Mediterranean Wetlands Observatory

#3
March
2015

THEMATIC NOTE

MEDITERRANEAN COASTAL WETLANDS

Evolution in land use from 1975 to 2005

Natural wetlands are vitally important for biodiversity as well as for the populations that use their resources or benefit from the services they provide.

In the Mediterranean region, **since ancient times man has been transforming natural habitats for various types of use, mainly agricultural, with this exploitation increasing sharply after the start of the 19th century**. However, no consolidated information has been available on the recent loss of wetlands in the Mediterranean Basin, on their cumulative surface area, or on their evolution over time. This information is nonetheless essential for decision-makers in a region that faces great challenges with regard to its demography, its development and the management of its water resources and biodiversity.

In order to remedy this situation, **between 1975 and 2005 the Mediterranean Wetlands Observatory (MWO) carried out a study of the evolution of land use in 214 coastal wetlands across 22 Mediterranean countries**, in accordance with the methodology adopted in the European Space Agency's (ESA) GlobWetland II Project. This made it possible to draw up maps based on satellite images and to calculate indicators that provide information on the evolution of the surface area of both natural and artificial wetlands, and thus enabled recommendations to be made on how to preserve them.

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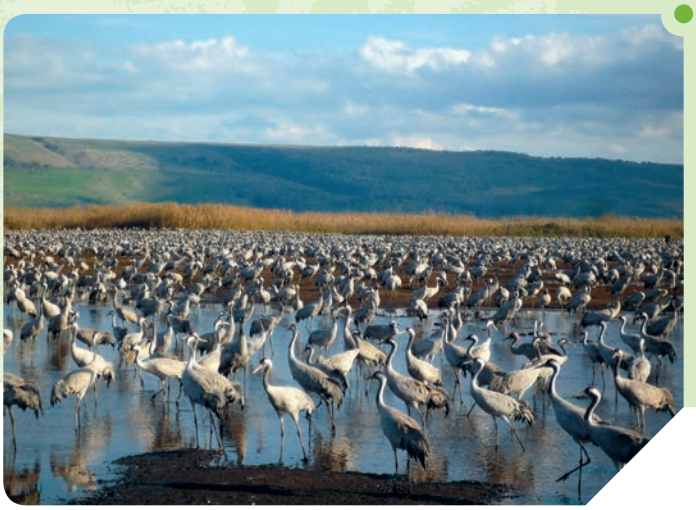
ESSENTIAL ECOSYSTEMS

Whilst the Mediterranean Basin contains a surface area of 15-22 million hectares of wetlands, roughly 1.5% of the world's total, it is actually home to around 10% of the world's biodiversity. Moreover, these wetlands guarantee a large number of **environmental and socioeconomic** services for several hundred million people, in one of the most densely populated areas of the world: fisheries and agriculture, water treatment, flood control, groundwater replenishment, amongst others.



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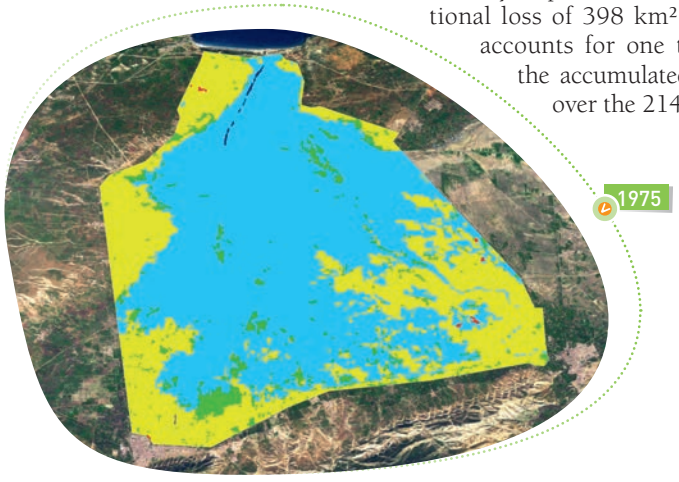
Wetlands, a hotspot of biodiversity, Hula Valley, Israel.

A 10% DECREASE IN NATURAL COASTAL WETLANDS OVER 30 YEARS...

The surface area of natural coastal wetlands decreased by 10% between 1975 and 2005, in other words a loss of 1,248 km² across the 214 sites studied. **Wet meadows and marshes, in particular, lost 43% and 10% of their surface areas respectively.**

In the Macta marshes (Algeria), for example, wetland habitats decreased from 272 km² in 1975 to 194 km² in 2005, a 28% decrease over 30 years. The main cause was the construction of three new dams which retain water upstream, as well as extended periods of drought.

Large wetlands such as lakes and lagoons are also affected. Thus, the lagoons in the Nile Delta, of such great importance in terms of biodiversity, experienced an exceptional loss of 398 km², which accounts for one third of the accumulated losses over the 214 sites.



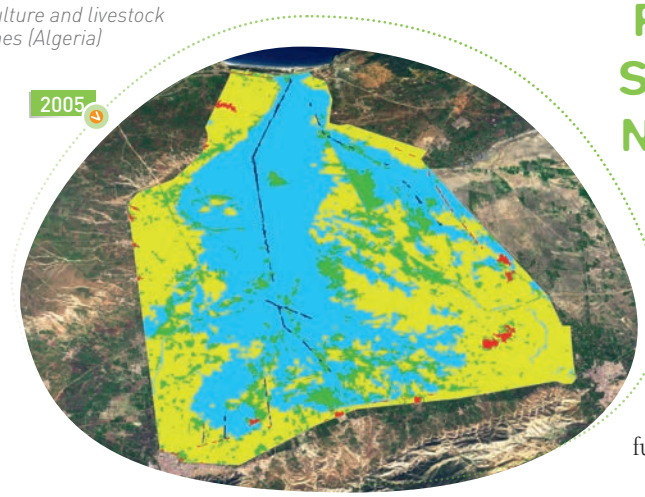


Fig. 1 : *Expansion of agriculture and livestock farming in the Macta marshes (Algeria) between 1975 and 2005 (© GlobWetland II/ESA)*

- *Urbanized areas*
- *Agricultural areas*
- *Natural non-wetland habitats*
- *Natural wetland habitats*
- *Artificial wetland habitats*
- *Sea and ocean*

...BUT A GREAT INCREASE IN ARTIFICIAL WETLANDS

On the other hand, the surface area of artificial wetlands increased by 54%, with an increase of 661 km² over the same period (that is, half the surface area of natural wetlands lost between 1975 and 2005). These are pools, reservoirs and storage ponds that have been built mainly for agricultural or aquacultural purposes.

© M. Renaudin / Wetlands International

A dam lake in Wadi Mujib, Jordan

A MARKED REDUCTION IN SURROUNDING NON-WETLAND NATURAL HABITATS

Overall, **there has been a 20% decrease in the surface area of other natural habitats adjacent to wetlands**. The regression and fragmentation of these habitats has also had a negative impact on the wetlands themselves, affecting their ecological and hydrological functioning.

A CHANGE RESULTING MAINLY FROM AGRICULTURE...

The conversion of natural wetland habitat into farmland accounts for 891 km², or 71% of the total habitat loss measured between 1975 and 2005.

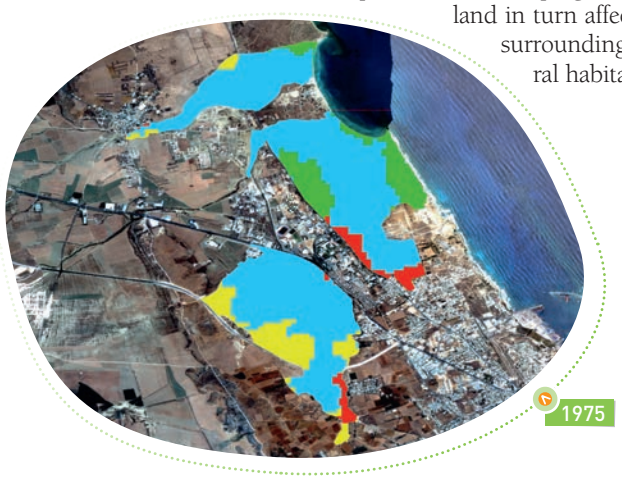
Thanks to their flat surfaces, plentiful water and often very fertile soil, coastal wetlands are indeed highly sought after for irrigated agriculture, which has been expanding in the Mediterranean Basin over the past few decades.

...BUT ALSO FROM OTHER TYPES OF HUMAN PRESSURE

The expansion of urban and industrial areas and transport networks also impacts upon natural habitats. The conversion of wetlands into urbanised areas thus accounts for 8% of the direct loss of natural wetland habitats. However, the real impact of urbanisation is in fact much greater, because the urban sprawl that eats up agricultural land in turn affects the surrounding natural habitats.

Excessive extraction of water from natural habitats and the artificialisation of their management thanks to dams and canal networks also constitute factors that lead to the loss or modification of natural wetland habitats. Water is a rare and overexploited resource in the Mediterranean region, which, despite the fact that it supports 7% of the world population, enjoys only 3% of the global freshwater resources.

Mediterranean coastal wetlands - deltas and lagoons in particular - are also affected by the **receding shorelines** that can be observed in some of the sites studied. This is a result of rising sea levels due to climate change, as well as coastal erosion caused by a decrease in the amount of sediment brought down by rivers.



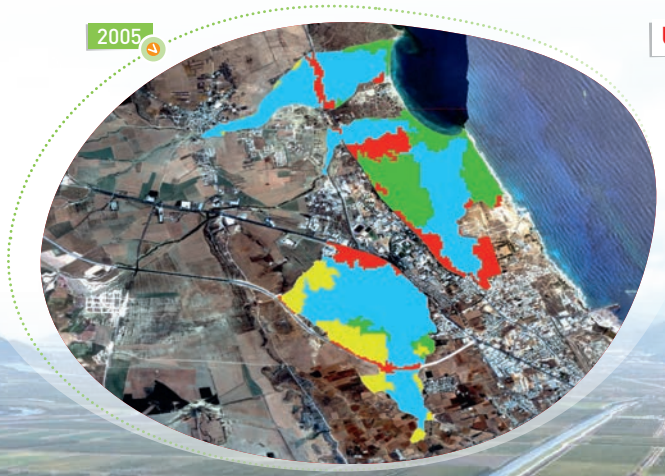


Fig. 2 : *Expansion of the city of Famagusta (Cyprus) and a 44% decrease in the surface area of natural wetlands between 1975 and 2005 (© GlobWetland II/ESA)*

- *Urbanized areas*
- *Agricultural areas*
- *Natural non-wetland habitats*
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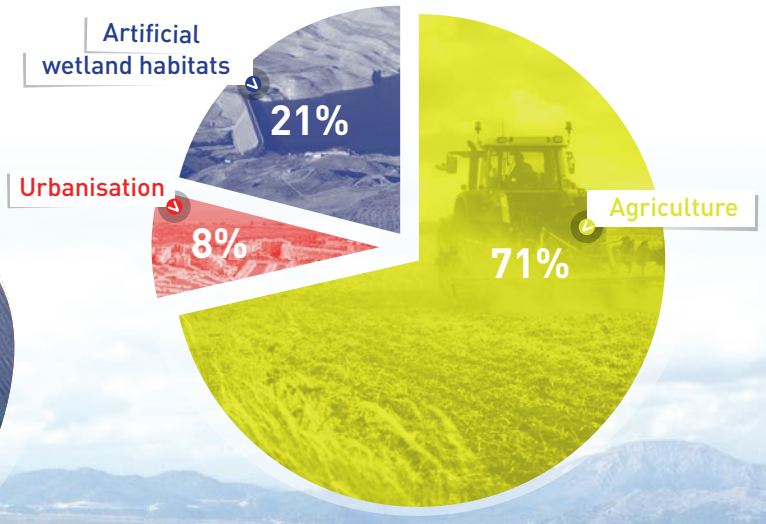
THE MAIN CAUSES OF NATURAL WETLAND HABITATS DECLINE



Intensive agriculture in the Neretva Delta in Croatia (© L. Chazée).

RECOMMENDATIONS FOR THE PROTECTION OF WETLANDS AND THE WELL-BEING OF THE POPULATIONS THAT BENEFIT FROM THEM

Taking into account the evolution observed over the past 30 years in the Mediterranean Basin coastline and the causes of this change, the MWO recommends the following actions:

Improve the identification of wetlands in each country, raising awareness about them as well as of the services they provide.

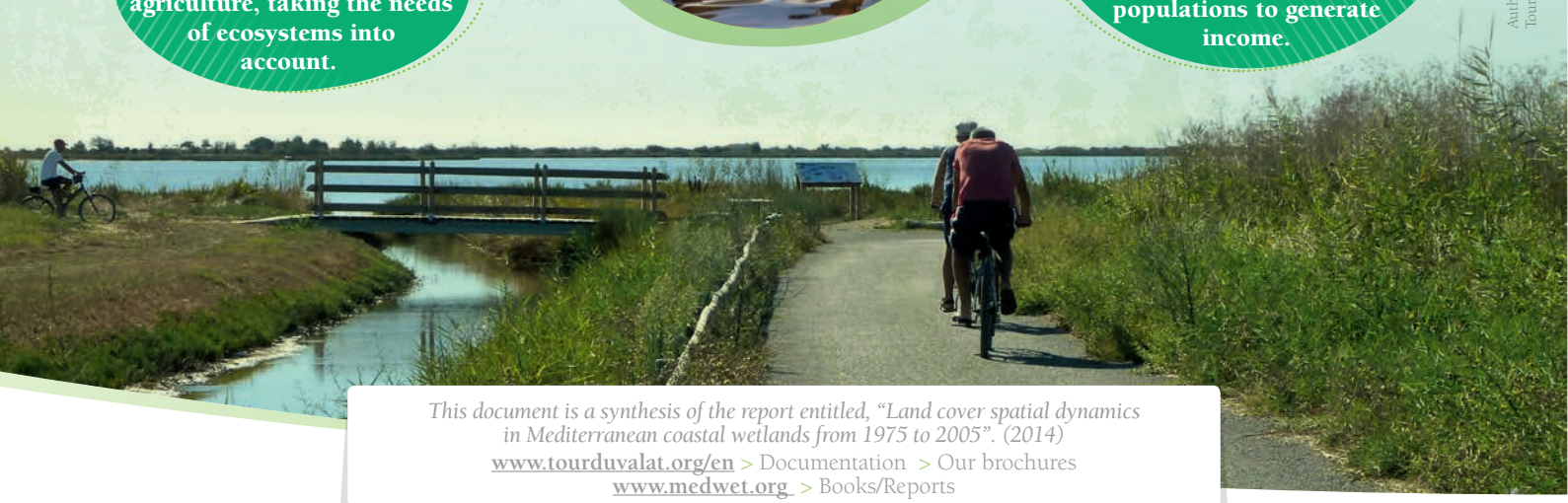
Protect existing natural wetland habitats, or restore them if they are degraded.

Rethink coastal development to adapt to the foreseeable receding of the shoreline.

Renaturalise artificial wetland habitats in order to improve the services provided by wetlands and biodiversity.

Manage water resources sustainably, rationalising their use in agriculture, taking the needs of ecosystems into account.

Guarantee the effective, sustainable management of coastal wetlands, setting up mechanisms that allow local populations to generate income.



This document is a synthesis of the report entitled, "Land cover spatial dynamics in Mediterranean coastal wetlands from 1975 to 2005". (2014)
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