Vigueirat marshes © Lisa Ernoul-TdV

RESTORATION OF ABANDONED AGRICULTURAL LAND (RICE FIELDS) TO TEMPORARY MARSHES

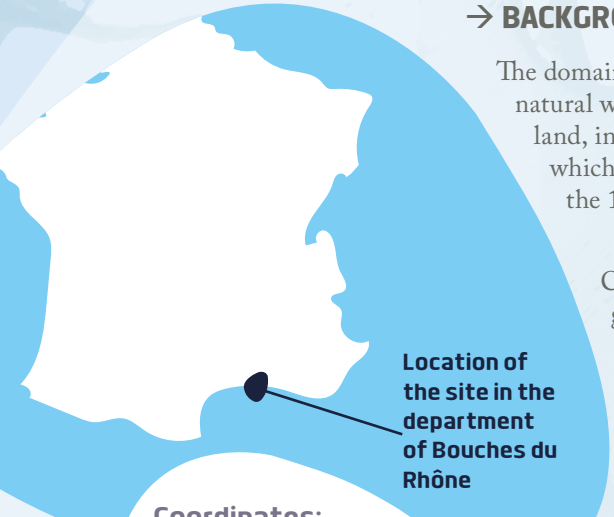
VIGUEIRAT MARSHES - ARLES, RHÔNE DELTA, FRANCE

Wetland Type:

3 - Irrigated land; includes irrigation channels and rice field

Protection Status:

Natural site protected by the Conservatoire du Littoral (landowner), part of which (920 ha) has been classified as a National Nature Reserve since 2011. The abandoned rice fields concerned are located in the Reserve.



Location of the site in the department of Bouches du Rhône

Coordinates:
43.5331° Y
47.5249° X

Site Size: 30 HA

Area Restored: 18 HA

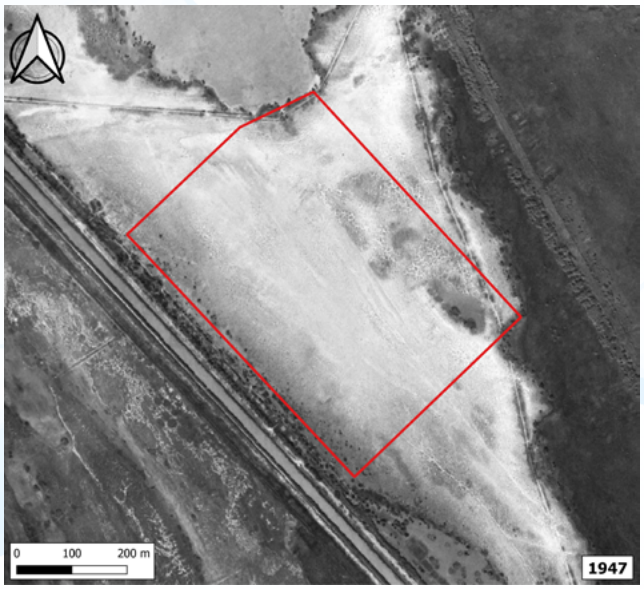
→ BACKGROUND

The domain is characterized by a mosaic of natural wetlands and abandoned agricultural land, in particular abandoned rice fields - which were cultivated from the 1950s to the 1970s.

Cultivation practices related to rice growing have significantly modified the environmental conditions, giving rise to the possibility of natural (passive) restoration of the original environments. The practice of levelling, soil compaction, and the construction of dykes and canals induce a fragmentation into flat plots with higher levels of salinity. Before the restoration, these agricultural wastelands provided very poor habitats for flora and fauna and were not conducive to pastoral activities.

WETLAND BASED SOLUTIONS

→ BEFORE RESTORATION



→ OBJECTIVES

This programme aimed to develop ways of rehabilitating Mediterranean wetlands from abandoned agricultural lands by testing the possibility of controlling plant communities and some major functions of these habitats through the introduction/maintenance of low quantities of water and grazing.

The project had three main objectives:

1. Nurture the development of emerging species/communities characteristic of Mediterranean shallow marshes
2. Obtain grazing (feeding) areas for wintering waterbirds
3. Increase the productivity of these environments and their pastoral interest

Natural wetlands were originally destroyed by agricultural levelling and cultivation. The agricultural land was then restored to temporary marshes.

18 HA

have been revived through restoration activites

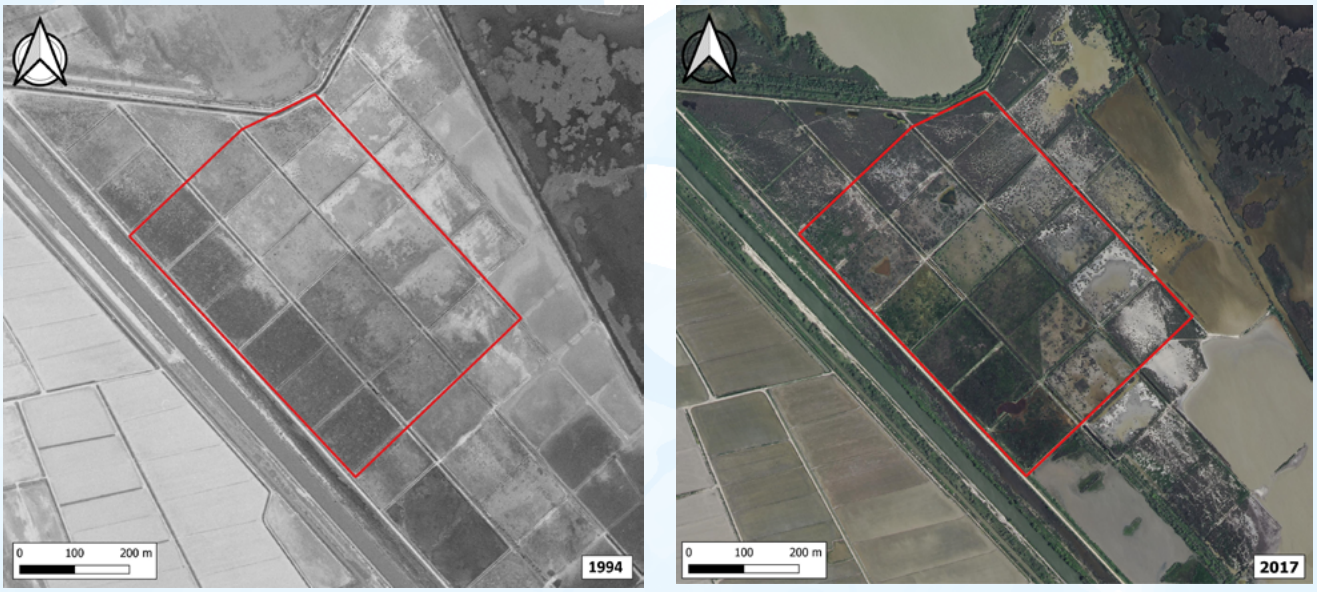
→ IMPACT

No engineering work was required. The rehabilitation was achieved by introducing water from the inherited and still functional canal infrastructure, and the use of grazing by domestic herbivores.

→ WHO BENEFITS?

This project was initiated by the site manager who wanted:

1. To recreate marshes on former rice fields favourable to the local flora and fauna (increased interest for conservation), and to provide ecotourism opportunities promoting the site to several thousand visitors each year.
2. To have a demonstration site for wetland users (in particular managers and cattle breeders) exploring different types of management, their interests, their risks and limits (e.g. the arrival of unwanted species and difficulties in controlling them once established). The project highlighted both good and risky practices, and the site is used for training by wetland managers and ecology students.



Overview of plots before destruction (1947), after establishment of rice cultivation (1974)A, during experimentation (1994), and recently (2017). Source: BD Ortho® 2017, IGN

→ RESTORATION ACTIONS & METHODOLOGY

PROJECT DATES:

1991 - 1996: Restoration

1996 Onwards: Monitoring & Management

Six fields were subjected to simulated 'winter' flooding from November to April (water was pumped into them and a depth of approximately 10 cm maintained). Six other plots were subjected to flooding during the driest months, from May to October. The introduction of water during this period of the year is considered as a management risk because it can favour colonization not only by native species, but also by undesired or non-indigenous species. Despite these risks, this type of water management is frequently practised on land devoted to pastoralism to increase production. The objective in testing this treatment was to show both the potential gains (species of good pastoral interest and with some consumption by avifauna, high production) and the dangers (colonization by species of no pastoral interest or low conservation value).

Six control plots did not undergo any artificial introduction of water. Three of these plots had mixed cattle-equine grazing and three had no domestic grazing. The plots that hosted grazing activities developed species that were less competitive but were nevertheless interesting for pastoral activities. The creation of open environments through grazing was necessary to attract larger numbers of birds who favour open habitats.

→ LESSONS LEARNT

This restoration project achieved spectacular results in terms of habitats, pastoral production, and feeding capacity for wintering ducks. It also clearly demonstrated different management techniques that can be applied to various environments (wetlands in general that can be artificially flooded, in particular Mediterranean wetlands). It must be noted that this type of restoration requires water management to be maintained over a long period of time, with expensive and potentially risky management challenges during the hottest/driest periods. The introduction of water during the summer in Mediterranean wetlands is not recommended from an environmental point of view, as it leads to the simplification of ecosystems and colonization by undesirable species. It is important to also ensure regular monitoring in order to avoid prolonged dry periods and excessively shallow depths of water: these can also encourage such species, in particular invasive ones.

→ REFERENCES

1. Grillas P. & Mesléard F. 1995 - Experimental restoration of abandoned rice fields in the Camargue. In C. Montes (eds) Ecological Basis for the creation & restoration of Mediterranean wetlands. Conservation de Medio Ambiante, 283-298.
2. Mesléard F., Grillas P., Roux D. & Lucchesi J.L. 1992 - Experimental management of shallow wetlands. Preliminary results on vegetation structure and use by waterbirds. In Finlayson, M., Hollis, T. and Davis, T. (eds), Managing Mediterranean Wetlands and their birds IWRB publication, 20: 243-245
3. Mesléard F. 1994 - Abandoned ricefields in the Camargue (France) - can they be of value for conservation? Environmental Conservation, 21: 354-357
4. Mesléard F, Tan Ham L & Grillas P. 1995 Restoration of temporary marshes in abandoned ricefields in the Camargue (Southern France). Ecological Engineering, 5: 95-106

→ CONTACT DETAILS

François Mesléard
mesleard@tourduvalat.org
Tour du Valat, Camargue, France.
Institute for Research and Conservation of Mediterranean Wetlands.

With support from MAVA

WETLAND BASED SOLUTIONS

wetlandbasedsolutions.org