In terms of the cultural values and other ecosystem services provided by birds, Doñana is clearly critical for the survival of many migratory bird populations. Doñana attracts birdwatchers and other ecotourists from all over Europe and beyond.

Doñana National Park

SPAIN

Doñana National Park contains one of the largest wetlands in western Europe, lying within the delta of the Guadalquivir River (south-west Spain). Covering over 110,000 hectares including dunes, marshes, temporary ponds, Mediterranean scrub and pine forests, the park is home to over 200 endemic and endangered species of plants and animals, many of which are associated with its aquatic habitats. Over 300 different species of birds can be sighted annually, including over 100 species that are directly dependent on the wetlands.

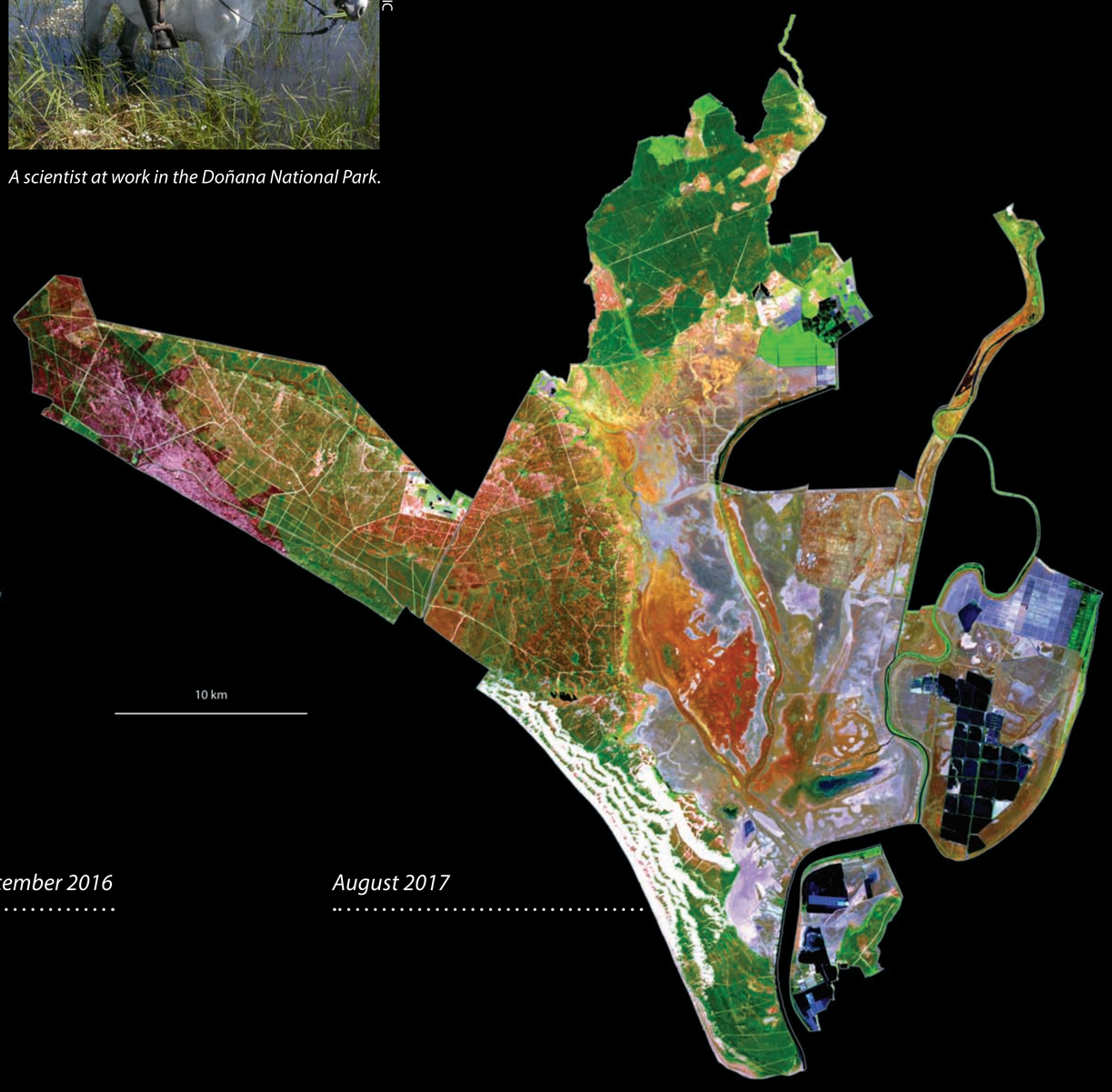
This remarkable waterbird diversity is the result of the variety of habitats and the dynamic changes that occur in Doñana. The size and depth of the wetlands vary remarkably from year to year, driven principally by varying rainfall. Wetland flooding starts from September onward. In late spring, evaporation becomes the most important factor influencing water levels, and most of the marshes are completely dry by the end of July. The different water depths, flood duration, chemical composition, vegetation cover and soil types lead to very diverse flora and fauna and create attractive landscapes for waterbirds and humans.

Marshlands and Marismeña cow, Reserva Biológica de Doñana, Almonte, Huelva. This highly polymorphic breed is the origin of several American races, including the Texas Longhorn.

The ECOPOTENTIAL project combines traditional bird monitoring data with Earth Observations to gain a better understanding of how bird occurrence is related to wetland features. Variations in flooding are mapped and seasonal and inter-annual variations are monitored. Satellite images, correctly interpreted based on the knowledge gained from field data, are used for management purposes and to help conserve endangered species. Modifications in the wetland structure due to processes such as sedimentation or variable flooding are assessed in order to estimate the future impacts of climate change and the effects of implementing different management options.

A scientist at work in the Doñana National Park.

The increase in nutrients in waters supplying Doñana wetlands causes their eutrophication. Climate change can act in synergy with nutrient loading. Both processes drastically change water communities, e.g. floating plants, such as the alien floating fern Azolla filiculoides, become more abundant.



10 km

December 2016

August 2017

In the December image, the marsh is flooded. Areas of water in the marsh and ponds appear as black or dark blue. In August, the marshes have dried out and bare soil areas look gray. Large areas with dry helophyte vegetation in the central area have an orange color. There are some flooded areas in the east corresponding to fish farm ponds. The area in the west that was burned during a forest fire in June 2017 shows a pink color.

Sources: Landsat 8 OLI (RGB 654 bands). Courtesy of USGS/NASA Landsat program. Processed by LAST-EBD (CSIC).

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