



LIFE + MC-SALT

ENVIRONMENTAL MANAGEMENT AND
CONSERVATION IN MEDITERRANEAN
SALTWORKS AND COASTAL LAGOONS



AFTER-LIFE Conservation Plan for the Camargue Natura 2000 sites FR9301592 & FR9310019



LIFE10 NATIT000256

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THE LIFE MC-SALT PROJECT

The LIFE MC-SALT project was developed from 2011 to 2016 within 9 Natura 2000 sites located in Italy, France and Bulgaria, with the aim of improving conservation status of waterbirds and coastal habitats. The Consorzio del Parco Regionale del Delta del Po dell'Emilia-Romagna was the coordinating beneficiary, the other beneficiaries were the Consortium of the Regional Natural Park Molentargius-Saline, the Parc naturel régional de Camargue, the Tour du Valat, the Green Balkans NGO and Compagnie des Salins du Midi et des Salines de l'Est.

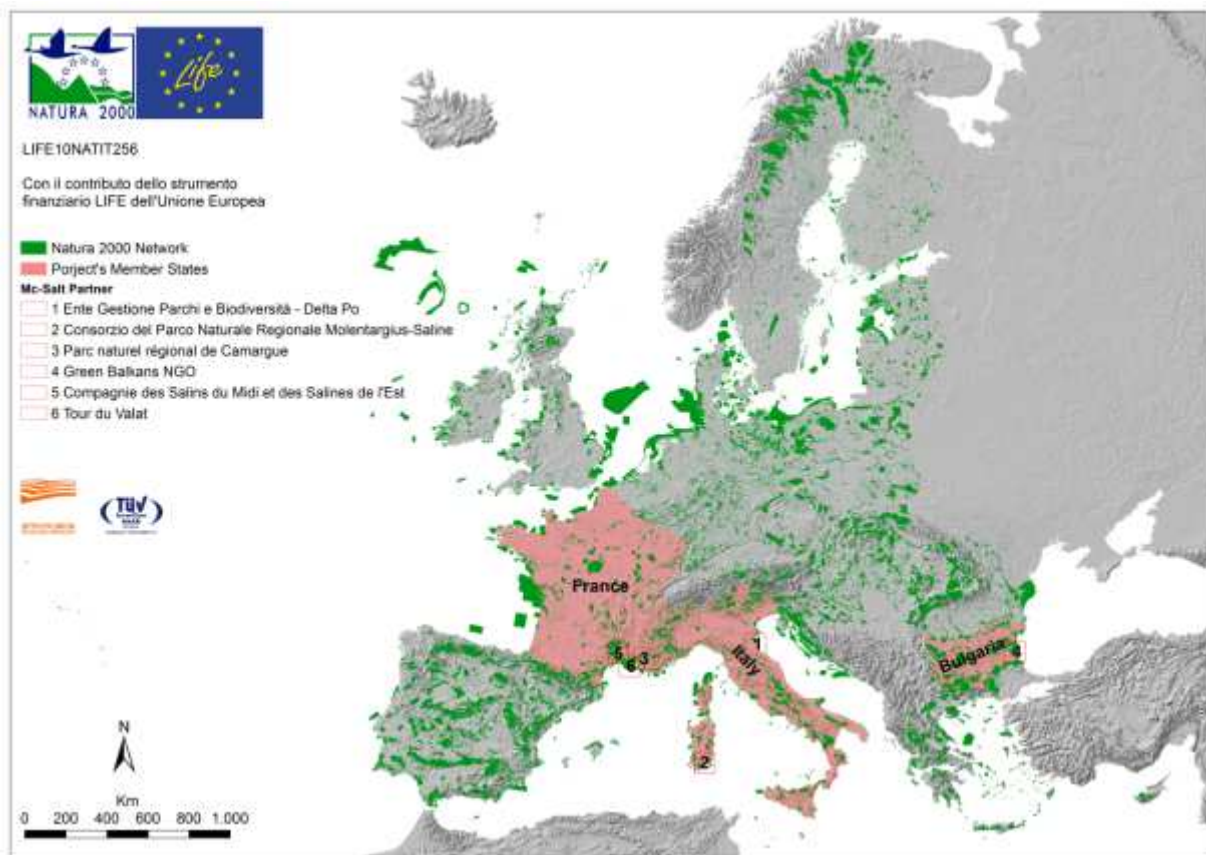


Figure 1: Location of the sites targeted by the LIFE MC-SALT Project

The common denominator of the sites targeted by the LIFE MC-SALT project is the presence of saltworks, albeit with different characteristics, including non productive saltworks, as in Molentargius (Sardinia) and Etangs et marais des salins de Camargue (France), artisanal saltworks as in Cervia (Italy) and industrial saltworks (Aigues-Mortes, France).

In the Camargue, southern France, actions carried out by Parc naturel régional de Camargue and Tour du Valat were targeting 2 Natura 2000 sites: SCI FR9301592 and SPA FR9310019.

These actions addressed the following threats:

- Loss of capacity in water supply and water circulation, as a result of interruption of salt production, affecting the conservation status of coastal lagoons habitats and colonial breeding birds,
- Coastal habitat degradation and destruction resulting from embankment construction,
- Loss of suitable breeding conditions for coastal colonial waterbirds,
- Disturbance of Little Tern colonies.

Most actions implemented within the Camargue Natura 2000 sites targeted former saltworks located in Etangs et marais des salins de Camargue, a property of Conservatoire du littoral, with further actions implemented at neighbouring Maritime Public Domain for the conservation of Little Terns, whereas hydraulic restoration works implemented in the former salt works is expected to improve the conservation status of the coastal lagoons located within the Réserve Naturelle Nationale de Camargue (Figure 2).

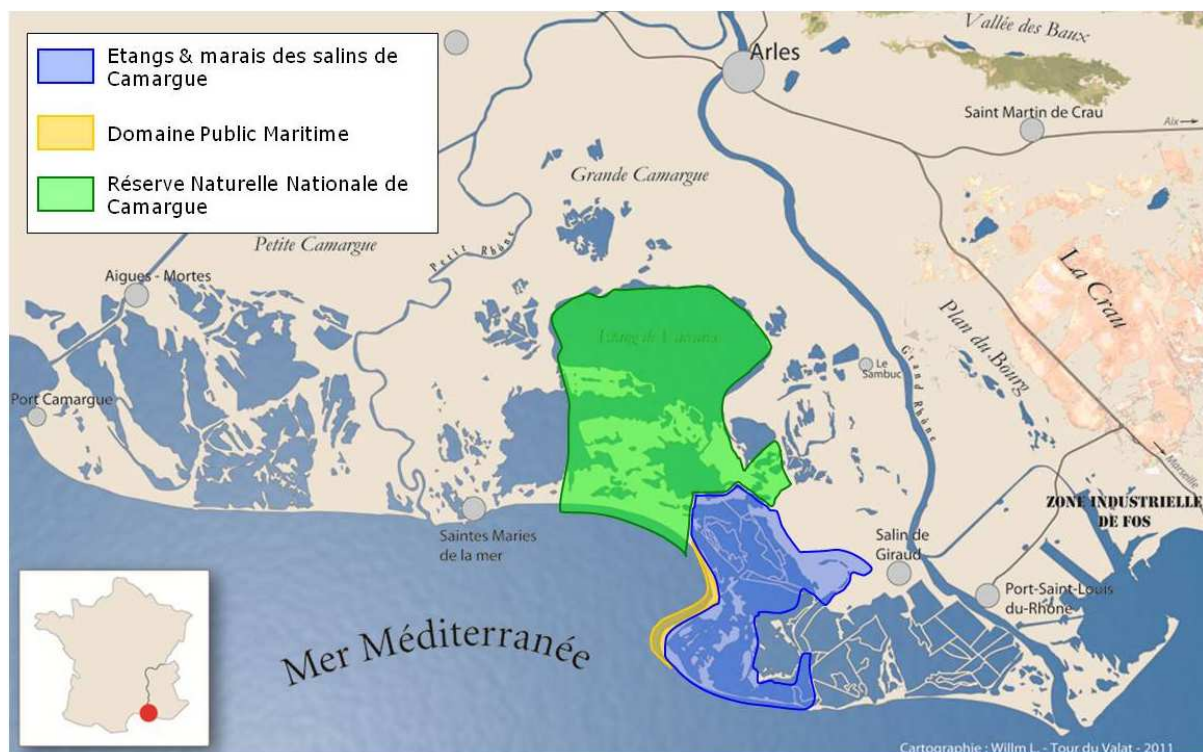


Figure 2: Location of the areas targeted by the LIFE MC-SALT Project in the Camargue.

Actions implemented in the frame of the LIFE MC-SALT project included :

- hydraulic works aimed at restoring water and biological connections between the lagoons,
- dyke restoration aimed at restoring adequate water level variations for the restoration of coastal habitats including Mediterranean halophilous scrubs (1420) and *Salicornia* and other annuals colonizing mud and sand (1310),

- hydraulic works aimed at maintaining suitable water levels for colonial waterbirds, including Greater Flamingo, Avocets, Slender-billed Gull and terns
- construction of breeding islets for colonial waterbirds,
- construction of enclosures for the protection of a Little Tern colony.

CURRENT SITUATION

The project has enabled to obtain significant results for the restoration of coastal habitats and species for which the former saltworks of Etangs et marais des salins de Camargue are important.

Short-term results from the post-works monitoring show improved conservation status of habitat 1150* Coastal lagoons, with populations extensions of several aquatic plants. These include primarily *Ruppia cirrosa*, whereas populations of *Ruppia maritima* and *Zostera noltii* were found in lagoons where they were previously absent. A slight increase of benthic invertebrates species-richness was also observed in some lagoons.

Other results related to coastal habitats include spectacular surface extension of *Salicornia* and other annuals colonizing mud and sand (1310) and significant extension of Mediterranean halophilous scrubs (1420).



Extension of *Salicornia* and other annuals colonizing mud and sand (1310) (photo: september 2016, M. Thibault / Tour du Valat).

Actions targeting Greater Flamingoes have given mixed results, with exceptionally large number of breeding pairs and high breeding success in 2015, and breeding failure in 2016.

Following the construction of a breeding islet, the former saltworks hosted for the first time since 2002 a large colony of small Charadriiforms including Slender-billed Gull, Gull-billed Tern and Pied Avocet. After the construction in 2013 of an enclosure on the Maritime Public Domain, Little Tern have bred or attempted to breed every year, albeit in low numbers.



Gull-billed Terns breeding on the islet constructed in december 2014 (photo : 08 june 2016, M. Thibault / *Tour du Valat*).

After-LIFE OBJECTIVES

Conservation actions implemented in the frame of the LIFE MC-SALT in the former saltworks of Etangs et marais des salins de Camargue are to be considered a first important step in the restoration process currently implemented on this site. Most of the after-LIFE objectives presented herebelow are long-term objectives defined for the former saltworks by Conservatoire du littoral and site managers (Parc naturel régional de Camargue, Tour du Valat, Société Nationale de Protection de la Nature). One further ambition is to reinforce hydrological and biological connection between the former saltworks and the coastal lagoons located in the Réserve Naturelle Nationale de Camargue (13000 ha).

Conservation and restoration:

- Improve the conservation status of the coastal lagoons (1150*) located in the former saltworks and in the Réserve Naturelle Nationale de Camargue.
- Reinforce hydrological and biological connections between the former saltworks and the Réserve Naturelle Nationale de Camargue, focusing on improvement of migration conditions of fish including European Eel (*Anguilla anguilla*).

- Maintain suitable hydrological conditions for continuing surface extension of *Salicornia* and other annuals colonizing mud and sand (1310) and Mediterranean halophilous scrubs (1420) in the former saltworks.
- Maintain suitable conditions for the reproduction of colonial small Charadriiforms in the former saltworks.
- Maintain suitable conditions for breeding Greater Flamingoes at least during years with important rainfalls.
- Reinforce secure conditions for Little Terns breeding on beaches.

Monitoring:

- Continue on-going monitoring of coastal habitats and bird populations and extend monitoring to migrant fish

Communication:

- Continue public awareness and public information efforts, focusing on promoting the renaturation process and the restoration actions implemented on site.

After-LIFE ACTIONS

Actions carried out in the frame of the LIFE MC-SALT Natura 2000 site have allowed to save precious time in the implementation of the Natura 2000 policy. Implementation of actions over the next few years, are presented in the form of tables listing the actions planned and specifying the context of their implementation (timetable, organizations responsible for the implementation, potential funders, cost). Most actions are expected to be funded by Agence de l'Eau Rhône Méditerranée Corse en Région Provence-Alpes-Côte d'Azur in the frame of the Contrat de Delta Camargue.

Conservation and restoration actions

Actions	Organizations in charge of implementation	When ?	Potential funders	Cost
Continue the management of hydraulic infrastructures to improve water circulation and maintain water levels and water salinities suitable to conservation objectives	PNRC	2017, 2018, 2019, 2020	AE RMC, CG13, Région PACA	100 days / year
Enlarge the hydraulic infrastructure between Galabert and Tampan lagoons	PNRC, CDL	2017 or 2018	AE RMC, Région PACA, CDL, WWF-France	200 000 €
Enlarge infrastructure between Pourtour Rascaillan and Vaisseau 1 lagoons	PNRC, CDL	2018	AE RMC, Région PACA, CDL	45 000 €
Pursue decompartmentalization works	PNRC, CDL	2017, 2018	AE RMC, Région PACA, CDL	100 000 €
Reinforce the temporary lagoon hydrological functioning in the Briscon area	PNRC, CDL	2018	AE RMC, Région PACA, CDL	40 000 €
Maintenance of hydraulic infrastructures (including channel dredging)	PNRC	2018	AE RMC, CDL	17 000 €
Maintenance of protections fences set up for colonial waterbirds	PNRC	2017, 2018, 2019, 2020	CDL	ca.5 days / year
Maintenance of breeding islets and platform	PNRC	2017, 2018, 2019, 2020		ca.5 days / year
Improve hydraulic infrastructures for managing suitable water levels for colonial waterbirds	PNRC	to be defined	Région PACA, CDL	to be defined
Pursue the guarding of the former saltworks (by intervening in priority on activities disturbing breeding colonies)	PNRC, TDV	2017, 2018, 2019, 2020	CG13, Région PACA	150 days/year
Control vehicle circulation on the Maritim Public Domain	PNRC, CDL, DDTM	2017, 2018, 2019, 2020	Mairie d'Arles	200 days/year
Assess the feasibility for constructing new breeding islets	PNRC, TDV	to be defined	MEEM, EU	20 000 €
Prepare the new management plan of the site (including preliminary & prospective studies)	CDL, PNRC, TDV, SNPN	2018, 2019, 2020	AE RMC, CDL	150 000 €

Organizations in charge of implementation: **PNRC:** Parc naturel régional de Camargue ; **TDV:** Tour du Valat ; **SNPN:** Société Nationale de Protection de la Nature ; **CDL:** Conservatoire du littoral ; **DDTM:** Direction Départementale des Territoires et de la Mer

Potential funders: **AE RMC:** Agence de l'Eau Rhône Méditerranée Corse ; **CG13:** Conseil Général des Bouches du Rhône ; **CDL:** Conservatoire du littoral ; **MEEM:** Ministère de l'Environnement, de l'Energie et de la Mer ; **EU:** European Union

Monitoring

Actions	Organizations in charge of implementation	When ?	Potential funders	Cost
Implement a global monitoring of natural habitats by remote sensing	TDV	to be defined	to be defined after on-going PhD thesis	to be defined
Implement specific habitat mapping on areas targeted for the restoration of coastal habitats 1310 and 1420	TDV	2020	AE RMC	15 000 €
Testing a methodology for the monitoring of habitat 1510	TDV	to be defined	to be defined	to be defined
Continue monitoring of aquatic vegetation and benthic invertebrates	TDV	2018, 2020	AE RMC, Région PACA, CG13, WWF-France	73 000 €
Continue monitoring of sediment and water quality	SNPN	2019, 2020	AE RMC, WWF-France	90 000 €
Continue water level and salinity monitoring	PNRC, TDV	2017, 2018, 2019, 2020	AE RMC	30 days / year
Monitoring and evaluating the recolonization of lagoons by fish populations	TDV	2017, 2018, 2019, 2020	AE RMC, WWF-France, Région PACA	268 000 €
Telemetric monitoring of European Eel downstream migration	TDV	2018, 2019	AE RMC, Région PACA	173 000 €
Monitoring of breeding colonial waterbirds	TDV	2017, 2018, 2019, 2020	Région PACA, EU	13000 € / year

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Public awareness and communication

Actions	Organizations in charge of implementation	When ?	Potential funders	Cost
Develop nature-friendly public visits	PNRC, TDV, SNPN, BGN	2017, 2018, 2019, 2020	to be defined	3000 € / year
Organize events and visits targeting local communities	PNRC, TDV, SNPN	2017, 2018, 2019, 2020	MEEM, WWF-France	2000 € / year
Pursue the edition and diffusion the Etangs et marais des salins de Camargue Newsletter	PNRC	2017, 2018, 2019, 2020	WWF-France, AE RMC	20 000 €
Pursue information broadcasting on Etangs et marais des salins de Camargue facebook	PNRC	2017, 2018, 2019, 2020	-	-
Production of a film broadcasting the ecological restoration of the former saltworks	PNRC, TDV	2019, 2020	AE RMC, CDL	18 000 €

Organizations in charge of implementation: **PNRC:** Parc naturel régional de Camargue ; **TDV:** Tour du Valat ; **SNPN:** Société Nationale de Protection de la Nature ; **CDL:** Conservatoire du littoral ; **DDTM:** Direction Départementale des Territoires et de la Mer ; **BGN:** Bureau des Guides Naturalistes

Potential funders: **AE RMC:** Agence de l'Eau Rhône Méditerranée Corse ; **CG13:** Conseil Général des Bouches du Rhône ; **CDL:** Conservatoire du littoral ; **MEEM:** Ministère de l'Environnement, de l'Energie et de la Mer ; **EU:** European Union

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AFTER-LIFE Conservation Plan for the Camargue Natura 2000 sites (FR9301592 & FR9310019)



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