

## HUMAN ACTIVITIES AND NATURAL PROTECTED AREAS: THE WETLANDS IN SOUTHERN CORDOBA

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A numerous amount of inland pools, water bodies with different features and sizes, can be found within the geographical area of the Baetic Depression, offering a clear contrast with the dry conditions typical from the Mediterranean climate to be found in that region. Its study and knowledge is of obvious interest, and the area between the Guadalbullón river (on the East) and the Genil river (on the West), both tributaries of the Guadalquivir, the biggest river in Andalusia, has been chosen as representative from the spot. We have been working on 89 municipalities from four different provinces: Jaen, Cordoba, Granada and Seville; so far in that space we have listed 141 natural wetlands, with a total surface area of 18.269.469 sq m, to which other anthropogenic and eco-anthropogenic elements are added, such as inland salt lakes, from which 66 have been already listed.

Almost all the wetlands are located within agricultural landscapes with a high degree of humanisation and very fertile soils, in which ancient settlement can be found as well, accommodating an important demographic contingent and highly appreciated heritage values. In these wetlands, during centuries, the natural elements (the water bodies, wild fauna and plant life) have coexisted with another group of anthropogenic elements (agriculture, settlement, socio-economic activities...).

Apart from the cataloguing and portrayal of these wetlands, we are interested in knowing, from a geographical perspective, the complex world of interrelations established between the two realities: the natural and the anthropogenic dominants; and we are also interested in knowing its results, a general goal for which, as an anticipation, in the present study we have selected a particular area of the total set: the so called "Wetlands in Southern Cordoba".

We have applied the following cognitive outline to them:

- 1) Acquisition of, at least, a basic knowledge of the physical and human geography of the territory.
- 2) Identification and characterization of the main units in the pond system.

- 3) Analysis of the environmental elements that take place in the wetlands, and their importance within the general ecological framework.
- 4) Knowledge of the historical vicissitudes the wetlands have gone through, paying special attention to the effects of the protection policies.
- 5) Study of the relationships established in the past and present between the natural dominant environment (wetlands) and the anthropogenic dominant in which the former is included. Of particular interest is the historical look at the lifestyles developed in these lagoon environments, as well as the conflicts arising between the natural and anthropogenic processes.
- 6) Recognition process of the Cordoban wetlands' environmental values, their declaration as Protected Natural Spaces and the account of the results of the environmental legislation passed in the last decades, as well as the new ways of interrelation between territorial events and society, generated from that new condition.

This work scheme lays on the observation on how the world of interrelations interesting to us is very different depending on the historical moment in which it is considered. Since the most ancient human presence in that territory, the wetlands have been singular components in a landscape which, due to its Mediterranean climate, is not characterized by a large number of rivers, streams, lakes and other water elements. However, and due to that singularity, during this long period wetlands were always integrated within the general agrarian setting, from which they were part and provided certain elements and raw materials basic for the traditional economies, both of forestry nature (wood, reeds...) or alimentary and survival oriented for those societies: traditional vegetable garden, pastures, wild fruits, hunting, fishing...

For centuries, this interrelation was kept with a sustainability profile that, in general, allowed the conservation of the natural values held in the wetlands. However that balance started to weaken during the 20<sup>th</sup> century, when new actions are introduced, resulting in a progressive ecological decline of the lagoon settings, reaching a worrying state in the last third of that century.

This situation coincides with the moment of the "scientific discovery" of these wetlands, that took place during the 70s. An awareness raising of the exceptional nature and richness of these spaces and the progressive decadence of their natural values takes place, with the subsequent birth of an environmentalist consciousness that becomes stronger and stronger and that defends the need of the study, valuing, defence and preservation of these values. It is confirmed then that these wetlands are a meaningful reality, not only for their landscape relevance, but for their function as basic setting for a wide biological community, with an special relevance for birdlife that, literally, depends on the marshes. These spaces hold a significant plant community and also relevant heritage values that, in those years, reappraised these settings, triggering the appearance of a body of opinion that will crystallize in the classification of the wetlands as Protected Natural Spaces and their reception as an ecocultural and heritage landscape unique in several aspects.

This process, that begins in the 70s, will reach its first law passing in 1984, and will continue in 1989, being this lake system constituted as "Natural Reserve" including two "Natural Areas" with anthropogenic origin, detailed as follows:

Picture 1

## RESERVES AND NATURAL SPACES INCLUDED IN THE "WETLANDS OF SOUTHERN CORDOBA"

Name	Municipality	Lake basin area (has)	Water basin area (has)	Hydro period
<b>Natural Reserves</b>				
Laguna de Zóñar	Aguilar	37,00	876,78	Permanent
Laguna Amarga	Lucena	2,40	263,00	Permanent
Laguna del Rincón	Aguilar	3,20	649,29	Permanent
Laguna de Tíscar	Puente Genil	11,00	270,04	Temporary-seasonal
Laguna del Salobral	Luque	46,00	1.135,00	Temporary-seasonal
Laguna de los Jarales	Lucena	3,00	173,58	Temporary-seasonal
<b>Natural Areas with anthropogenic origin</b>				
Cordobilla Reservoir	Puente Genil	313,00	-	Permanent
Malpasillo Reservoir	P. Genil/Badolatosa	87,00	-	Permanent

Source: Plan de Ordenación de los Recursos Naturales de las Zonas Húmedas del Sur de Córdoba. BOJA, Act 52/2011, 8th March (own development)

The main goal of our study for this group of ponds (and many smaller ones) will be to detect and study the results and displays of the interrelations established between the wetlands as natural realities and the human or socioeconomic processes present in the territory, considering also the variability over time, since there are remarkable differences between the period when the wetlands were just another element within the dominant agrarian landscape, and the most recent period in which the declaration of the Protected Natural Spaces brought a new scenery for interrelations between society and lakes spaces.

In order to meet that goal, the main features of the geographical setting (La Campiña Alta of Cordoba) are considered –as has been already mentioned–, both in their physical and human side; the process of formation and evolution of this endorheic system (taking into account the multiple factors involved, both climatic and geological) is analyzed, a process that involves a main fact: the salinization of water. The historical and cultural features of a territory inhabited since prehistoric times, and with a dense network of settlements that, starting in the Iberian-Roman culture, finishes in a group of agrocities with a high heritage value are also studied; similarly, singular “natural” elements (the totality of the wetlands) are considered, being the landscape counterpoint to the olive groves dominant in the agrarian scenery, especially interested in the variety and richness of birdlife that dwells on these lake spaces.

From the first moment the attention is polarised by an endangered species that found in these wetlands its last European breeding stronghold: the white-headed duck (*Oxyura leucocephala*), that made of these wetlands a Cordoban icon of the urgent need for a protective legislation over what was sensed as a singular natural heritage.

As has been already mentioned, this protective law and the following acknowledgement of the natural values present in the wetlands were finally achieved, deploying a set of protective measures that will mean a strong contrast in the relationship between the wetlands and the society prior and subsequent to the declaration of the Protected Natural Spaces.

The consideration and study of the different ways of reciprocal flows among human groups and wetlands, distinguishing between the period prior and posterior to the implementation of the protective measures, constitutes the core of our analysis. In that sense, vectors of interinfluence previous to the environment-protective stage that are considered in this study were:

- Interventions striving towards hydrological planning, embodied in:
  - a) Subsequent and repeated attempts to drain the wetlands.
  - b) Conflicts for fresh water (irrigation, human supplies...) provided by fountains and springs, very appreciated and valued due to the brackish nature (with a relatively high salinity) of the ponds' waters.
  - c) Creation of continental salt lakes, by using that brackish nature of the water from the lakes, of many watercourses and even of some groundwater flows.
- Interferences in the natural dominant spaces (wetlands and their sphere of influence) and high-impact human interventions: communications network, agriculture and activities.

This set of circumstances had fostered that, after a very long stage of sustainable coexistence between human activities and lagoon spaces, during the second half of the 20<sup>th</sup> century the already mentioned traumatic environmental degradation was reached, due to the fragile natural equilibrium of the wetlands. Starting with this situation, we can establish in 1974 the beginning of a process of assessment, defence and protection of these landscapes, the first step for transforming what was a simple agrarian setting into a landscape with environmental and heritage value, acquiring new nuances.

The coincidence in those moments of different circumstances and factors (creation of the University of Cordoba, including a Faculty of Biological Sciences; the structuring of Spain as Autonomic State, and society imbued with a new sensibility towards environmental issues) will mean the emergence of new perspectives in the relationships between the pond spaces and human activities.

With actions coming both from private enterprises and official and government interventions. The reality is that, from that moment onwards, a set of new manifestations in the relationship man-environment is set up. Within this aspect the following are considered and studied:

- The difficult balance between agriculture and protected natural spaces, reflected in:
  - a) The possible conflict with intensified agriculture supported by irrigation.
  - b) Conflicts derived from their condition of endorheic areas: erosion and chemical contamination.
- Interrelationships derived from the naturalistic and ecological extent: intervention with regard to the weak population of white-headed ducks, and the results obtained.

- Interrelations derived from a hunting extent.
- Interrelations derived from the scientific and experimental extent:
  - a) Restoration of indigenous vegetation.
  - b) Changes in the ecosystem derived from the introduction of allochthonous fauna.
- Boosting of the historical-cultural extent of the territory, with a new valuation of these spaces and the promotion of economical (tourism) and/or educative activities that can contribute to complement the agrarian economies of these settlements.

As a conclusion, we want to highlight the high representativeness of the so called Wetlands in Southern Cordoba as an example of the secular upheavals experienced by the inland wetlands in Andalusia and even in Spain.

The starting point is the consideration of the ponds as mere singular elements within a landscape in which the agrarian dominant is overwhelming, even though for centuries the coexistence between both realities (natural and anthropogenic) was not traumatic and worked in an acceptably sustainable way.

From this perspective, a degradation process of the natural values that impregnate the lakes and their sphere of influence is constatable, existing a major conflict between the natural and human components, up to the point of drastically affect the birdlife, driving to danger of extinction some of the most representative species; that is the case of the white-headed duck, from which there were only 22 specimens in Europe in 1977, all of them dwelling these lagoons.

This precise situation will trigger the alarm and a the apparition of a new social awareness towards environmental and ecological values that will start not only a process of recovery, but even the acquisition of a certain heritage and symbolic profile of these landscapes: first, as eminently ecological and over-protected spots, and later incorporating other eco-cultural views and new compatible, accurate and landscape interpretative vectors. And all of them managed through the transformation of an agrarian landscape into a reality of singular, eco-cultural characteristics.

The initial trigger was the critical situation of the Cordoban lagoon spaces, although later the acknowledgements and awarded values to that part of the territory by the Spanish and European authorities have acted in a very positive way. It must be added as well the significant effect the number of visits these spots record every year has, since it goes beyond the figures of any other protected natural space in the province of Cordoba.

This set of circumstances, taken from the fully geographical perspective of the interest in the “humanised landscape”, led to our attempting to unravel the interrelations between men and spaces that, until the end of the 20<sup>th</sup> century, worked within the framework of an agrarian society and economy (a mere part of the agrarian landscape). However, their declaration as protected natural spaces has acted diversifying in an extraordinary way that world of mutual influences between the natural and the anthropogenic elements, as well as its effects over the landscape.

