

**The Mouth of the River Isonzo Nature Reserve:
a strategy for wildlife conservation along the Northern Adriatic coasts**

The lagoon of Grado – Marano, in the Italian Region Friuli – Venezia Giulia, is the northernmost wetland area of both the Adriatic and Mediterranean sea. Along with the lagoon of Venice and the delta of the River Po this is a key area for migrating waterbirds, but it is a highly developed and very crowded area as well, where problems of coexistence between development and nature conservation programs are great. Although the biological value of the lagoon and of the other related wetland areas has decreased this century, the lagoon of Grado - Marano and the mouth of the River Isonzo can be considered a good representation of coexistence and compromise between natural features and human activities in a developed country. After the reclamation and exploitation of recent years, the bulk of drainage has been halted, partially thanks to the Ramsar international convention. In Friuli - Venezia Giulia, there are still about 35.000 ha of coastal wetlands which could be considered of international value as a whole, according to Ramsar criteria. At present, two separate areas are officially declared as being of international importance: Valle Cavanata (248 ha in the lagoon of Grado) and the Foci dello Stella (1400 ha in the lagoon of Marano), but the declaration of other areas, such as the Mouth of the River Isonzo, is in progress. The more endangered habitat types are the (once often-flooded) plain woods and freshwater marshes. The latter are still well represented at the mouth of the River Stella to the west, where a reedbed covers nearly 400 ha and, partially as a consequence of a *restoration project in formerly cultivated areas*, at the mouth of the River Isonzo, to the east, where a “Nature Reserve” was created in 1996 by the Regional Administration recognizing the good results of a restoration project started in 1983. In this area there is a low island (called "Cona"), surrounded by two branches of the River but connected with a dike to the mainland. Including 15 km of the river, the mudflats in the tidal area and a portion of shallow sea the whole reserve currently covers about 2.400 ha. The inner and higher part of the (former) island was transformed into a farm to cultivate maize and soya bean. In 1983 a new embankment was built by landowners, enclosing a piece of saltmarsh of about 30 ha for further reclamation purposes. This process was halted under the Region's General Urban Plan and a project in keeping with the new designation as a nature reserve was promoted.

The main aims of this project were:

- Conservation of reedbeds, sand dunes, mudflats and saltmarshes in their current state.
- Restoration of an experimental area of 50 ha as a freshwater marsh, with temporary wetlands and flooded meadows in formerly cultivated areas, reproducing the natural sequence of summer droughts and winter flooding.
- Conservation of an example of Plains Woodland.
- Management of the area with the aim of increasing diversity using herbivores, such as Camargue horses, cattle (from Spring to Autumn only) and geese, to control vegetation.
- Education of visitors in the Wetland Interpretation Centre.
- Creation of the "Stazione Biologica Isola Cona" with the aim of promoting field research, covering topics such as: wetland ecology, restoration and management of recreated habitats, biodiversity and biogeography, bird populations and migration, compatibility between conservation and human activities, management, planning etc.
- Increasing awareness about wildlife conservation.

The biodiversity of the area, already great for a number of reasons including its position at the northernmost point of Mediterranean, increased enormously from the first flooding of the experimental pool (October 1989), the introduction of horses (1991) the extension of a hunting ban to cover the whole reserve (1994, over 2350 ha). A slight decrease of wintering waterfowl

registered in the western side of the lagoon was counterbalanced by a parallel increase, in the east, contributing to the maintenance of a fairly high waterbird population in the region, a fact which shows the importance of a network of well distributed and safe day-roosts for conservation and wise management of wildfowl populations. The area's value for birds, which was only few years ago very small, is now great, with more than 20.000 ducks and 5.000 coots wintering and almost 300 bird species recorded with a number of first observations for Italy.

The building of hides and an interpretation / research centre helps in the control of disturbance from a rapidly increasing number of visitors and allows for a wider knowledge of results of the project.

Birds as a planning tool.

The study of bird distribution and abundance may be of some relevance in planning if correctly interpreted. In the case of the lagoon of Friuli – Venezia Giulia the results of a regular monitoring work performed during the last 20 years is now very useful for a better understanding of ecologic problems of this area. Tides in the lagoon connected to the sea are larger than elsewhere in the Mediterranean (as witnessed by Venice and its frequent floodings) and this allows considerable numbers of waders to stopover on migration. The disturbance level inside the lagoon and the lack of grazing marsh along the coast forced the main wintering Wigeon - *Anas penelope* - flocks, whose peak numbers of about 50 – 70.000 are reached during migration, in November, to rest by day offshore and occasionally, to desert the area entirely for short periods. Recently wildfowl has been helped significantly both by a hunting ban introduced in all offshore areas and by the institution of the nature reserve at the mouth of the River Isonzo where, as elsewhere in the lagoon, huge areas of tidal mudflats are covered by carpets of *Zostera noltii* (so called “Wigeon” or “Eel grass”), their main food resource in Northern Adriatic. On the sandy islands small colonies of Little Tern (*Sterna albifrons*) breed together with Kentish Plover (*Charadrius alexandrinus*), Oystercatcher (*Haematopus ostralegus*) and the very rare, in the warm mediterranean waters, Common Eider (*Somateria mollissima*). A major success of the management within the smaller re-flooded areas, near the main entrance of the reserve, are the increasing populations of many once-very rare bird species, e.g. herons, Spoonbill, waders etc. including the Black – winged Stilt - *Himantopus himantopus*. Two wildfowl species, Greylag Goose (*Anser anser*) and Mute Swan (*Cygnus olor*) recently started to breed regularly and their populations represent, nowadays, a very visible part of local wildlife. Comparing wildfowl winter counts carried out in the nearby lagoons of Venice and Friuli – Venezia Giulia on almost 90.000 ha and those from Isola della Cona (about 2.000 ha), the importance of coastal wetlands of this area is obvious, showing that a small wetland can host very many birds if intensively managed.

The place is important of course for the presence of many other “non bird” species at, or near, the limit of their geographic distribution as, e.g.: the Italian Tree frog (*Hyla intermedia*) being replaced on the near Karst by *Hyla arborea* or the Lataste's frog (*Rana latastei*), a northern Italian endemic to the Po- Venetian Plain, here close to the boundary of its distribution,. To say nothing of many other possible examples.

A strategy for conservation: final comments.

If we consider the number of waterbirds present in a wetland area as a valid indicator which can say if current management is sustainable or not, we should assume that in the case of the lagoon of Upper Adriatic, at least during the last 20 years or so, it was. The achievement of this goal has been permitted by a strategy based upon nature conservation and the establishment of “wetland centres”, open to the public and linked with the management and restoration of nearby bird sanctuaries. The Visitor Centres built thus far and the restoration of new wetland areas, taking the place of intensive agriculture together with *better shooting regulation*, represent the fundamental steps towards the goal of an integrated and hopefully sustainable management of the lagoons as a whole. A success can be particularly considered the project of the Mouths of River Isonzo, where planning was favoured by natural conformation of the land: a long narrow stripe of ground protruding into

the middle of the Gulf of Trieste, in scenic landscapes with the Carso (Karst) limestone hills and cliffs at the horizon and at the centre of a great diversity of habitat types. In a short time the visitor can get visual experience of newly created marshes; temporary wetlands such as flooded meadows; reedbeds; a plain wood; salt marshes and a huge area of mudflats dotted by a number of islets. The original planning concept was to take profit of the only existing ground entrance to the area where to build the main visitor centre. The recently reflooded area around is organized with a circular footpaths (the Ring) and a number of hides, one of which, a thatched three stores house (one semi-submerged with a partial underwater view), can host more than a hundred people together. The rest of the area, where the access of visitors is limited, maintains a higher degree of wilderness. The visitor centre actually works both as an *information centre* and as an effective “*disturbance filter*” catching and setting aside those who are or can be its source (the visitors themselves) addressing them towards an *artificially re-created area*, specially planned for the observation of wildlife into some sort of “*reversed zoological garden*”, where humans are actually kept in captivity along screened pathways and into the observation hides.

The highest possible compatibility between eco-tourism and wildlife is achieved within a relatively small area. The result of the establishment of interpretation facilities, far beyond its biological value, proved fundamental in gaining the favour of the majority of people, facilitating the conservation of more important and vaster “wild” sites (e.g. mudflats and saltmarshes). As usual within the zoological gardens, *highly visible fauna means a better appreciation by the public*, with a positive feedback upon *in situ* conservation. In this case this happens in the surrounding still existing wetlands, otherwise menaced by development programs. Judging by our experience in Italy, where nature conservation projects are just now gaining strength, the key elements to attract the favour and interest of the general public, including that, fundamental, of decision makers, seem to be:

- a wetland interpretation centre, open to the public, built as far as possible from the most sensible areas;
- a pleasant “natural” landscape, which can actually be artificial, if well designed and managed;
- plenty of easily visible and not too shy “relevant” animal species.

In other terms: *turning words into... birds!*.

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