

**DIFFERENCES AND SIMILARITIES IN TYPES OF WETLANDS
SATCHINEZ SWAMP AND DANUBE DELTA RESERVATION**

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***Abstract:** The variety of wetlands we occur are offering us major opportunities. Wetlands are one of the most productive ecosystems in the world. They bring socio-economic benefits into to the local community. The lack of knowledge how to promote a sustainable tourism or agriculture activity in this area, brings a long-term loss of interest with serious consequences for the wetlands.*

The goal of this thesis is to present the similarities between Satchinez swamp and Danube Delta, delta which was chosen for its international recognition. Both wetlands have similar functions and their biodiversity is measurable at a larger size. These type of wetlands are extraordinary areas to promote a sustainable and responsible tourism in protected areas.

Key words: *wetland, protected area, Satchinez, Danube Delta, marsh, swamp, biodiversity*

INTRODUCTION

According to specialist[1,2,3,4,5,6,7] tourism is a real challenge and it also has its opportunities, especially the one in a protected area.

Satchinez is located in western Romania, in Timiș County, which has the county seat at Timișoara. The swamp near Satchinez, known as "Satchinez Swamps" is an ornithological reserve and has an important value from biodiversity point of view. The swamp hosts a third of the migratory birds that are also nesting in Danube Delta. The marsh is also known as the "Banat's Delta" for the rich bird diversity. The rich biological diversity and the typical wetland landscape is remembering us on the Danube Delta.

The Danube Delta is situated in eastern Romania, in Tulcea County and is the second largest river delta in Europe. The Danube Delta hosts over 300 species of birds as well as 45 freshwater fish species in its numerous lakes and marshes.

Wetlands are hard to define due to its vague definition as they also have national or regional terminology, which is internationally not understood. The terms that are used to describe a specific type of wetland have the origin in the regional part of a land, where the wetland is located. Increasing national and international recognition of the values of wetlands will intensify the need of reliable information and comparable information in order to have a clear definition and classification of wetlands and deep-water habitats.

The two major difference between Satchinez swamp and Danube Delta is obviously the size of the area and the way they were formed. Danube Delta reservation is the second largest delta in Europe, the only one which is recognized as biosphere reservation and occupies 3446 km². Satchinez swamp is also a protected area which covers a field of 1200 ha.

The Danube Delta was formed 2000 years ago through silt accumulation which was brought by the Danube River. The lack of tides and the low leakage slope formed the beautiful Delta. On the other hand, Satchinez swamp collects the creeks and forms a new water body in a depression.

The main lineament between the two marshes is the preservation of water quality and quantity. The Danube Delta springs in Germany's Black Forest and drains into the Black Sea. Just before reaching the sea it forms the second largest and best preserved delta

in Europe. The Danube Delta, as well as the Satchinez swamp are supplied with water and the water level is directly influenced by the amount of rainfall.

The Satchinez swamp is fed by many water sources, like the Danube Delta, water which is collected in the large valley of the Ier River. This area represents an important wet habitat in western Romania for all the bird species, which outside of this given area, are not able to provide themselves the needed supply. All birds that are nesting in Danube Delta or near the Satchinez swamp are loving the reed and the hiding places that they can find, which makes Satchinez and the Danube swamp a paradise for birds.

MATERIALS AND METHODS

The paper presents a retrospective vision about the facts that the author could observe in the field during his individual study. Through consulting the specialty literature, international publications and comparison of field data, the author could establish the result and discussion that are presented as follows.

RESEARCH RESULTS

Marshes, swamps and bogs are well known terms that only recently have been brought under a single term as “wetland”. Wetlands are among the world’s most productive environments.

The specialty literature is classifying the wetland and the deep-water habitats into Marine -, Estuarine-, Riverine-, Lacustrine- and Palustrine Systems.

The Danube Delta is part of the Estuarine System. These systems consists of deepwater tidal habitats and adjacent tidal wetland that is usually open or partly open to the sea or ocean. The ocean water is at least occasionally diluted by the freshwater brought by the river. Estuaries are ending mostly in a shape of a funnel. Estuary systems are formed by the seashore and oceans with strong tides that prevent silt accumulation. Furthermore, in area with low tide, the mouth shape of an estuary forms a delta. This type of systems include both estuaries and lagoons. They are more strongly influenced by its association with land than with other Marine Systems, which include just deep-water habitats. In terms of wave action, deltas are generally considered to be low-energy systems.

Danube Delta’s water regime and water chemistry is a typical estuarine regime, which is affected by one or more of the following forces: sea tides, precipitation, freshwater runoff from land areas, evaporation and wind.

Satchinez swamp, on the other hand, belongs to the Palustrine System. This system includes all the non-tidal formed wetlands dominated by trees, shrubs, emergent mosses or lichens. It also includes wetlands lacking such vegetation, in which the mandatory requirement is lacking wave-formed shorelines, the water depth in the deepest part of the basin is less than 2 m at low water and the water salinity never exceeds 0.5‰.

The Palustrine System was developed to group the vegetated wetlands traditionally called by names as marsh, swamp, bog, fen or prairie. It also includes the small, shallow, permanent or intermittent water bodies, often called ponds. Palustrine wetlands may be situated shoreward of lakes, river channels or estuaries, on river floodplain, in isolated catchments or on slopes. They may also occur as islands in lakes or rivers. The erosive forces of wind and water are of minor importance except during severe floods.

Wetlands have many different characteristics. One of the most common feature of all wetlands is that the groundwater level is very near to the soil surface. The main trait of character of all kind of wetlands is the presence of *water*.

Another main characteristics of a wetland is determined by the combination of the salinity of the water in the wetland, the soil type and the plants and animals living in this area. Because of the high variability of the conditions and because of the different needs

for distinguishing among different types of wetlands, so far, there is no single wetland classification system that would account for the manifold aspects of this specific ecosystem type.

Satchinez marsh and Danube Delta are both *mineral soil wetlands*, which is a type of wetland ecosystem characterized by poorly drained mineral soils and by plant life dominated by grasses. The vegetation slows down the flow of water and allow for the nutrient enriched sediments to be deposited, thus providing extremely favorable conditions for further development of the delta or marsh.

Both wetland types are non-tidal and preserve freshwater. Present are the wetland plant species that are only to be found in freshwater marshes, for example the Common Cattail (*Typha latifolia*) which is a freshwater and estuarine marsh species. Also the vegetation whichever normally is determined by the hydric regime, in the wetland habitat vegetation is caused by the water abundance. Both wetlands present specific aquatic plants adapted to the unique hydric soil. Hydric soils are defined as soils that formed under conditions of saturation and constantly flooding area. Mineral rich soil of sand, silt and clay are highly organic soils which can be found in Danube Delta and Satchinez swamp.

Flora and Fauna of Satchinez swamp and Danube Delta are similar up to a point. Both wetlands present the typical hydrophilic vegetation, but each of them has their own particularities. The Danube Delta is more adapted to a marine ecosystem while Satchinez swamp is adapted to a continental ecosystem interspersed with steppe vegetation.

Both wetlands are housing significant populations of various rare birds, including *Botaurus stellaris* (bittern), *Aythya nyroca* (ferruginous duck) and the *Crex crex* (corncrake). Species like *Ardea purpurea* (red heron), *Plegadis falcinellus* (glossy ibis) and *Circus aeruginosus* (Western marsh-harrier) are included in the red list of IUCN - *International Union for the Conservation of Nature*, which means that these species are threatened and need immediate action to prevent them from disappearance.

Areas with such a large biodiversity are protected areas. The Danube Delta was declared a biosphere reserve in 1990 by the Government of Romania. It also has an international recognition by the *Man and Biosphere (MAB) Program of UNESCO* and it is listed since 1991 as a strictly protected area by the *RAMSAR Convention*. The Danube Delta biosphere reservation is also included in the *World Cultural and Natural Heritage Convention* (1990). Unfortunately, Satchinez doesn't have the same international recognition, but it is included in the ecological network *NATURA 2000* and classified by *IUCN as Category IV - Habitat/Species Management Area*, which means that this area has an active conservation management.

CONCLUSIONS

From functional point of view, both wetlands are preserving the biodiversity, recharging groundwater, retain nutrients, capturing carbon dioxide and removing toxins. They provide wildlife habitat and support to aquatic plants. As they produce fuel products and maintain a gene bank, they also mitigate climate change.

Satchinez swamp and Danube Delta is a tourism attraction for its large biodiversity and recreation possibilities. Activities like bird watching, fishing and hiking are on high demand in this area.

Through a sustainable management we are trying to reduce negative impacts of development on the natural environment (e.g. avoiding developing in sensitive ecological area, such as the core of a strictly protected area), while we maximize the benefits of conservation (e.g. generating revenue for finance conservation activities). While the goal of conservation is achieved in small areas of the wetlands, the lack of visitors of the area

may have a series of consequences. The absence of interest in the wetland areas will lead on long-term to degeneration of the protected areas. Nowadays we assist to a lack of market awareness in the tourism sector and among travelers of the protected areas.

We encourage the sustainable tourism in the protected area stimulating the local economic linkages through local ownership of tourism assets, workshops and educational activities made by local authorities and alternative livelihoods. We also encourage a quality life in Romania and the sustainable development of the local area

REFERENCES

- [1]. **CIOLAC RAMONA**, 2009, Management în turism rural și agroturism, Editura Eurostampa, Timișoara
- [2]. **CIOLAC RAMONA, CSÖSZ I., PET ELENA**, 2011, Perspectives of agrotourism development in rural area, Revista Agrobuletin AGIR, nr.8/2011, pp. 170-176
- [3]. **CIOLAC RAMONA**, 2012, Necessity and perspectives of rural tourism business expansion, Scientific Papers: Animal Science and Biotechnologies, ISSN 1221-5287, vol.45(1)
- [4]. **CSÖSZ IOAN**, 2007, Agroturism și Turism Rural, Editura Mirton, Timișoara
- [5]. **MARTIN SIMONA CRISTINA**, 2014, Inginerie și servicii în agroturism, Editura Eurostampa Timișoara, ISBN 978-606-569-927-4
- [6]. **SÂRB MATEOC T., GRAD I. ȘUSTER G.**, 2013, Study considering the environmental protection and life quality in Romania in the context of sustainable development, Vol. 13, ISSN 2284-7995, E-ISSN 2285-3952
- [7]. **YU-FAI LEUNG, SPENCELEY A., HVENGAARD G.**, 2014, Tourism and Visitor Management in Protected Areas
- [8]. ***http://www.wetlandtrust.org.nz/Site/Why_Wetlands/Types_of_Wetlands.ashx
- [9]. ***<https://www.icpdr.org/main/danube-basin/danube-delta>
- [10]. ***<http://www.ddbra.ro/en/danube-delta-biosphere-reserve/danube-delta>
- [11]. ***<http://www.earthlyissues.com/wetlands.htm>