth. Such structures is biodegradable and favour the sedimentation decreasing the currents;*
- *morphological restoration of several portions of the saltmarshes;*
- *substrate stabilization by plantation of pioneer halophytic plants.*

The maritime traffic in the area has also been regulated, especially defining strict speed limits.

Another project devoted to saltmarsh protection is the Program of conservation of Po Delta area (second phase) (Regione Veneto, Regione Emilia-Romagna, Provincia di Ravenna, LIPU), carried out from 1995 to 1998. The problems are related to the landfill of vaste lagoonal areas, that causes a decrease in water circulation and quality, and a loss of breeding sites for birds of community interest. The objective was to recreate the water circulation system, subdividing a sample area of 200 ha. Two canals have been excavated and the sediment has been used to rebuild saltmarshes and to create islets, with the functions of barrier from erosion and of nesting sites for birds. The increase in water circulation that derived from the intervention has also lead to an increase in water quality and decrease in eutrophication. An immediate increase in breeding bird numbers was also recorded after the intervention. A further project, called Program for the Conservation of Po Delta geographical area (Provincia di Ravenna), has continued the environmental monitoring and has realized the management plan of the area, providing specific conservation measures for the site, the habitats and the species of community interest, and tackling the problem of the coexistence of hunting and bird conservation.

The problem of MISE emergency responses in presence of electric lines – that are an important cause of mortality for many bird species of big size – has been tackled by several projects, some of them being particularly innovative. Two of these projects were located in Po Delta transitional waters: Improvement of bird habitats and electric line reclamation and Ecological restoration and habitat conservation in saltpans of SAC Valli di Comacchio. During the first project, ENEL has dismantled 70 km of electric lines, and substituted 60 km with Elicord chords (at higher visibility for flying birds) in 20 areas of Po Delta Park considered of high value for bird presence. It is the first big project of this kind in Italy, with a budget of 6 millions euros cofinanced at 60,4% by EU, that will be used as a pilot experience for the rest of the territory.

*The “Laguna di Santa Gilla”, part of the pond of Cagliari, covers an area of 10 km reaching the river mouths of Rio Cixerri and Rio Fluminimannu, that allow the water input in the lagoon. It is separated from the sea by a tiny sandstripe. It is very relevant for the presence of many bird species, and there are several rare waterbirds breeding there. The creation of an harbour and a canal and the presence of pollution from wastes have put such a lagoon in danger. The project Gilia (Provincia di Cagliari) has allowed a pond restoration, using traditional techniques such as waste mechanical removal, and additional methods such as protection through the phyto-depuration actions of the reedbed. Islets were created to increase the presence of breeding birds, and monitoring and touristic activities were enhanced through the creation of a research lab in a rural building also used as a museum. Artificial coastal lagoons are well represented throughout Italy by saltpans, that are ideal habitats for many animal and plant species. Saltpans are composed by tanks and ponds connected to the sea by canals. The environment is highly salty and species that tolerated extreme conditions (e.g. *Aphanius fasciatus*) are hosted. The main reason of degradation is given by the landfilling of tanks and canals, that causes a decrease in water circulation and thus in tank oxigenation, with frequent algal blooms and eutrophication. The most common interventions are the excavation of sedimentation tanks and of canals and the restoration of embankments. LIFE Nature projects have been carried out in several lagoons of high relevance for the presence of priority habitats and species and especially of rare or threatened migratory birds. In Salina di Trapani e Paceco (Project of environmental restoration of the coastal habitats between Trapani and Marsala - Riserva dello Stagnone e delle Saline di Trapani-Paceco) a number of small freshwater ponds have been created in the reedbeds close to the saltpan; in Salina di Comacchio (Ecological restoration and habitat restoration in saltpan of SAC Valli di Comacchio) the traditional salt production has been restored, both to rebalance the overall environmental conditions and to enhance financial sustainment; in Salina di Tarquinia (Environmental restoration of the reserve of Saline di Tarquinia) a wetland area and a salt museum were created.*

LIFE Nature Program

In order to promote biodiversity conservation and sustainable development, the EU has adopted two important directives: 79/409/EC on the conservation of wild birds, called "Birds", and 92/43/EC, on the conservation of natural and seminatural habitats and of wild fauna and flora, called "Habitats". In order to enhance their implementation, a financial tool has been provided by the EU: the LIFE Program (Reg EC n. 1973/92).

LIFE Nature is the only financial tool of the EU that is specifically aimed at nature protection. In the framework of LIFE Nature, actions aimed at financing the Natura 2000 network are also carried out.



Foto Kajetan Kravos