



2023-02-05, Sentinel-2 (overview; with national park area)



2023-02-05, Sentinel-2 (detail)

Doñana National Park, situated in the Andalusian region of Spain, covers approximately 1,300 square kilometres, making it one of Europe's largest protected areas. The national park covers a diverse range of ecosystems, including marshlands, pine forests, and shifting sand dunes visible in the satellite images.

Satellite images show the web of water bodies, including the Guadalquivir River and its tributaries, which are essential for sustaining the park's biodiversity. Doñana is a sanctuary for over 300 bird species, such as flamingos and the rare Spanish imperial eagle.

Agriculture has a significant impact on Doñana, with around 25% of its area utilized for farming. The park faces challenges from agricultural practices, which have altered its hydrology. Crops such as rice, strawberries, cotton, and sunflowers dominate the surrounding landscape. Rice fields, covering approximately 12,000 hectares, are a vital part of the local economy and ecosystem. They serve as feeding grounds for numerous bird species, especially during the winter months.

Strawberry cultivation is another significant agricultural activity in the region, with Doñana being an important supplier of strawberries to European markets. This industry, however, has faced scrutiny for its water consumption and pesticide use, posing challenges to the park's delicate balance.

Furthermore, the effects of climate change are increasingly felt, with rising temperatures and more frequent droughts. Conservation efforts have intensified in recent years, with over 400,000 hectares surrounding the park designated as a buffer zone. More and more sustainable agriculture practices and strict land-use regulations are implemented to mitigate human impact.

### Exercises

- Look at the satellite image maps. Which land cover classes can you identify?
- Compare the areas inside and outside the national park borders. What differences can you see with respect to the structures in the vegetation?
- Which challenges do you expect for a nature protection zone embedded in an agriculturally used environment?
- How can satellite images help manage a national park like this one?

### Additional Information



*View from the Doñana National Park (photograph: Technische\_Fred)*

### Links and Sources

- [https://www.esa.int/ESA\\_Multimedia/Images/2013/07/Donana\\_Spain](https://www.esa.int/ESA_Multimedia/Images/2013/07/Donana_Spain) - Landuse change in the Doñana region