

ACTIVITY
REPORT 2018

TOUR DU VALAT



Research institute
for the conservation
of Mediterranean
wetlands



ACTIVITY REPORT 2018

TOUR DU VALAT



"Lands of water, lands of the future"

-48%.

Nearly half of the wetlands in the Mediterranean Basin have disappeared since 1970—a figure that is significantly higher than the already alarming worldwide average of 35%. More than a third of the species dependent on wetlands in this region are threatened with extinction, and their decline is accelerating, as witnessed by the fact that they have lost nearly half of their populations since 1990.

These few figures from the Mediterranean Wetlands Observatory report, which is coordinated by the Tour du Valat in the framework of the MedWet Initiative, remind us just how urgent the situation is. The most productive ecosystems on the planet are also the most highly threatened, and the pressures responsible for this massive loss are concentrated in the Mediterranean Basin!

The writing is on the wall, but what can we do?

According to the economist and anthropologist Jacques Weber, who specialises in biodiversity and natural resource management, being poor is not simply a question of lack of wealth, but above all about being unable to act on one's future. He adds that misery means being unable to act on one's present situation.

Yet it is obvious that we are rich in solutions!

Initiatives are being taken all over the world, every day: government authorities are implementing ambitious wetland conservation policies, entrepreneurs are developing a new, more responsible economy that does not prey on natural resources, farmers are inventing a new agricultural system that reconciles food security and wetland conservation, and citizens are creating new kinds of solidarity. Above all, dialogue is developing between these different components of society.

But time is short. Today, the staggering speed of climate change requires us to considerably accelerate

our own efforts, and to radically change our perspective. Leonardo da Vinci advised his students to learn from nature, for that is where the future lies.

Our future cannot be written without wetlands. These long-scorned and massively-destroyed environments prove to be in a certain sense our life insurance for tomorrow. They are first-class "climate change buffers," which mitigate very effectively and at no cost the effects of massive rainfall, prolonged droughts, and rising sea levels.

In France, committed parliamentarians have just submitted a report to the Prime Minister that contains numerous concrete propositions, "Lands of water, lands of the future— make our wetlands pioneering territories for ecological transition." That is indeed the challenge.

One must all take up —public institutions, private companies, associations, and common citizens. As you will discover in the following pages, along with its partners, the Tour du Valat is doing its best to respond to it.

André Hoffmann
PRESIDENT

Jean Jalbert
DIRECTOR GENERAL





Antoine Gazaix,
PHD STUDENT

“The wind hasn't gotten the best of my enchantment with the Camargue, just my hair. Every encounter with *Lythrum thesioides* is unique and that's why I am working for the well-being of this species”

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1954  82 
FOUNDED BY LUC HOFFMANN EMPLOYEES

 AROUND
1 450 scientific
PAPERS PUBLISHED

93 
PhD

PROJECTS IN
+THAN 20
MEDITERRANEAN
COUNTRIES
AND +THAN 300
PARTNERS




LOW EMISSIONS
Thanks to local waste recovery
such as rice husk
for insulation and heating


ORGANIC
AGRICULTURE
AND AGROECOLOGY

THE TOUR DU VALAT

Created more than 60 years ago by Luc Hoffmann, visionary naturalist and patron, the Tour du Valat has since then developed its research activities for the conservation of Mediterranean wetlands with the constant desire to achieve: better understanding for better management. Convinced that it will only be possible to preserve wetlands if human activities and the protection of the natural heritage can be reconciled, Tour du Valat has for many years been developing programmes of research and integrated management that favour interchanges between wetland users and scientists, and promote wetlands benefit to decision makers.

Tour du Valat, located in the heart of the Camargue, is a private research organisation. It has the legal form of a public-benefit foundation since 1978. The estate, which includes all the natural habitats representative of the fluviolacustrine zone of the Camargue, extends over an area of 2,700 hectares, of which 1,845 are classified as a Regional Natural Reserve. Beyond its role of biodiversity conservation, it is a privileged site for conducting researches, test and develop agricultural and hunting activities compatible with the maintenance of this exceptional biodiversity.

The Tour du Valat is also a unique bibliographical resource centre in the Mediterranean, specialized

in wetlands ecology. Each year, hundreds of researchers, teachers and students from the Mediterranean basin come and consult the library's reference material.

Tour du Valat employs eighty two employees who are involved throughout the Mediterranean. The scientific team, comprising around thirty specialists, is working on programmes of research into the functioning of wetlands, and is testing out methods of management.

The results are communicated via training and the implementation of innovative projects being carried out in collaboration with a wide range of partners.



The Estate

The Tour du Valat Estate extends over almost 2,700 hectares and consists of a mosaic of natural habitats characteristic of the Camargue, notably some rare and threatened habitats such as temporary pools and fossil dunes, and also wide expanses of *sansouires* (saline scrub). The fauna and flora are adapted to these special habitats. In July 2008, 1 845 hectares of the estate received approval as a Regional Natural Reserve.

1 - THE CONSERVATION OF THE EXCEPTIONALLY RICH NATURAL HERITAGE

To this end, a wide range of natural heritage surveys and monitoring programmes are regularly carried out: vegetation mapping, botanical surveys, water bird censuses, mammal counts, etc. The estate team sees to it that the natural reserve regulations are adhered to and that the hydraulic infrastructure that enables 640 hectares of marsh to be kept in optimal condition for supporting biodiversity is well-maintained.

© J.Jalbert



2 - THE IMPLEMENTATION OF RESEARCH PROGRAMMES

Programmes are meant to better understand the functioning of habitats and species in relation with human activities. The aim is to learn the lessons needed to maintain biodiversity, optimise management practices, combat undesirable species, and restore degraded habitats. The results are put to use in assisting with the management of other sites, drawing up management plans, getting involved in technical networks, and signing up to economic mechanisms (Agri-Environmental Measures, Local Farming Contracts, Sustainable Farming Contracts, etc).

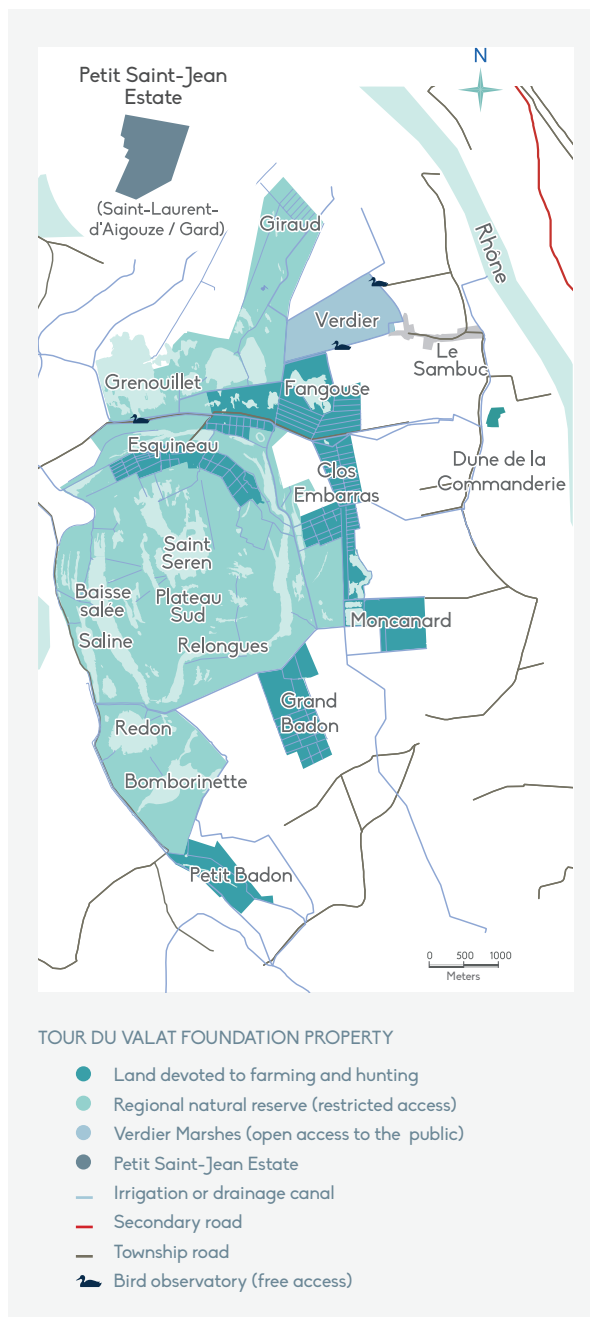
3 - MAINTAINING TRADITIONAL ACTIVITIES

Traditionally, the Tour du Valat's pastures have supported horses, sheep, and bulls. In 1994, the Tour du Valat set up its own extensive farm with 230 cattle and 20 horses of the Camargue breed, which graze 1200 hectares of natural habitats. This farm contributes to the research programmes that are carried out by the scientific teams. The estate's farm is self-financed and environmentally friendly, and conforms to the specifications for organic farming and for the "Camargue Bulls" Appellation d'Origine Protégée (AOP). Four herdsmen (livestock farmers) turn their herds out to graze on a thousand hectares of the estate. In 2018, the livestock grazing on the site amounted to about 450 cattle and 70 horses. Other areas of land are also used for organic farming within a farming cycle that is traditional in the Camargue: rice, wheat, and hay.

Hunting is also an activity that has been carried out traditionally on the estate.

It takes place subject to innovative regulations:

- To avoid lead poisoning among ducks, traditional lead shot has been banned since 1994 in favour of tungsten or steel alternatives; detailed shooting records are kept (number of shoots and number of kills) so as to provide reliable statistical data for scientific studies.
- The Tour du Valat hunting group comprises about twenty current and retired employees of the organisation, who hunt over nearly 25% of the site.
- The Tour du Valat also takes an active part in local efforts to control the wild boar population, by organising drives (to which many hunters from the region are invited), arranging shoots to protect crops, and organising hunting by bow and arrow in the most sensitive areas (the core nature reserve).



Biodiversity on the Estate

Colony of
arboreal waders
© M.Thibault

The Tour du Valat Estate harbours a wide variety of habitats and is home to many bird and plant species, as well as reptiles, butterflies, and crustaceans.



IN SEARCH OF THE BRANCHIOPODS OF TEMPORARY PONDS

The unusual conditions this autumn favoured the development of branchiopod crustaceans in the temporary ponds. After they were refilled with water by the autumn rains, the ponds were teeming with little creatures going by the charming names of *Imnadia yeyetta*, *Chirocephalus diaphanus*, *Daphnia magna*, or *Tanytastix stagnalis*.



Imnadia yeyetta © D.Cohez

The perspicacity of our new botanist paid off because he discovered *Elatine macropoda* in one of the Giraud temporary ponds. Although it is categorised as Endangered in the PACA region Red List, we had imagined this rare small plant could be found there, because it had grown after the sowing of a seed bank taken from sediments sampled on the site. But until that day it had not been found “in the wild.” Well, now it has!

Still on the subject of temporary ponds, one of the flagship species of the Regional Nature Reserve (RNR), the very rare and beautiful Starfruit *Damasonium polyspermum*, also thrived in this year's conditions. Its stands were in bloom and carpeted the Cerisières des Faïsses pond bed.

BREEDING BIRDS

The thickets of flooded Tamaris at La Bomborinette were once again home to a large colony of cormorants and tree-nesting herons, totalling 1600 pairs of Squacco Heron, Cattle Egret, Little Egret, Glossy Ibis, Black-crowned Night Heron, Grey Heron, and Great Cormorant. The Pygmy Cormorant also frequented the colony, and then the roost in the autumn.

In early summer the south of France was visited by an influx of Rosy Starling. This pretty, colourful, and very sociable bird breeds in Eastern Europe and Asia, and spectacular movements in some years cause it to reach Western Europe, as was the case this year. Small groups of Rosy Starling were observed at the Tour du Valat between 27 May and 4 June. They particularly enjoyed feeding on the fruit of the mulberry trees at the Verdier Marshes.

Flight of
Common
cranes
© J.Jalbert



NEW SPECIES

The 54th species of butterfly (*Rhopalocera*) identified on the site is the Cardinal. Common in garrigue scrubland it was perhaps blown into the Camargue by the mistral wind.

The 605th plant species is *Carex pseudocyperus*. Protected at the regional level, this sedge was discovered during sampling of vegetation to revise the mapping of habitats. There is a good stand in a little silty marsh close to Le Rendez-vous.

The mycological inventory of the Estate is underway. A short field visit with mycologists from Aix-Marseille

University and Atelier Luma enabled the identification of some thirty species of fungi. The same visit was also the opportunity to put a name on the curious, sticky, whitish patches that we notice here and there at the base of plants. In fact, it is a species of Myxogastria, which were previously considered as fungi but now placed in a different kingdom, the Protozoa. Commonly referred to as “blobs”, these living organisms take the form of plasmodia and are capable of moving short distances (a few centimetres) to find light and food. Those frequently observed this autumn at the Tour du Valat seem to belong to the species *Mucilago crustacea*.



Damasonium polyspermum Granger © A.Granger



Blob *Mucilago crustacea* © D.Cohez



Rosy Starling © M.Thibault



Patrick Grillas,
PROGRAMME DIRECTOR

THE PROGRAMME

Our programme has the following four objectives: (1) improve our understanding of the functions, values, and services provided by Mediterranean wetlands, (2) assess management practices that aim to better conserve, restore, and use them sustainably, (3) develop synergies between stakeholders, particularly through capacity building, to ensure there is a real evolution toward the sustainable management of wetlands, and (4) unite stakeholders to advocate the importance of Mediterranean wetlands vis-à-vis decision-makers.

An external mid-term assessment for the 2016-2020 programme was conducted to monitor its implementation and propose changes for the future. This assessment report is extremely informative and generally very positive. It encourages us to continue developing our activities in southern and eastern Mediterranean countries, and to improve our capacities in terms of policy transfer.

1. RESEARCH

Our research and conservation projects on waterbird populations were continued. In the Mediterranean Region, this work is based on a major partnership, especially with our network in North Africa.

In the field of health ecology, two new projects were started on avian flu virus dynamics in the Grand-Lieu Nature Reserve, and on contaminants affecting amphibians and reptiles in the Camargue.

Three doctoral theses were defended this year. Elie Gaget, in partnership with the National Museum of Natural History, Paris, analysed the resilience of wintering bird populations in the Mediterranean Basin in response to climate change. Emeline Sabourin, in partnership with the University of Montpellier (MIVEGEC), studied fasciolosis and the circulation of liver flukes in Camargue ecosystems. Finally, Benjamin Folliot, in a partnership with the ONCFS (French Hunting and Wildlife Bureau), finished his thesis on the Palearctic population of Common Pochard.





2. MANAGEMENT

Several wetlands management and conservation projects also include major research activities, as is the case in our ecological restoration projects. This is also true of our project seeking lower environmental-impact mosquito control alternatives.

On the Tour du Valat Estate, the mapping of natural habitats was carried out using an innovative method based on remote sensing with image segmentation, photointerpretation and phytosociological surveys.

3. NETWORKS—CAPACITY BUILDING

The Mediterranean Lagoons Transfer Unit continued assisting Mediterranean lagoons stakeholders in France, and in particular participated in a major project (Life Marha) that aims to restore and maintain the conservation status of marine habitats. The Mediterranean Lagoons Transfer Unit contributes to this project through better assessment of the conservation status of coastal lagoon habitats, and by implementing a capacity building plan for the stakeholders concerned.

At the Mediterranean level, the Tour du Valat team is increasingly involved in projects in networks, and, in particular, in building the capacities of its partners in the eastern and southern parts of the Basin. We also strengthened our ties with national institutions (framework agreements signed in Algeria and under preparation in Morocco and Tunisia).

4. ADVOCACY

Internationally significant events included our participation in the Conference of the Contracting Parties to the Ramsar Convention in Dubai, U.A.E, and the UN Biodiversity Conference in Sharm El-Sheikh, Egypt. The Mediterranean Wetlands Observatory worked very actively there with the MedWet Secretariat, particularly in the process to achieve the second edition of the report on the status of wetlands in the Mediterranean Basin.

Meanwhile, the Mediterranean Lagoons Transfer Unit pursued its advocacy activities vis-à-vis French government officials from the Mediterranean region, in two regional meetings, which brought together around one hundred people to discuss how territories can adapt to climate change and encourage responsible nautical activities in coastal areas.

Finally, the Tour du Valat organised a visit of the Former Camargue Saltworks ecological restoration site for the parliamentary mission headed by the French Prime Minister.

WHAT LIES AHEAD IN 2019?

Our programme will be continued in line and in coherence with our strategic plan. Funding from the Agence Française de Développement will help to foster regional activities, particularly in terms of support for bird monitoring networks, but also for the implementation of various capacity building actions in the framework of the Mediterranean Wetlands Alliance.

In addition to programme implementation, the main projects in 2019 will be a forward-looking study of the situation of wetlands in the Mediterranean Basin and the search for funding opportunities.

Patrick Grillas
PROGRAMME DIRECTOR



Nigel Taylor,
POST-DOCTORAL RESEARCHER

“There’s no better place to write about conserving wetland vegetation than in a beautiful research institute surrounded by wetland vegetation – and full of wonderful people!”



Species Conservation

Fish monitoring © G.Wasse/TDV

The Department's overall objective is to contribute to the conservation of animal species found in Mediterranean wetlands and assist in the management of conflicts that may occur between these species and human activities.

We aim to contribute to:

- the conservation of endangered species;
- the management of species in conflict with human activities (pests, health...);
- the management of key species for human activities (fishing and hunting, tourism...).

Our conservation objectives are based above all on scientific knowledge, either by directly conducting research projects, or by transferring and applying the knowledge produced by the scientific community at large. Research in our Department is focused on four main areas, which are considered to be major issues in Mediterranean wetlands today and correspond to our current capacities:

- the population dynamics of Mediterranean wetland species in response to the pressures of human activities;
- the interactions between species conservation and issues linked to public and veterinarian health;
- the interactions between Mediterranean wetland species with an unfavourable conservation status and introduced non-indigenous species;
- 5-, 10-, and 25-year estimates of species distribution and populations, in function of changes to landscapes, climate, and their exploitation

Two doctoral students defended their thesis this year: Emeline Sabourin and Benjamin Folliot. Emeline Sabourin's research contributed to our understanding of the interaction between the Common Liver Fluke—a parasite with a potentially significant veterinary impact on cattle in the Camargue—, and its hosts: water snails, wild boar, and bulls. Antonio Vazquez Perera began a post-doc to continue this project in collaboration with the University of Montpellier.

Benjamin Folliot's project improved our understanding of the dynamics of Common Pochard—a duck declining rapidly in Europe (see Focus pages 24). David Vallecillo began his doctoral research on the distribution of wintering ducks in the Camargue in collaboration with the ONCFS (National Office for Hunting and Wildlife) thanks to funding from the François Sommer Foundation. Oscar Sanchez-Macouzet joined our team for a post-doc during which he will study Glossy Ibis population dynamics.

The Life+ ENVOLL project, which was managed by the Friends of the Vigueirat Marshes Association, came to an end this year. 30 islets (and six nest rafts) were built along the Mediterranean coast to add to the already existing network of 150 islets installed for colonial Charadriiformes.

Along with the standard ringing and marking procedures, we continued to place GPS/GSM tags on Eurasian Spoonbills and Argos tags on European Rollers, as well as RFID chips on eel to obtain more precise information concerning their movements.

Our monitoring of hydrobiological connectivity in the former Camargue saltworks has been continued and shows that colonisation by marine species has occurred, particularly through breaches in sea dykes after storms.

The project funded by the Rhone-Mediterranean and Corsica Water Agency on the impact of contaminants on reptiles was started with 180 blood samples taken from turtles and the publication of an article on mercury contamination of Viperine Water Snakes.

Support for our Mediterranean partners was continued through training for ornithologists in making waterbird censuses, as well as the development of specific modules intended for upper educational institutions. We also participated in a survey of the herpetofauna in the Gediz Delta, Turkey and collaborated in the biometric and demographic study of turtles in Lake Tonga in Algeria.



© H.Hôte / Agence Caméléon

Arnaud Béchet,
HEAD OF
DEPARTMENT

The Species team

LEFT TO RIGHT, TOP TO BOTTOM:

Oscar Sánchez Macouzet, Clémence Deschamps, Hugo Ferreira, Christophe Germain, David Vallecillo, François Marc, Delphine Nicolas, Marion Vittecoq, Timothée Schwartz, Mathilde Blanquet, Marie Suet, Jocelyn Champagnon, Luna Dupont, Maud Parent & Pascal Contournet.

MISSING :

Antoine Arnaud, Arnaud Béchet, Benjamin Folliot, Émeline Sabourin, Florian Leborne, Laura Dami, Yves Kayser & Thomas Blanchon.





SPECIES PROJECTS

Ringling of Eurasian Spoonbills
© Tour du Valat

1 - Population dynamics in response to human activities

Arnaud Béchet / bechet@tourduvalat.org

Three main activities are being developed:

- Demographic analysis of populations and metapopulations by means of Capture-Mark-Recapture (CMR) and genetic studies (birds, fish, reptiles);
- Long-term monitoring of biodiversity in the Camargue (in particular communities of birds, fish, amphibians and reptiles);
- Development of tools for gathering, managing, analysing, networking, and presenting data.

The long-term monitoring of **Greater Flamingo, Slender-billed Gull, Glossy Ibis, and European Pond Turtle** was continued with a view to better understanding the relative benefits of various migration and/or dispersion strategies on their population dynamics in response to global changes.

Greater Flamingo: Greater Flamingos were once again disturbed by Eurasian Eagle Owl predation, which did not prevent them from nesting at Aigues-Mortes.

Eurasian Spoonbill: Eurasian Spoonbills suffered heavy predation by Wild Boar but nevertheless many fledglings were able to leave the nest. Two more GPS tags were fitted to members of the species, raising the number of GPS-monitored birds to six since 2016. One of these spoonbills was killed by a hunter, highlighting the existence of poaching in the western part of

the Camargue. Data from the tags enabled estimation of the time that the spoonbills devote to various activities (feeding, resting, flying) during their annual cycle, especially before starting migration. Considerable ring-reading work was conducted during the winter in the Camargue and Tunisia. The latter was in the context of the AEWA (African Eurasian Waterbird Agreement) workshop of international experts on the Eurasian Spoonbill organised by the Tour du Valat in Djerba (Tunisia) in partnership with the Friends of Birds Association.

Trout species: Fieldwork was continued in June on trout species in Slovenia. The September session could not be conducted due to access being refused by the new board of the local angling association. After 26 years of fruitful collaboration and more than 35 scientific papers published, the fieldwork must stop for the time being. However, there are many already-gathered samples, and data still to be analysed.

European Eel: More than 400 eel were marked and 145 recaptured (including several marked in 2006, 2008, and 2009). We now place larger marks that are compatible with RFID technology and detectable at greater distances. This development will enable us to study the longitudinal movements of these individuals by means of listening stations set up at two points in the system that continuously record movements of the fish.

Ocellated Lizard: In the framework of Timothée Schwartz's thesis, an initial ecological status assessment was conducted on the presence of Ocellated Lizard at ecological compensation sites created for it during construction of the Nîmes-Montpellier high-speed train bypass. In addition, eight individuals were fitted with GPS-VHF tags on the Cossures estate (Crau) in partnership the Crau National Nature Reserve.



Ocellated Lizard © J.Renet

2 - Health ecology

Marion Vittecoq / vittecoq@tourduvalat.org

The aim of this project is to understand the interactions between biodiversity and the dynamics of the pathogenic agents linked to public health and veterinarian problems. Our understanding of these issues will help us to reconcile the conservation of Mediterranean wetlands with the presence and well-being of human populations, and also contribute to the protection of species with an unfavourable status during epizootic periods or pollution events.



Measurement session for this young Eurasian Spoonbill © Tour du Valat

In collaboration with Kristianstad University (Sweden) we added a "water" component to our studies of multi-resistant bacteria. We intend to compare the strains present in wildlife and in water, which is considered as a major bacterial transmission factor between human beings, poultry and livestock farms, and the environment.

Now recognised as experts in antibiotic resistance within wild fauna, we informed people about the importance of taking the environment into account for combatting the development of multi-resistant bacteria by participating in various on events and workgroups, especially as part of World Antibiotic Awareness Week.

Emeline Sabourin's thesis work led to the publication of a paper summarising the different possible aspects of the integrated management of the health risks associated with the Common Liver Fluke in livestock farms and human populations.

3 - Modelling and monitoring wetland biodiversity

Jocelyn Champagnon / champagnon@tourduvalat.org

Our overall objective is to effectively exploit the monitoring data concerning the population of vertebrates and the presence of pathogens so as to better understand the factors that influence their spatial and temporal distribution.

In the Camargue, the aim of David Vallecillo's thesis is to study the influence of the person counting, the method (air or ground), and also habitat, on duck censusing operations to understand the changes in numbers observed over the last fifty years. In parallel, a concertation process was set up with local managers to promote more sustainable hunting and adaptive management.

In the framework of the Life+ ENVOLL project, 82% of the islets developed were occupied at least once during the last ten years. Nesting populations of the species concerned recovered, with increases positively correlated to the occupation rate of the islets developed, confirming the effectiveness of this approach.

In the Mediterranean, the Mediterranean Waterbird Network (MWN) continued its support of wintering waterbird monitoring through waterbird census training courses and analysis of the results on population trends, the first of which was presented at AEWA MOP7. This project, which benefits from close collaboration with the AEWA Technical Support Unit (run by our colleagues from the National Office for Hunting and Wildlife, ONCFS) will be strengthened by better integration with the Mediterranean Wetlands Observatory (MWO) and

Mediterranean Wetlands Alliance (MWA) through a joint project to promote the value of wetlands in the Mediterranean region and build the capacities of NGOs in Mediterranean countries (funded by the French Development Agency).

The AEWA Technical Support Unit (AEWA TSU) continued its activities aimed at improving the quality and quantity of waterbird censusing data in Africa. In the framework of the RESSOURCE project, piloted by the United Nations Food and Agriculture Organization (FAO), the censuses conducted by the ONCFS in Egypt, Sudan, and Chad counted more than 15% of the population of Black Crowned Crane, a species listed as Vulnerable by the International Union for the Conservation of Nature (IUCN). The TSU also organised a trainers' training course on the management and analysis of data for teachers from African wildlife schools (see the educational film on the Tour du Valat website).

Modelling pathogenic agent dynamics. In collaboration with the Ecosystems Department, in 2017 we had mapped the risk of the presence of Avian Influenza viruses in the Vaccarès lagoon over time in function of different scenarios. The development of this innovative approach was completed in 2018 by taking into consideration the influence of water temperature and salinity on the persistence of these viruses. We also added an epidemiological component to our hydrodynamic model. This work will shortly be extended to Lac de Grand-Lieu (a lake in the Loire-Atlantique department).

Bird census training, Tunisia
© Said.Fritas



4 - Database

Christophe Germain / germain@tourduvalat.org

The aim in this area of work is to develop efficient infrastructure for gathering, managing, and consulting naturalistic data. Several tools are being developed within this framework.

The breeding monitoring data management system of the **www.medwaterbirds.net** web portal was revised to improve the management of data sharing rights. It is now possible to enter both detailed waterbird breeding data (daily monitoring operations) and compiled data (summary for the season).

A new compiling system was set up, enabling the dynamic generation of visually attractive diagrams and export files. The module detecting administrative bodies attached to newly added sites was completely revised, and is now based on reverse geocoding services. This method avoids having to manage an administrative geographical database. In addition, the new system is no longer limited to a predefined list of countries, which makes the platform usable throughout the world.



Common cranes
© Jean Jalbert

Demography of Common Pochard populations

The Common Pochard (*Aythya ferina*) is a diving duck that was relatively rare in Western Europe before 1850. Its breeding range started to expand in the late 19th century, particularly due to the rise of fish farming in Central and Eastern Europe. Today, it is fairly common throughout the Western Palearctic, where its much-hunted population is estimated to be about two million individuals. The main breeding areas are Central Europe, Scandinavia, and Russia. Western Europe hosts only a marginal proportion of nesting populations, but remains nonetheless a major wintering ground for the species.

In the last twenty years, a considerable decline in the species—estimated to be between 30% and 49%—has been observed, in particular along its Northwest European migration route. This marked decline has led the International Union for the Conservation of Nature (IUCN) to revise the conservation status of the Common Pochard from “Least Concern” to “Vulnerable.” In the last three years, Benjamin Folliot, a Ph.D. student at the National Hunting and Wildlife Office (ONCFS) in partnership with the Tour du Valat, has been studying the demography of Common Pochard populations in order better to understand the cause of this decline, and propose management measures to ensure the long-term conservation of the species.

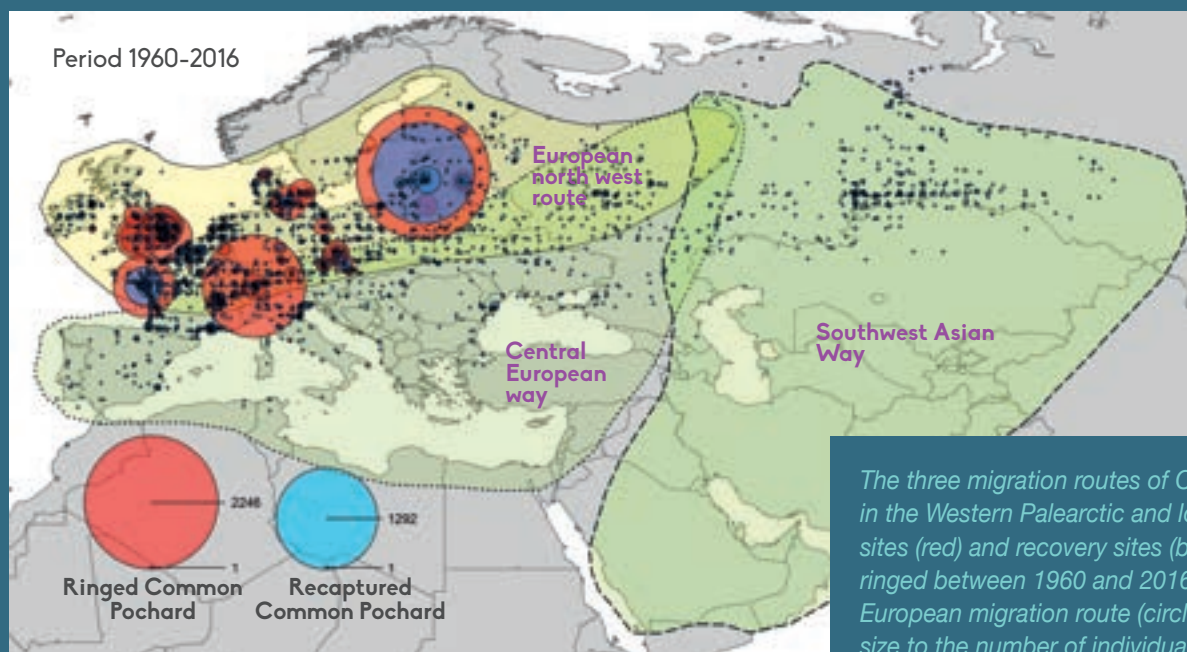
Trends, Movements, Breeding, and Survival

The approach adopted in the framework of this research is related to several major lines of research. The first consists in assessing the robustness of estimations of Common Pochard trends, in particular along its Northwest European migration route. These trends are established on the basis of annual waterbird censuses that have been carried out around 15 January since the 1960s, and coordinated by Wetlands International. We applied a method that takes into account the correlation between sites that are close to each other, and our results attest to a population reduction of 40% between 2002 and 2012. We also observed that this reduction is greater in Scandinavia than in more Southerly European countries.

In a second phase, we endeavoured to assess the movements of Common Pochard between geographical zones. The historical hunting recovery data for ringed Common Pochard on the Northwest European migration route showed that a substantial proportion of the individuals wintering in Western Europe originates from an area of Siberia that had not previously been identified as important. Yet the proportion of individuals coming from that geographical area has diminished since the 2000s. The region has suffered heavy pressure, such as pollution events and the draining of wetlands to extract oil and gas, and to grow cotton. These threats could have considerably altered Common Pochard breeding success in the area in recent years. In addition, predation by introduced species and the intensification or abandonment of fish farming are likely to be major problems encountered by the species in Central Europe and Scandinavia.



Common
pochard
©T.Galewski



The third line of research aimed to estimate the survival rate of Common Pochard using the ringing data of thousands of birds at Grand-Lieu, in the UK, and in Switzerland. Analysis showed that in the UK and Switzerland survival rates have remained stable during the last 35 years. In the UK and Switzerland survival rates are significantly higher for males than for

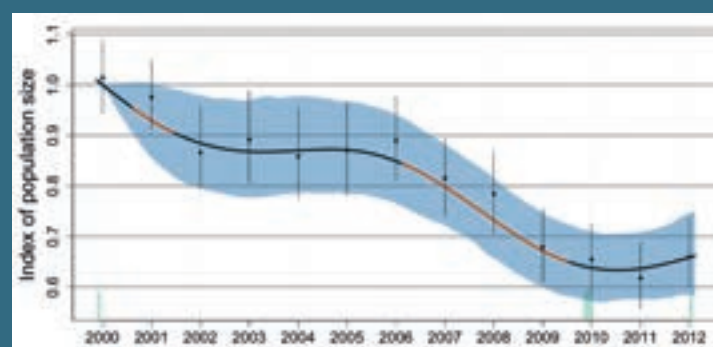
females, a phenomenon that could be explained by greater predation of females in the breeding season. At Grand-Lieu the survival rate is lower and declining compared to the UK and Switzerland, which could reflect both heavier hunting pressure right on the edges of the reserve where the birds are ringed and a degradation of conditions during the breeding season.

Demographic model and management

Using the data obtained in this work we were able to model the demography of a “theoretical” population of Common Pochard. The objective was mainly to determine which of the demographic parameters were most likely to be involved in the declining numbers in order better to target the type of action that could be implemented to redress the species’ falling population trend. Whatever the scenario used (higher or lower survival rate values drawn from our analyses of survival rate and nesting success), the population is decreasing. Our studies reveal that the growth rate is highly sensitive to variations in survival rate, in particular that of females over a year old. Even a modest increase in this survival rate could therefore be sufficient for the population to recover. Reducing hunting harvest in countries like France, where the survival rates of females are lower than those measured in Switzerland and the UK, would therefore probably be enough to halt the decrease in Common Pochard numbers.

The management of species subjected to hunting consists in seeking a balance between an acceptable harvest number and a favourable long-term conservation status of the population. The future of Common Pochard hunting will involve the setting up of an adaptive management system. This adaptive management will enable actions to be taken such as managing of harvest, even though further knowledge is required for some parameters like juvenile survival rates, annual hunting bags, nesting numbers, and the productivity. The monitoring of these actions will enable an increasingly thorough understanding of the demography of the population. This work provides a highly valuable assessment for setting up such a management system.

TREND IN COMMON POCHARD NUMBERS ON THE NORTHWEST EUROPEAN MIGRATION ROUTE.





Ecosystem conservation

Camargue
horses in the
Tour du Valat
© Tour du Valat

The general objective of the department is to conserve biodiversity, and ecosystem functions and services, in a context of global changes by means of multidisciplinary research based on the complementarity between four research areas:

- modelling to assist management and restoration actions based on a better understanding of the functioning of ecosystems and their probable evolution;
- restoring the biodiversity and functionality of degraded ecosystems by using scientific expertise to pilot restoration actions and management decisions;
- implementing and promoting adaptive, intersectoral, and sustainable management systems integrated into the dynamics of local areas by favouring a site-based approach;
- transferring the knowledge acquired to target stakeholders (managers, decision-makers, scientists, and the general public) by designing appropriate communication tools, in particular through the actions of the Mediterranean Lagoons Transfer Unit.

This year was marked by the beginning of several new projects focusing on various sites in the Camargue and the Mediterranean Basin as a whole. Working in close collaboration with local partners, the Tour du Valat has been developing several projects in the framework of the Delta Contract in the Camargue. These projects do not only concern the Ecosystems Department, but also entail collaboration with staff in our other two departments. We also continued using the different parts of the Tour du Valat Estate as an open-air laboratory, where we test out new methods and models, in activities ranging from governance tools to controlling invasive species. This year we continued our collaborative projects with our longstanding “environmental partners,” but we also tried to integrate stakeholders from the private sector including the GPMM (Greater Marseille Sea Port), a start-up mosquito-control company, and Vinci Autoroutes, in order to increase our impact on wetland conservation.

2018 was marked by:

- Modelling that uses two types of greenhouse gas emissions forecasting to quantify water deficit, trends in the status of wetlands, and the volumes of water needed to maintain semi-permanent marshes at 229 locations throughout the Mediterranean region in 2050 and 2100.
- Two new doctoral projects, bringing the number of doctoral students in our Department to five. These new theses concern the characterisation of the conservation status of agropastoral habitats on Natura 2000 sites and a comparative study of biodiversity in natural, urban, and intensive and extensive agricultural environments in the Gediz Delta in Turkey.
- We continued to apply nature-based solutions this year in the form of experience sharing with the production of a booklet on the former Camargue saltworks site (EMSC), and through the development of a partnership in environmental education that promotes the Petit Saint Jean agroecology project.
- The launch of the Life Marha project (Marine habitats) in collaboration with the French Biodiversity Agency and 10 other partners, which aims to improve the conservation status of natural marine habitats (including lagoons) by mobilising all sea-related Natura 2000 stakeholders.
- Concerning the southern and eastern shores of the Mediterranean, our activities in the Gediz Delta were maintained in spite of the geopolitical developments in Turkey. A LIFE project was further developed on the management and restoration of the Prespa reed beds in Greece, and we also contributed to the projects within the Initiative for the conservation of Mediterranean saltworks, the preservation of the Aoös River in Albania, and the Ulcinj saltworks in Montenegro



Brigitte Poulin
and Lisa Ernoul
DEPARTMENT
COORDINATORS

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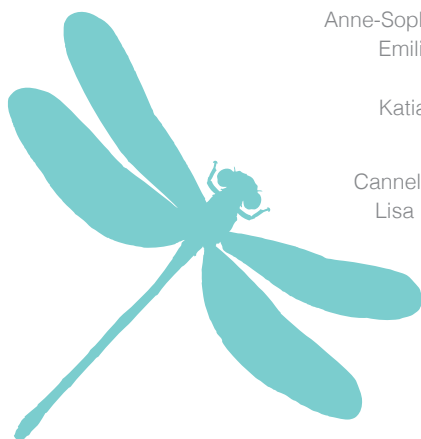
The Ecosystems team

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MISSING:

Cannelle Moinardeau, Hugo Fontes, Lauren Redmond,
Lisa Ernoul, Loïc Willm, Manon Hess, Nathalie Barré,
Nathalie Chokier, Nicolas Beck, Olivier Boutron,
Olivier Brunet & Philippe Lambret.





ECOSYSTEMS PROJECTS

Setting up of a scientific experimentation within the framework of the restoration project
© B. Solgrain

1 - Ecosystem dynamics modelling

Olivier Boutron / boutron@tourduvalat.org

In 2018, our modelling activities focused to a large extent on projects completed within the Delta Contract. Working with the SNPN (National Nature Protection Society), the hydro-salinity modelling tools developed by our team were used to simulate the influence of various water management scenarios on hydro-salinity dynamics in the Vaccarès hydrosystem. The first simulations for the ensemble made up of the Vaccarès hydrosystem and the EMSC (former Camargue saltworks) were conducted to better understand the residence times.

The hydro-salinity models currently being developed by this team require considerable computational means to perform the simulations. Working with the LEMON project team (Inria-UM-CNRS – French national research institute for the digital sciences, University of Montpellier / French National Center for Scientific Research), a porosity-based hydrodynamic model was developed and described in a published paper. This new type of modelling requires less computational power, and will be applied in the Camargue marshes in 2019.

Meanwhile, in terms of our remote sensing activities, indicators for detecting the presence of water in wetlands, including marshes in which there is a high density of emergent plants such as reeds, have been developed with several satellites (Landsat 8, Spot 5, and Sentinel 2), which can cover a period of 40 years retrospectively. This tool will be useful for monitoring the long-term trends of wetlands in the Camargue and beyond. In addition, in collaboration with AgroParisTech Montpellier and the LEMON project team, we started to develop an algorithm for estimating bathymetry based on satellite images and time-specific water level data.



Installation of new probes © E.Luna-Laurent

Collaborative projects with other Tour du Valat departments were also developed (together with the Mediterranean Wetlands Observatory, a modelling study that takes account of ecosystem services) and is consolidated (with the Health Ecology team on the avian flu, antibiotic resistance, and fasciolosis).

Our project with Paul Sabatier University (Toulouse) and the Adict Solutions company was continued on the

hydrological component of the hydrology-vegetation dynamics coupled model being developed.

Finally, we started a joint project with the University of Zurich to study the dynamics of pyrogenic carbon in the Camargue Delta, because this type of carbon is an important component in the global carbon cycle, and therefore plays a major role in climate dynamics.

2 - Ecosystem restoration

François Mesléard / mesleard@tourduvalat.org

Our ecosystem restoration activities focus on three specific subjects:

Rehabilitating and creating ecosystems and communities

- The restoration of the EMSC site, which aims to re-establish more natural hydrological functioning by recreating a functional link between the sea and the central lagoons of the Camargue, and rehabilitating ecosystems;
- The management and creation of ponds for hunting and biodiversity in order to assess the compatibility between hunting management and pond conservation management—the MEDICYN project carried out with the GPMM (Greater Marseille Sea Port);
- The restoration and conservation management of *Lythrum thesioides* populations in temporary ponds (doctoral thesis co-supervised with the University of Montpellier and the CEFE-CNRS—Centre of Functional Ecology and Evolution – French National Center for Scientific Research);
- The utilisation of ants for ecosystem engineering in restoring degraded grassland ecosystems (doctoral thesis co-supervised with the University of Avignon, IMBE—Mediterranean Institute of marine and terrestrial Biodiversity and Ecology);
- The utilisation of reference ecosystems to create temporary ponds (thesis in collaboration with the University of Avignon, IMBE).

Pastoral management of biodiversity

- The specific roles of domestic herbivory and climate variability in maintaining biodiversity;

- The impact of eco-pastoralism on the plant communities on dykes in the Donzère-Mondragon hunting and wildlife reserve (doctoral dissertation in collaboration with the University of Avignon, IMBE). This project aims to test the capacity of domestic herbivores to increase the plant diversity in artificial habitats at different spatial scales.



Field work –Thesis on *Lythrum thesioides*
© Tour du Valat

Controlling invasive species

- Controlling the seed stock and vegetative parts of invasive species. This project aims to use microwave technology to destroy the seed banks and plant individuals or parts of individuals present in the soil.
- Restoring plant communities after the eradication of invasive species. The aim is to plant native species that will make or create communities that are more impermeable to invasive species (doctoral dissertation in collaboration with the University of Avignon, IMBE).

3 - Adaptive and integrated management

Lisa Ernoul / ernoul@tourduvalat.org

To preserve landscape diversity and improve the management of wetlands, we have tested management methodologies and approaches on various sites in the Camargue and in the Mediterranean Basin. We also continued our transfer activities that use Open Standard methodologies for biodiversity conservation. The key sites for this project are the **Tour du Valat**, the **Petit Saint Jean**, the **Verdier Marshes**, and the **EMSC** (former Camargue saltworks site).

The **Tour du Valat** management plan was approved and the planned operations were implemented. The dismantling of a high voltage electrical line, which was installed in 1940, was a significant event in 2018. It had cut across more than five kms of the Tour du Valat Estate, with negative impacts on biodiversity and landscapes. Its dismantling was completed through a partnership between RTE (French electricity transmission system operator), the Tour du Valat, and the Sud-Provence Alpes Côte d'Azur Region. The work was conducted with limited passage of heavy equipment, while the utilisation of geotextiles made it possible to reduce the impacts of this machinery on the soil and vegetation. We also took advantage of this dismantling project to create

two new ponds, using the matter excavated to fill in the holes created when the pylons were removed. These operations were monitored by a naturalist to assess impacts on biodiversity.

On the **Petit Saint Jean Estate**, we started implementing the new site management plan with more rigorous supervision by a naturalist. Two new vineyard plots were planted, and a trellis system has now been installed on all of the nine plots planted since 2016. A total of 900 linear meters of hedges have been planted between the vines and on the edge of the plots. In the framework of a Natura 2000 contract, the project to selectively clear some parts of the large pine grove was successfully completed by students from a rural vocational training centre. A collective composting project aiming to achieve autonomy in terms of organic matter was initiated thanks to the financial support of the Fondation de France. Numerous volunteer events were organised throughout the year for the planting and maintenance of hedges. In April 2018, to mark the fiftieth anniversary of the official recognition of the Camargue purebred horse, we welcomed over 850 people on the site for various events, conferences, visits, and exhibitions.

Dismantling of the high-tension power line in the Tour du Valat Nature Reserve

© Tour du Valat



The **Verdier Marshes** project was further developed with the realisation of community-based management activities in collaboration with the local association from the village of Le Sambuc. In 2018, a European Union project (WetNet) used the Verdier Marshes as a pilot site for testing out and developing a common vision for the site. This vision will be incorporated into the new management plan next year. We also organised participative activities like 'a meal in the marshes,' discussions with school children from Le Sambuc, and naturalist visits.

The former Camargue saltworks site (EMSC)

A study on the evolution of the coastline from 2010 to 2018, and the connections with the sea, was conducted based on satellite images. Fish and shellfish monitoring were continued, and it showed that the path for migrating between the sea, the former saltworks and the Vaccarès hydrosystem has been partially re-established, and the habitat functions for the species that live in part of the lagoons have been restored. The monitoring of bottom-dwelling macrofauna also revealed an improvement in the ecological status of the lagoons located along the sea. An assessment of the current state—a pre-requirement before restoring and reconnecting the marshes of the Old Rhone—was undertaken as well as a concerted study backed by the Conservatoire du Littoral et des Rivages Lacustres (coastal and lakeshore protection agency) on how well the irrigation and drainage networks in the Japan Basin are adapted to the challenges in the EMSC project. A short film was also produced and is now online (*The Lagoons and marshes of the former Camargue saltworks site: a changing territory. You can see it on our vimeo account*).



Other sites

This year we continued our five-year monitoring programme of the forest population in the Tourtoulens Woods, and contributed to a study by the Groupe Chiroptères de Provence (Provence Chiroptera Group—<https://gcprovence.wixsite.com/ripimed>) on Mediterranean riverine woodlands, which used bats as bio-indicators.

In the framework of a project with EuroNatur and the Bird Research and Protection Centre in Montenegro (CZIP), the Tour du Valat participated in a mission at the Ulcinj saltworks (Montenegro) that assessed the technical and economic possibilities of putting the saltworks back into production.

Horse-drawn carriage trip in the Verdier marshes
© Tour du Valat

Fish monitoring in the Lagoons and Marshes of the former Camargue saltworks
© M.Thibault



The Mediterranean Lagoons Transfer Unit, a consortium advocating for coastal wetlands

The Tour du Valat manages the Mediterranean Lagoons Transfer Unit consortium in partnership with the Languedoc-Roussillon Natural Area Conservancy (CEN) and the Corsican Environmental Office (OEC) since 2001 under the supervision of the AFB-French Biodiversity Agency. Field of action: French Mediterranean coastal lagoons and their peripheral wetlands, which form a chain covering 130,000 hectares of the Occitanie / Pyrénées-Méditerranée, Provence-Alpes-Côte d'Azur and Corsica regions. Mission: to foster better recognition of lagoons and encourage their sustainable management among the various stakeholders involved, through three areas of action.

In spite of the immense services they render to humanity, these coastal wetlands are still being subjected to major anthropogenic pressures, which have resulted in widespread pollution and a 25% loss of coastal marshes and lagoons in the Mediterranean region.

Yet they play a crucial role for the Mediterranean coastal area, with high levels of extreme climate events, population density, and land artificialization.

Lagoons can buffer the effects of climate change in many ways:

Through their role as natural sponges, they help to control the flooding that is linked to heavy rainfall episodes, and, on the contrary, contribute to maintaining minimum water levels during droughts. The mud flats, saline prairies, lagoons, dunes, and salt marshes play a role in protecting the coast from the forces of waves and erosion. Whereas the sea level rise is speeding up (about 2mm/year in the 20th cen-

tury, but nearly 5 mm/year over the past five years), lagoons act as a buffer and are a natural rampart that protect against marine storm surges. Finally, by effectively storing atmospheric carbon, coastal marshes have a long-term effect in terms of climate regulation.

Therefore, in addition to being biodiversity hotspots, and being used for numerous traditional activities that shape the landscape, such as salt, rice, livestock, and shellfish farming, these coastal wetlands provide veritable natural infrastructure for free that make local territories more resilient for encountering two major societal challenges we face today: climate change and the erosion of biodiversity.

In 2018, this advocacy of coastal wetlands targeting local authorities in the Mediterranean region included in particular two regional meetings that brought together about one hundred people, and attracted in all thirty local and regional government officials.



Moving toward bioclimatic cities...

In the framework of World Wetlands Day 2018, in partnership with the SUD Provence-Alpes-Côte d'Azur Region (PACA), the Rhone Mediterranean Corsica Water Agency, and the PACA DREAL (Regional Directorate for the Environment, Planning and Housing), a meeting targeting local authorities from the coastal area was held to compare and capitalise on feedback from communes that have invested in adapting to climate change, and to identify the levers of action that exist for becoming more resilient. Organised as an occasion for "politicians to speak to politicians," this meeting was kicked off by Philippe Vitel, the president of the PACA AGORA (operational assembly for the governance of water resources and aquifers), and brought together 30 local officials, mainly from the Var Department.



Meeting « Towards bioclimatic cities : how local communities are adapting to territorial economic constraints and climate change » in La Garde (Var Department) © La Garde Municipality

“Regulations for nautical activities: local officials discuss their responsibilities”

This information seminar for mayors from the coastal area was co-organised with Rivages de France (French Coasts Association) and the French Biodiversity Agency (AFB), and brought together about 60 participants including over 20 elected officials, mayors, and city councillors. Among them were Agnès Langevine, vice president of the Occitania Region in charge of the ecological transition, Bernard Devic, president of the Narbonne Mediterranean Regional Natural Park, Michel Py, president of the federation of associations RIVAGE, and Michel Moly, vice president of the Pyrénées-Orientales Department and president of the Gulf of Lion Marine Natural Park.

Visit of a parliamentary mission concerning the restoration and promotion of wetlands in Arles

The parliamentary mission commissioned by the Prime Minister in the summer of 2018 was accompanied to the former Camargue saltworks site with all partners, to show the strengths of this territorial project as a response to the challenges of climate change.



Parliamentary mission welcomed to the former Camargue saltworks site – 30/11/2018 © J. Jalbert

Life Marha, for a better state of conservation of coastal lagoons

Finally, in 2018 the Mediterranean Lagoons Transfer Unit started participating in a major eight-year project aiming to rehabilitate marine habitats and improve their conservation status. This Life Marha project, the first integrated Life project in France, has an overall budget of over 20 million euros, is being managed by the AFB, and concerns 170 Natura 2000 sites. It is intended to contribute to a better assessment of the conservation status of coastal lagoons, which are listed as a Priority Habitat of Community Interest (1150), and to implement a capacity building plan for the stakeholders concerned.



HEAD OF PROJECT: Virgine Mauclet - mauclet@tourduvalat

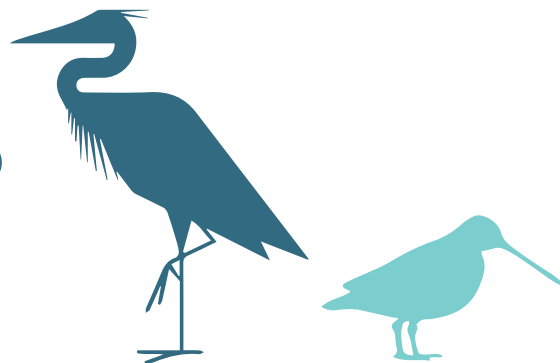
TEAM: Nathalie Barré, Nathalie Chokier

TECHNICAL PARTNERS: Conservatoire d'espaces naturels du Languedoc-Roussillon
Office de l'environnement de la Corse

FINANCIAL PARTNERS: Agence française pour la biodiversité, Agence de l'eau Rhône-Méditerranée-Corse, DREAL des régions Occitanie, Provence-Alpes-Côte d'Azur et Corse, Région Sud Provence-Alpes-Côte d'Azur, Région Occitanie / Pyrénées-Méditerranée, Conseil départemental de l'Hérault, Conseil départemental des Bouches-du-Rhône, Groupe AccorHotels, Axiome Associés, VINCI Autoroutes

WEBSITE: www.tourduvalat.org - www.pole-lagunes.org

Retrospective 2018



The Tour du Valat
from another angle

WELCOMING A GROUP OF STUDENTS
FROM HARVARD UNIVERSITY

© Tour du Valat



THE ENVIES-
RHÔNEMENTS FESTIVAL



© Tour du Valat

© Tour du Valat



Launch in Tunisia of the project funded by the
AFD, Civil society organizations and wetlands

A REMAKE OF TINTIN
ON THE MOON?
NO, WE'RE JUST
CLEANING UP THE BEACH
AFTER AN OIL SPILL



© B.Solgrain-Tour du Valat

© Tour du Valat



BENJAMIN,
ONE OF OUR
"WETLAND AMBASSADORS",
DURING HIS CIVIC SERVICE



WINTER
OUTING ON THE
REGIONAL NATURE
RESERVE WITH
REPRESENTATIVES
FROM THE SUD-
PROVENCE-ALPES-
CÔTE D'AZUR
REGION AND
THE BOUCHES
DU RHÔNE
DEPARTMENT

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© Kerstin Weman
Thornell

Collaboration with Kristianstad University (Sweden) in the framework of a research project on antibiotic-resistant bacteria present in water



© A.Granier



Photo of Hugo Ferreira, a young European Volunteer who won the European Solidarity Corps photo contest

© Tour du Valat



Wetlands and climate change: the Tour du Valat participated in the Eurosite workshop "Natural Climate Buffers Study Tour"



© Tour du Valat

MISSION
IN THE
SOUTHERN IRAQ
MARSHES,
AN EMBLEMATIC
BUT THREATENED
WETLAND



Welcoming a parliamentary commission visit of the Camargue wetlands

© J.Jalbert



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SOMMIÈRES, A
MANAGEMENT
SEMINAR
'OUT IN
NATURE'



© Tour du Valat



Mediterranean Wetlands Observatory

Ghar el Melh
harbour,
Tunisia
© J. Jalbert

The Mediterranean Wetlands Observatory (MWO) is a wetlands monitoring unit developed in the framework of the MedWet Initiative and the Ramsar Convention. Its two main objectives are to:

- Analyse the status and trends of Mediterranean wetlands, their biodiversity, and the goods and services they provide, as well as the anthropogenic environmental factors that explain these trends;
- Promote effective decision making

Convey and convince

In 2018, the Department's activities focused especially on the production of summary documents that report on the status and trends of wetlands throughout the Mediterranean, and on presenting these reports at major international meetings. The COP 13—Ramsar, CBD, and IPBES meetings were all excellent opportunities to mobilise our international expertise and propose pertinent arguments to decision-makers.

Considerable work was devoted to preparing and disseminating the second MWO report (*Mediterranean Wetlands Outlook 2*). Most indicators have been updated, and new ones developed particularly concerning biodiversity. Each of the 16 indicator fact sheets was accompanied by a key message, which was more fully developed in the summary report for decision-makers. This second MWO report underscored the alarming state of many of these indicators, which means that the trend already described in the first MWO report (2012) has deteriorated. The *MWO 2 Report* was first presented at several side events at the COP 13 that brought together the contracting parties to the Ramsar Convention in Dubai (UAE). The results of this summary report were also presented at the national scale for France and Algeria. This report was also distributed by our team at the Convention on Biological Diversity meeting in Sharm el Sheikh, Egypt, where it led to discussion about the Aichi world biodiversity conservation targets. We also contributed to the IPBES regional report for Europe and the Middle East and the first Ramsar Convention *Global Wetland Outlook* report.

New tools and theses

After 3 years of work under the supervision of Thomas Galewski and two research scientists from the *Museum National d'Histoire Naturelle* in Paris (Isabelle Le Viol and Frédéric Jiguet), Elie Gaget defended his doctoral dissertation *Importance des politiques de conservation pour faciliter l'ajustement des communautés d'oiseaux d'eau hivernants au réchauffement climatique en Méditerranée* (The Importance of conservation policies for helping wintering waterbird communities adjust to global warming in the Mediterranean region). His research has enabled us to highlight the role played by wetlands protection in improving the capacities of waterbird communities to adapt to climate change.

Remote detection tools for identifying ecosystem services have been developed within the framework of the final year of the European SWOS project with the publication of some very good results. Anis Guelmami ensured the transfer of these results to our Mediterranean partners. Christian Perennou contributed to a technical study on indicators for French Mediterranean wetlands.

Thanks to a CIFRE grant (an industrial agreement for research-based training) and the Rhone-Mediterranean-Corsican Water Agency, Suzanne Catteau began her doctoral thesis and will try to develop geomatic tools for qualitative definitions of wetland functions and for identifying the pressures facing them today. Our research was written up in 14 scientific and technical publications, which further strengthens the Observatory's scientific credibility.

Support for our partners in other Mediterranean countries is also an important dimension of MWO work. In 2018, we won the bid for a project funded by the *Agence Française de Développement* (AFD), which was launched in the aim of improving the capacities of local stakeholders and non-governmental organisations to improve the conservation and management of their wetlands. Some of the partners in the project include the Mediterranean Waterbird Network (MWN), and members of the Wetlands Alliance. Several training courses will be developed corresponding to the subjects identified as priorities by the stakeholders concerned.



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Ilse Geijzendorffer,

DEPARTMENT
COORDINATOR

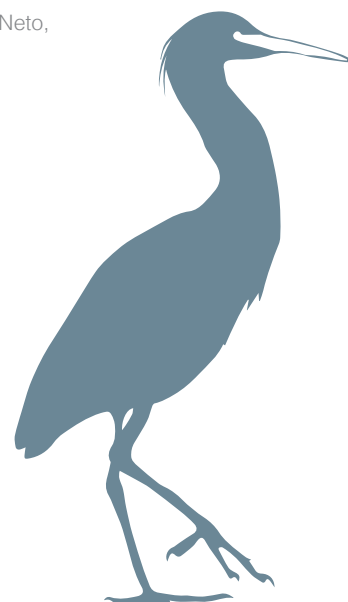
The Observatory team

LEFT TO RIGHT, TOP TO BOTTOM:

Nigel Taylor, Suzanne Catteau, Mélanie Trémoureux
Christian Perennou, Élie Gaget, Anis Guelmami,
Ilse Geijzendorffer.

MISSING :

Alain Sandoz, Ana Paula Garcia Neto,
Clément Merle, Laurent Chazée,
Nadège Popoff, Patrick Grillas,
Sara Fraixedas, Sofia Lopes
& Thomas Galewski.





Tour du Valat Estate
© J. Jalbert

OBSERVATORY PROJECTS

1 - Ecosystem services

Ilse Geijzendorffer / ilse@tourduvalat.org

Ecosystem services can be seen as an important argument for the conservation and sustainable management of Mediterranean wetlands, because they embody how society and nature interact and depend on each other. Healthy and ecologically functioning ecosystems contribute to safeguarding human well-being. Our objective is to study the complex interactions of socio-ecological systems to allow for better informed integrative management and decision making.

In 2018, under the supervision of Ilse Geijzendorffer (MWO) and Wolfgang Cramer (Mediterranean Institute of Marine and Terrestrial Biodiversity and Ecology - IMBE), Ana Paula Garcia Nieto defended her thesis *Ecosystem services around the Mediterranean Basin*. Several typical aspects of Mediterranean socio-ecosystems concerning the provision of ecosystem services were studied, and a paper published

meta-analysing the impact of agricultural practices on the production of services provided by Mediterranean agroecosystems.

Together with Cédric Gaucherel (INRA) and Olivier Boutron (Tour du Valat, Ecosystems Department), we started a project aimed at identifying the impact on ecosystem services of a reduced freshwater pumping scenario in the Camargue. A model will be developed and interviews with experts and local stakeholders will be conducted to set the parameters for the model's variables.

Finally, coordinating the GEO-BON (Global Earth Observation – Biodiversity Observation Network) workgroup on ecosystem services contributed considerably to our thinking about the large-scale monitoring of ecosystem services.

2 - Monitoring the biodiversity of Mediterranean wetlands

Thomas Galewski / galewski@tourduvalat.org

Our aim is to halt negative biodiversity trends and reduce the extinction risk for the most threatened species and wetland habitats. To achieve this goal, we endeavour to generate knowledge about the biodiversity status of wetlands in the Mediterranean Basin, prioritise the conservation actions to be set up, and disseminate this information in the appropriate format for it to have a chance of being taken into consideration by decision-makers.

In 2018, we updated our set of biodiversity indicators, which was therefore incorporated into Mediterranean Wetland Outlook 2 (MWO2). First observation: although they cover only 2 to 3% of the Mediterranean Basin's surface area, wetlands are much more important for biodiversity, because 30% of vertebrate species imperatively depend on them. The Living Planet Index for Mediterranean wetlands, which summarises the trends of 267 species of vertebrates, shows a reduction in global abundance of 15% between 1990 and 2013. Even more worryingly, the abundance of species that are threatened according to the IUCN Red List has declined by 46% since 1990, bringing them inexorably

closer to extinction. Currently, 36% of the species evaluated are threatened with extinction, including a particularly large number of freshwater fish, amphibians, and molluscs that are endemic to the Basin.

Global warming is a serious threat for wetland species. A fine-tuned study conducted on the waterbird communities of the Mediterranean Basin shows that species throughout the region tend to adjust their migration routes and periods in function of increasing temperatures. Nevertheless, the thesis defended by Elie Galet demonstrates that the accumulation of pressures, such as the destruction of wetlands and hunting or poaching, prevents waterbird populations from adapting to changes in temperature. The measures that urgently need to be taken therefore include effectively protecting all wetlands in the region, protecting declining species, and combatting illegal killing.



Goldfinch
© T. Galewski

3 - Water monitoring

Christian Perennou / perennou@tourduvalat.org - **Anis Guelmami** / guelmami@tourduvalat.org

This axis focuses on improving our understanding and monitoring of water cycles (flow, quantity, quality) and the use and needs of people and nature. This information is used to interpret trends in other indicators related to biodiversity and habitats.

In 2018, we organised two workshops, at the international and national levels, with organisations involved in water monitoring in the Mediterranean Basin to identify the databases useful to the MWO, and the opportunities for projects that could contribute to improving our "Water" indicators. One of the main conclusions is that there are many databases, at the worldwide or regional level, but that they generally do not fulfil the criteria required by the MWO: pan-Mediterranean, georeferenced, regularly updated, and adaptable to the local scale. On the other hand, there are water data in some of these databases that could be helpful for calculating the MWO indicators or carrying out targeted thematic analysis. The usefulness and limits of these data still need to be assessed case-by-case. In addition to

existing databases, those derived from remote sensing and certain modelling tools offer promising possibilities. Finally, reliable in situ water data for the southern and eastern parts of the Mediterranean region appear to be more and more difficult to obtain, partly because it is in the interest of some countries to not share sensitive water data.

MONITORING OF WETLANDS USING EARTH OBSERVATION TOOLS IN THE SWOS PROJECT

In the framework of the SWOS project, many workshops were organised during 2018, including the final presentation in the presence of users from more than 15 countries together with representatives of the European Commission (Directorate-General for Environment) and Ramsar Secretariat. It was the opportunity to present some key results of the project, in particular those incorporating the latest Earth observation techniques for monitoring wetlands in line with international conventions and reporting obligations.



Flight of black-headed
gull in Camargue
© J.Jalbert

4 - Local and national observatories

Christian Perennou / perennou@tourduvalat.org

The objective of this axis is to help other Observatories with their monitoring goals and capacity building, based on existing experience and knowledge of the MWO.

In 2018, requests were limited to the National Biodiversity Observatory (ONB) and its thematic "Wetlands" meeting (RT-MH), now organized by the French Biodiversity Agency (AFB). Work essentially consisted in critically evaluating the ONB's set of 19 indicators for the theme. Although it is one of the ONB themes with the best set of indicators, many limits were identified: some issues still without indicators, unsatisfactory

proxy indicators instead of the expected "real" ones, and sometimes inappropriate titles and forms. In particular, there is a blatant lack of quantified and reliable data on such key indicators as wetland surface area trends in France, the surface area of protected wetlands, and agricultural and urban pressures within wetlands.

Various ways to improve them were consequently proposed, and a crucial issue for improving spatial indicators is the need for a sample of representative sites or quadrats. The AFB validated a working proposition to achieve that goal in 2019.



5 - Wetlands in the framework of sustainable development in the Mediterranean

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The objective of this axis is to provide evidence and knowledge on the social and economic context of Mediterranean wetlands. This knowledge will enable us better to identify key messages for decision-makers, and also the means and forms of communication that can increase the impact of those messages on decision-makers.

Ramsar COP 13 was a key opportunity to rebuild links with the representatives of the various governments involved, the Ramsar Convention Scientific and Technical Review Panel, and the members of the MedWet Initiative. After these encounters, we were able to identify new collaboration options for 2019.

We obtained funding from the Agence Française de Développement that will enable us to mobilise partners in the Mediterranean Wetlands Alliance and invest in the capacity-building of local stakeholders for better conservation of their wetlands.

In the framework of the MAVA project in the Buna Delta in Albania, we gave a training course on an approach to managing the Delta through livelihood analysis, which we also applied to a research project in Senegal.

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6 - Cross-analysis and databases

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This axis essentially aims to cross-analyse several georeferenced databases at Mediterranean-Basin scale covering different themes concerning wetlands, including biodiversity, ground cover, agriculture, flooded surface area, and protected areas. The goal is to achieve better understanding of certain trends observed for other monitoring indicators, and to develop new indicators when relevant to the Observatory's needs.

In collaboration with the Mediterranean Agronomic Institute (IAM-Montpellier), initial work was carried out in 2018 to study the relationships between agriculture and natural Mediterranean wetlands. To achieve this goal, numerous georeferenced databases were acquired, harmonised at Basin-scale, and integrated into

a Geographical Information System (GIS). This system can be used to characterise and quantify the impacts of certain agricultural development models on natural wetlands, especially regarding the construction of dams. During the last three years, we have observed a significant increase in the surface area of open water in most countries, essentially due to the rising number and carrying capacity of dams. However, this infrastructure seems to have a negative impact on some natural wetlands, several dozens of which are under threat of disappearing (drying out due to the lack of water retained upstream by dams). This is especially true of arid and semi-arid regions that practise irrigated agriculture, which consumes particularly large quantities of water.

Mediterranean Wetlands Outlook 2 (MWO2)

Launching of the second assessment report during the Ramsar COP



The Mediterranean Wetlands Observatory was set up to identify and monitor the status and trends of wetlands in the region. To that end it publishes scientific papers and reports, the most important of which is “Mediterranean Wetlands Outlook.” The first Outlook was published in 2012. For the thirteenth meeting of the Conference of the Contracting Parties to the Ramsar Convention (COP-13), which took place in Dubai in the United Arab Emirates, we launched “Mediterranean Wetlands Outlook 2.” This report is an assessment based on a set of sixteen indicators each covered by a detailed fact sheet, with a summary and recommendations aimed at decision-makers for better management of wetlands.

This COP 13 was attended by more than 1000 delegates from 170 countries who discussed the best ways to protect wetlands, the most bountiful and yet also most threatened ecosystem on the planet. On this occasion, in partnership with the MedWet Initiative, the MAVA Foundation, and several partners from the Mediterranean, side-events were organised to present and promote the report’s key results and messages. There was also a stand open throughout the Ramsar COP to disseminate documents more broadly and to answer the many visitors’ questions.

All the warning lights are blinking red!

Trends in this second report do not show much improvement compared to MWO1, as attested by these figures derived from the Mediterranean Wetlands Observatory indicators:

- **Since 1970, 48% of Mediterranean wetlands have disappeared**, a loss significantly higher than the worldwide average of 35%* (* figures taken from the report “Global Wetland Outlook” published by the Ramsar Convention Secretariat).
- **The loss of wetland-dependant species is continuing.** 36% of the species dependant on wetlands in the Mediterranean region are threatened, compared with 25%* worldwide. Even though improved trends have been observed for some groups of species such as birds, the situation for all the other groups analysed (amphibians, fish, reptiles, and insects) is very negative.



- In the already naturally arid Mediterranean region, the effects of climate changes coupled with a growing demand for water (demography, irrigation, and the development of tourism) is exerting excessive pressure on water resources that is not sustainable in the long term. The water retention capacity of dams has risen tenfold since the 1950s. As a result, most of the Basin's watercourses have lost between 25% and 70% of their flow since 1960, and during the 20th century the volume of water flowing into the Mediterranean through the whole watercourse network fell by 45%.
- At the same time, urban development and construction in floodable areas have seriously increased flood risks for inhabitants.

There are, however, a few bright spots that could lead us to hope for a reversal in the trend. Despite a difficult period for many countries, the number and surface area of Ramsar sites have increased, with 55 new sites covering 660,000 hectares. The designation of Ramsar sites, and therefore commitments by States to the sustainable management of those sites and wetlands in general, is one of the possible responses for trying to safeguard the most emblematic wetlands. Since the start of the 21st century, the designation rate has risen more quickly in the Mediterranean Basin (x 3.8) than worldwide (x 2.6). The educational and recreational (tourism) services provided by wetlands are greatly appreciated around the Mediterranean. In places where efforts have been made to restore wetlands the surface areas of natural habitats are increasing, and where the protection of species has been put into action, populations are clearly doing better than elsewhere.

Despite these positive points, Mediterranean countries are not yet sufficiently committed to the sustainable management of wetlands, and without rapid action this objective will become more and more difficult to achieve due to demographic growth, the continued

degradation in the quality of these areas, and the impacts of global changes. The rising sea level will affect many densely populated areas on the coast where coastal wetlands have lost much of their capacity to mitigate the consequences. The sharpest reductions in precipitation and highest increases in temperature are expected to occur in the places where wetlands would be the most useful but are the least protected.

Major progress needs to be made especially in the development and implementation of management plans for wetlands. Currently only 30% of Ramsar sites state that they have implemented a management plan. The implementation of national plans is also an important action, and, in this field, Morocco and Algeria are in the process of developing their new "Wetlands" strategies.

In addition to already implemented measures, this new "Mediterranean Wetlands Outlook" provides specific recommendations linked to each indicator and more global key messages for decision-makers.



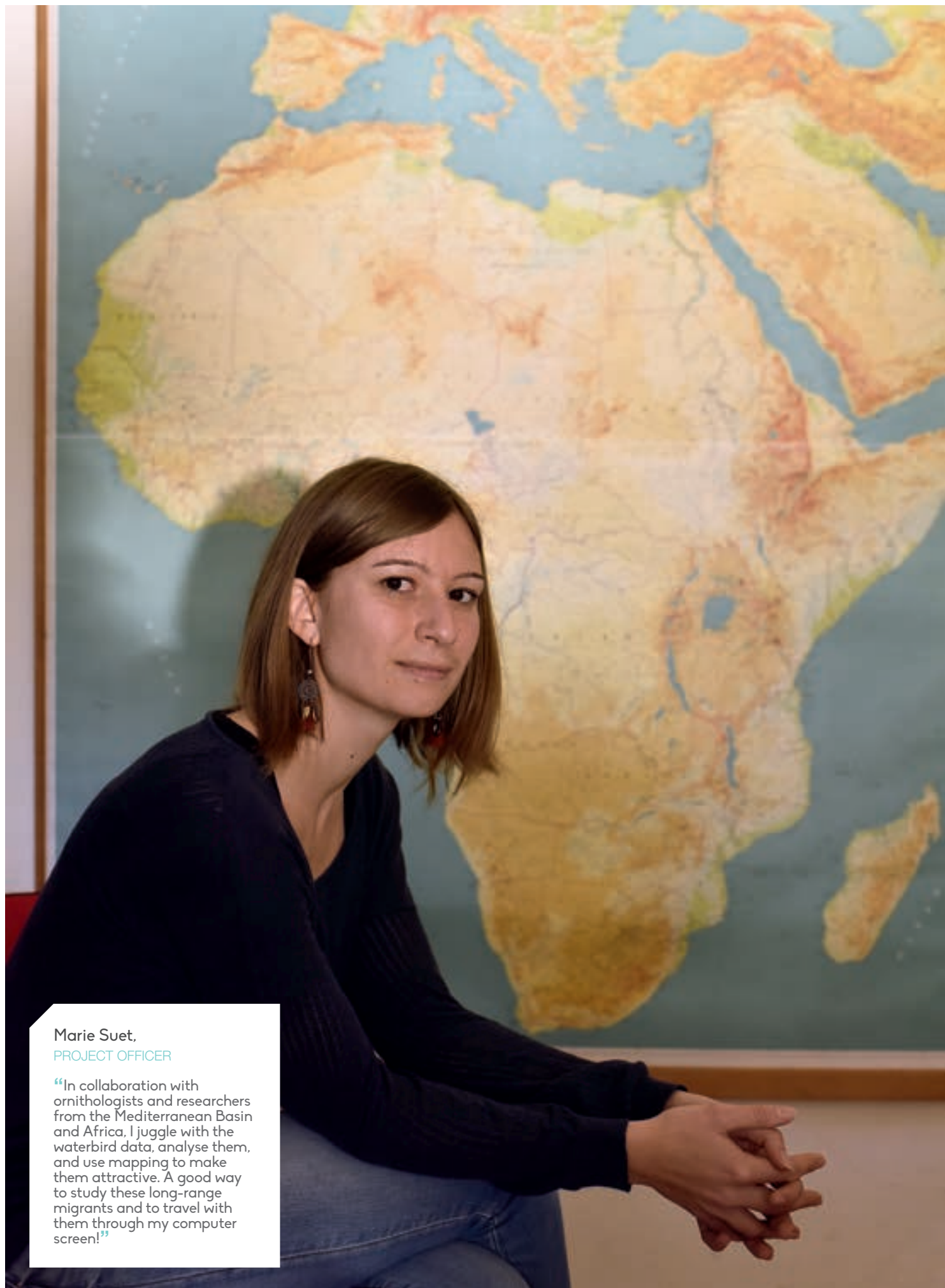
Dubai, COP13 Ramsar © Tour du Valat

PROJECT LEADER: Ilse Geijzendorffer

MEMBERS OF OUR TEAM DEDICATED TO THIS PROJECT: Laurent Chazée, Elie Gaget, Thomas Galewski, Ilse Geijzendorffer, Patrick Grillas, Anis Guelmami, Christian Perennou. (Tour du Valat)

TECHNICAL AND SCIENTIFIC PARTNERS: Nick Davidson, Marine Didier, Carlos Guerra, Coralie Hermeloup, Jean Jalbert, Roxanne Leberger, Rob McInness, Nadège Popoff, Mailis Renaudin, Alessio Satta, Gwenael Wasse.

FINANCIAL PARTNERS: The Prince Albert II of Monaco Foundation, the Ministry of Environment (Ministère de la transition écologique et solidaire), the Total Foundation and the European project SWOS.



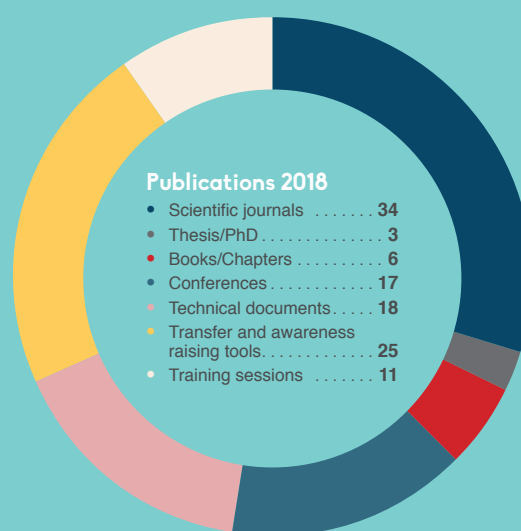
Marie Suet,
PROJECT OFFICER

“In collaboration with ornithologists and researchers from the Mediterranean Basin and Africa, I juggle with the waterbird data, analyse them, and use mapping to make them attractive. A good way to study these long-range migrants and to travel with them through my computer screen!”

OUR ACHIEVEMENTS

Knowledge transfer is central to the Tour du Valat's mission, and a great amount of effort is made to achieve that goal. Communication in the scientific world, through publications and talks, and making the results of our research available to potential users (site managers in particular), are major activities for our teams.

We published a wide range of articles in international journals, with 29 publications by the end of 2018.



AMONG THE WIDE VARIETY OF SIGNIFICANT TOUR DU VALAT PUBLICATIONS, WE CAN CITE THREE IN PARTICULAR:

- Large-scale analysis of how the protection of wetlands in the Mediterranean Basin enables waterbird communities to adapt better to climate change: *Gaget E., Galewski T., Jiguet F., Le Viol I. 2018. Waterbird communities adjust to climate warming according to conservation policy and species protection status. Biological Conservation 227:205-212. DOI: <http://dx.doi.org/10.1016/j.biocon.2018.09.019>*
- A publication showing how non-targeted invertebrates in the Camargue are affected by anti-mosquito spraying with Bti Poulin B., Lefebvre G. 2018. *Perturbation and delayed recovery of the reed invertebrate assemblage in Camargue marshes sprayed with Bacillus thuringiensis israelensis. Insect Science 25:4:542-548. DOI: <http://dx.doi.org/10.1111/1744-7917.12416>*
- A paper showing how human activities can favour the re-emergence of a wetland-linked parasitosis affecting human and animal health Sabourin E., Alda P., Vázquez A., Hurtrez-Boussès S., Vittecoq M. 2018. *Impact of Human Activities on Fasciolosis Transmission. Trends in Parasitology 34:10:891-903. DOI: <http://dx.doi.org/10.1016/j.pt.2018.08.004>*

Our activities are not limited to scientific publications, and our publications are diverse both in terms of the nature of the documents (see figure above) and the target audience (scientists, site managers, technicians, students, the general public, and decision-makers). Among these documents:

- A summary report on the situation of Mediterranean Wetlands: *Mediterranean Wetlands Observatory 2018. Mediterranean Wetland Outlook 2: Solutions for sustainable Mediterranean wetlands. Tour du Valat.*
- A summary report on the effects of management on peat wetlands: *Taylor Nigel G., Grillas P., Sutherland William J. 2018. Peatland Conservation: Global Evidence for the Effects of Interventions to Conserve Peatland Vegetation. University of Cambridge*

Publications



Scientific Committee © Tour du Valat

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Unusual visit
of the Tour du
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Rhônements
Festival
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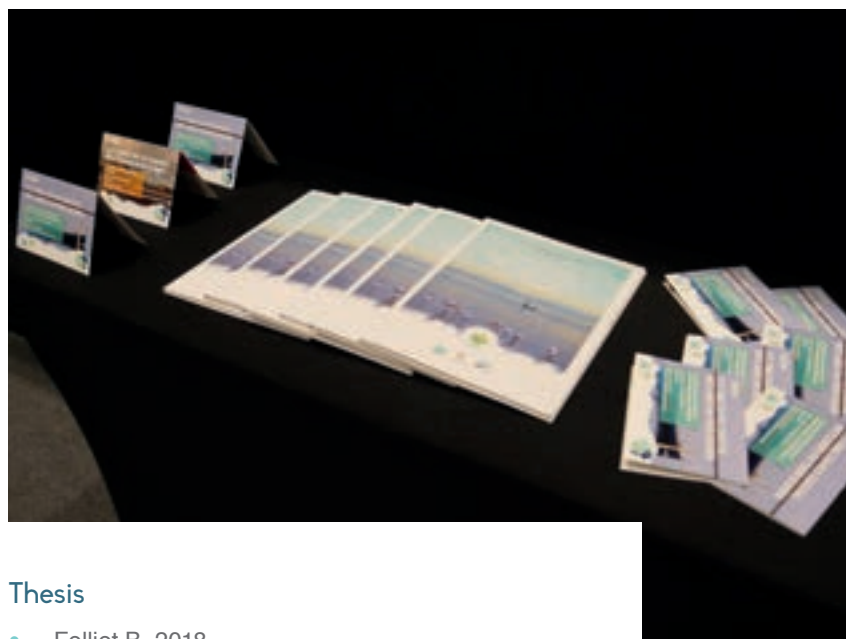


Greater flamingos
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Thesis

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*Dynamique des espèces exploitées : le cas du fuligule milouin (*Aythya ferina*) dans le Paléarctique. <http://www.theses.fr/2018MONTG043>*
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Importance des politiques de conservation pour faciliter l'ajustement des communautés d'oiseaux d'eau hivernants au réchauffement climatique en Méditerranée. Museum national d'histoire naturelle.

Transfer

In addition to the numerous scientific papers and technical reports we publish, every year we conduct various transfer activities aiming to popularize our research. This work can occur during side-line events at major international meetings as well as in schools, and with students, politicians, natural area managers, and the public. Several such events are organised for World Wetlands Day, European Heritage Days, the Camargue Festival and the "Envies Rhônements" Festival.

Training and capacity-building activities are offered throughout the Mediterranean basin in the context of the Mediterranean Waterbird Network as well as via our new project on "Civil Society, NGOs and Wetlands" funded by the French Development Agency. We also convene seminars, conferences and workshops and produce different communication (e.g. videos, leaflets) and pedagogical documents (e.g. our edited collection "Science and Management"). We relay advocacy campaigns such as, "Off your Map" (campaign for the protection of coastal wetlands) and another to protect European legislation on water. Actions are also oriented towards decision-makers. For example, this year, Tour du Valat hosted a French parliamentary mission working on wetlands. In the second Mediterranean Wetlands Outlook: Solutions for Sustainable Mediterranean Wetlands, the Mediterranean Wetlands Observatory gives an assessment of the state of knowledge and trends regarding wetlands and provides decision-makers with key messages while outlining possible solutions.

Learn more about our many achievements on our document base, tourduvalat.centredoc.fr and on our website www.tourduvalat.org.

Conferences & seminars

Tour du Valat welcomes numerous partners and scientists to attend conferences and seminars dealing with the conservation of Mediterranean wetland areas.

Conference for Young Scientists

In collaboration with the CEFCE-CNRS (Centre for Functional and Evolutionary Ecology-CNRS Montpellier) and the IMBE (Mediterranean Institute of Marine and Terrestrial Biodiversity and Ecology, Aix-Marseille), the Tour du Valat has launched a cycle of conferences on nature conservation sciences in the Mediterranean region for young scientists.

The principal objective of this conference is to **create a scientific environment and a dialogue around the Mediterranean Basin** on conservation sciences, and to share scientific knowledge and experiences to make it possible to respond to conservation challenges. Another aim of this conference is to stimulate informal discussions between young scientists and top-level conference speakers.

The fourth edition took place between the 16th and 18th of May 2018 and provided an opportunity for 50 young researchers, working in the Mediterranean region (France, Spain, Portugal, Algeria, Morocco, Tunisia and Turkey) to present their work, in a warm and friendly atmosphere at the Tour du Valat.

Renowned scientists presented their research in four plenary sessions :

- *Imad Cherkaoui* (Professor at the *Ecole Supérieure de Technologie of Khénifra* (Moulay Ismail University). Ecological factors affecting wetland occupancy by breeding waterfowl in the southwestern Mediterranean
- *Aggeliki Doxa* (Foundation for Research and Technology – Institute of Applied and Computational Mathematics – Heraklion Crete, Greece). Conservation planning on Mediterranean coasts under urban pressure
- *Carla Pinto Cruz* (Escola de Ciências e Tecnologia, Instituto de Ciências Agrárias e Ambientais Mediterrânicas, Universidade de Évora, Portugal). Conservation of Mediterranean Temporary Ponds in Portugal
- *Marion Vittecoq* (Researcher at the Tour du Valat). Biodiversity, conservation and infectious disease control: how to create synergies



The laureates and the jury of the Conference





REVER Conference

The French-speaking network: REVER, the Network for Exchange and Valorization in Ecology of the Restoration. <http://www.reseau-rever.org> aims to organize and foster relationships between managers, practitioners, researchers and students working in the fields of restoration ecology and/or ecological restoration. In the Tour du Valat on 05th and 06th of April 2018, for the 9th edition, 90 people were gathered to participate in these workshops-days promoting exchanges between different actors.

The fourth edition benefitted from several innovations:

- *An introductory statistics workshop, the day before the conference, organised by doctoral/ PhD students from the Tour du Valat*
- *Small grants: 8 young scientists from Mediterranean countries outside the EU, selected based on the quality of a submitted abstract, participated in the conference thanks to funds provided by the MAVA foundation and the Association "Friends of Tour du Valat"*
- *The Alan Johnson Prize, supported this year by the Rotary Club Arles-Orange rewarded three young researchers for the quality of their applied scientific research:*
 - **Hugo Ferreira** for the best poster
 - **Antoine Gazaix** (Tour du Valat/CEFE-CNRS) for the best research project
 - **Daniel Morant** (Institute of Biodiversity and Evolutionary Biology, University of Valencia) for the best presentation



Seminars

The seminars are open to everyone and generally take place on Monday morning. The programme is sent to natural area managers, scientists and local decision-makers. To be added to our list, write to com@tourduvalat.org, or to sign up yourself, go to www.tourduvalat.org

Heinz Hafner Lecture

In the cycle of annual conferences on biology and conservation, which was initiated by the Tour du Valat to pay tribute to the work of Heinz Hafner on waterbird and wetlands conservation, this year we welcomed Professor Tim Clutton-Brock, Director of Research at Cambridge University for a conference entitled "The Ecology and Evolution of Cooperative Breeding". This conference is available online from our Vimeo account.



Resource Centre François Bourlière Library

The Tour du Valat Resource Centre has been in existence since 1954. It was initially made up of documents from the personal library of the Tour du Valat's founder Luc Hoffmann. The Library is dedicated to François Bourlière (1913-1993), a pioneer in ecological conservation who was deeply committed to working with Luc Hoffmann and to the Tour du Valat.

The library's reference material, at first devoted mainly to ornithology, has been built up to include related fields of research, ecology, ethology and particularly the knowledge and the sustainable management of Mediterranean wetlands:

- 11,800 publications and thesis
- 490 different periodicals of which 71 are running
- 33,000 offprints, booklets and reports

A Resource Centre open to all

- The Resource Centre is open to everyone, from Monday to Friday from 9.00 to 12.00 and from 1.00 to 5.30. It offers Wi-Fi -connected workstations, access to all documents, and the assistance of a librarian.
- On-line since October 2016, by means of its new document portal, tourduvalat.centredoc.fr, it enables any internet user to:
 - discover the most recent publications by Tour du Valat researchers;
 - carry out bibliographical research in the document collection;
 - consult thematic selections of documents from the collection;
 - view summaries of journals received by the Library;
 - find out about the Library's newly acquired works;
 - open an on-line reader account to benefit from a range of custom used services: saving of research results, and the possibility to create alerts or to generate an RSS flow so as to be automatically informed of any new addition to the collect on that corresponds to the user's centres of interest.

Tour du Valat

- Tour du Valat Resource Centre - François Bourlière Library
Le Sambuc - 13200 Arles
Tel.: +33 (0)4 90 97 29 76
Email: biblio@tourduvalat.org
Document Portal: tourduvalat.centredoc.fr



Media

Publication of the second Mediterranean Wetlands Outlook report (MWO2), talks on the theme "The Camargue and climate change", publication of the Provence-Alpes-Côte d'Azur Living Region Index, Greater Flamingo ringing, as well as the organisation of scientific meetings and events for the general-public. In all, nearly 250 instances of media coverage, including 12 television reports, 7 radio programmes, 190 press articles, and 40 web articles.

The events we organised, such as the REVER Colloquium, Young Researchers' Conference, and the meeting with Grec PACA (Provence-Alpes-Côte d'Azur climate expert group), together with our scientific activities, received increased media attention. Once again, the experimental alternative mosquito control system set up at Le Sambuc using Qista traps was covered by several articles and reports. The ringing of Greater flamingos also received excellent media coverage (more than 70 instances in all types of media), particularly due to an Agence France-Presse dispatch.



Anis Guelmami
on a shoot for
Euronews
© J.Jalbert

Tour du Valat 2.0

The number of Facebook and Twitter subscribers is continually increasing and has more than doubled in two years (soon 2400 Facebook and 1100 Twitter followers). The LinkedIn page has 284 followers.

Facebook posts were viewed on average 32,000 times a month (compared to 22,000 in 2017 and 14,000 in 2016), and the number of people interacting with the posts is rising in parallel (shares, clicks, etc.): 2300/month in 2018 (compared with 1200 in 2017, and nearly 1000 in 2016).

In 2018, almost 12,000 people per month viewed one of our tweets (compared to 8100 in 2017, and 6500 in 2016). There were almost 250 interactions per month (compared to 162 in 2017, and 103 in 2016).

We broadcast the main results and key messages of our second Mediterranean Wetlands Outlook: Solutions for Sustainable Mediterranean Wetlands (MWO2) very widely on the social networks, especially Twitter.

Posts/tweets the most viewed and shared on Facebook and Twitter

- Report on the ringing of Greater Flamingo chicks
- News about the flamingo killed in the Hérault Department
- Film *Lagoons and marshes of the former Camargue saltworks, a site being transformed*
- Tour du Valat Open Day
- Job, internship, and doctoral study offers
- Participation in international projects such as H2020, Interreg, and LIFE+

For all our news, follow us on:



and visit our website:

www.tourduvalat.org



Laura Marre-Cast,
FACILITATOR/ASSOCIATION
MANAGER "FRIENDS OF THE
TOUR DU VALAT"

"Thanks to the Friends of Tour du Valat Association, I have the opportunity to meet many people with very different experience and profiles, but who all share the desire to conserve wetlands."

Arnaud Charbonnier,
COOK

“Having worked here for a year, my way of cooking is in complete harmony with that of the Foundation: local, seasonal produce, I cook at the canteen as I do at home!”



OUR ORGANISATION

The Tour du Valat is a non-profit organisation whose governance is handled by two management bodies: the Board, which is made up of three colleges — the Founders, Full Members, and Experts —, and the Science Council, composed of internationally acclaimed scientists from the major fields of wetlands research and conservation. In addition, six thematic experts (two for each of the scientific departments) provide specialised advice to support the Science Council.

In 2018, the Board renewed the mandate for four more years of Tobias Salathé (Ramsar Convention Secretariat) and Antonio Troya (Director of the IUCN Centre for Mediterranean Cooperation) as Expert Members. Their roles in the Board's bureau, were also renewed, respectively as Secretary and Treasurer.

Meanwhile, the Science Council also underwent some changes: Laurent Mermet (Professor at ENGREF, Paris) and Bill Sutherland (Professor of Conservation Biology at Cambridge University) came to the end of their second mandate, and therefore left the Council. We send them our warmest thanks for their always invaluable opinions and for the talented way in which Laurent Mermet chaired the Council during the last two years. Starting in 2019, the Science Council will be progressively renewed and reorganised to bolster and strengthen it as of 2021, no longer calling on thematic experts, whose function is not considered to be essential.

Although our statutes stipulate that our two governing bodies, the Board and the Science Council, must be separated, we deemed it necessary to organise times to work and reflect on issues together. Likewise, for the mid-term assessment of the 2016-2020 programme, a joint meeting of both bodies was held so that they could share the recommendations presented by the team that had carried out the assessment, which consisted of Dr Hilary Allison, UNEP-WCMC, UK, Professor Raphaël Arlettaz, University of Bern, Switzerland, and Dr Yann Laurans, IDDRI, France.

These exchanges enabled us to discuss and validate the main core issues to be considered during the next two years, which will result in the drawing up of a new internal organisational structure, and a new economic model for the Tour du Valat.

Budget

THE BUDGET FOR THE YEAR 2018 AMOUNTS TO 5,414,000 EUROS

Expenditure

- **3,520,000** euros have been allocated to the scientific programmes, including 953,000 euros for the “Conservation of species and their populations in the context of global changes” department, 1,214,000 euros for the “Ecosystem modelling, restoration and management” department, 558,000 euros for the “Monitoring and evaluation & wetlands policies” department, 513,000 euros for the management of the estate, and 282,000 euros for shared scientific activities (scientific management, conferences, training, transfer, project development, etc.).
- **383,000** euros have been allocated to general management (including the governance of the organization as well as the representation of the Tour du Valat in major forums) and to communication (website, annual report, etc.).
- **106,000** euros have been allocated to managing the Tour du Valat library, principally the purchase of books and scientific journals.
- **1,405,000** euros have been allocated to ancillary services, which include financial and administrative services, the canteen, building maintenance, and the repairs workshop.

Tour du Valat receives its financing from a number of sources

- **9%** of its receipts come from its own funds, held by the Pro Valat Foundation 457,000 €
- **26%** of its receipts come from partnership agreements with public organizations 1,421,000 €
- **50%** of its receipts come from the MAVA Foundation 2,700,000 €
- **9%** of its receipts come from partnership agreements with other private organizations 473,000 €
- **6%** of its receipts are revenues from the estate 363,000 €

Expenditures in euros

• Scientific programmes	3,520,000 €
• General management / Communication	383,000 €
• Library	106,000 €
• Ancillary services	1,405,000 €
	Total 5,414,000 €

Receipts in euros

• Core funds	457,000 €
• Agreements with private organizations	3,173,000 €
• Agreements with public organizations	1,421,000 €
• Revenues from the Estate	363,000 €
	Total 5,414,000 €

Governance

BOARD

College of Founders

- André Hoffmann President
- Maja Hoffmann Vice-president
- Vera Michalski-Hoffmann
- Isabel Hoffmann

College of ex officio members

- Michel Chpilevsky Sub-prefect of Arles, representing the Home Office
- Jean-Philippe Nabot Regional representative for Research and Technology, representing the Ministry of Higher Education and Research
- Hélène Souan PACA Regional Directorate for Environment, Planning and Housing, representing the French Ministry of the Environment
- Hervé Schiavetti Mayor of Arles, representing the Town Council of Arles

College of experts

- Dr Gordana Beltram President of MedWet steering committee, Ministry of the Environment and Spatial Planning (Slovenia)
- Dr Claire Papazoglou European Policies Consultant for NGO (Cyprus)
- Antonio Troya Treasurer, Director of the IUCN Centre for Mediterranean Cooperation in Malaga (Spain)
- Dr Tobias Salathé Secretary, Ramsar Senior Advisor for Europe in Gland (Switzerland)
- Thymio Papayannis Honorary member - MedWet Senior Advisor, President of MedINA

Executive Board
june 2018
© Tour du Valat



SCIENCE COUNCIL

- Dr Laurent Mermet President, ENGREF, Paris (France)
- Dr Patrick Duncan Vice-President CNRS, Chizé (France)
- Dr Teresa Ribeiro European Environment Agency
- Dr Debbie Pain Wildfowl and Wetlands Trust (WWT)
- Dr Wolfgang Cramer Mediterranean Institute for Biodiversity, Marine and Continental Ecology (IMBE)
- Pr William Sutherland University of Cambridge (United Kingdom)

Thematic experts

In support of the Science Council, a high level of expertise will be provided by six thematic experts, two for each of the three Tour du Valat programmes, for the duration of the five-year plan.

- Dr Jacques Blondel Centre d'écologie fonctionnelle évolutive / CNRS, Montpellier (France)
- Dr Pierre Chevallier Institut de recherche pour le développement/CNRS, Laboratoire d'hydrosociences, Montpellier (France)
- Dr Luis Costa SPEA/Birdlife, Portugal
- Dr Jonathan Loh Institute of Zoology, Zoological Society of London (United Kingdom)
WWF International
- Dr François Renaud Institut de recherche pour le développement / CNRS, Montpellier (France)
- Dr Sophie Thoyer Sup Agro LAMETA, Montpellier (France)



Eco-responsibility, an ongoing process

Testing and implementing the solutions of the future for a sustainable world; developing concrete, operational responses appropriate to the Mediterranean context, and disseminating them extensively. Those are the guiding principles of our eco-responsible process, developed in several areas:

WASTE



- 100% of our wastewater is treated by our reed bed water treatment plant;
- 100% of our waste is sorted, with fermentable waste repurposed on-site (compost), and the rest recycled via specialised processing chains.

- National and international trips have been limited by prioritising the use of tele- or video-conferencing, and the use of less expensive, low-ecological-footprint means of transport.

PRODUCTION & CONSUMPTION



- On the Petit Saint-Jean Estate we are developing an innovative agro-ecological pilot project aimed at optimising synergies between agricultural and natural habitats, limiting the consumption of water, farming inputs, and fossil energies, and testing crops adapted to the effects of climate change;
- Our herd of 350 Camargue cattle has grazed extensively, in compliance with the specifications of organic agriculture and without additional feeding or anti-parasite treatment, for 13 years. The high-quality meat produced is commercialised via a local supply chain;
- Our canteen prioritises organic, locally produced, seasonal ingredients, using short supply chains and solidarity-based economic principles. It regularly provides vegetarian meals, prohibits the use of species whose stocks are threatened, and limits and repurposes waste;
- Finally, the Tour du Valat Works Council organises the bulk purchase of cleaning products, rice, olive oil, and citrus fruit, all of which are organic.

ENERGIES

- 50% energy savings in our buildings after they were insulated with rice straw and other bio-sourced materials;
- 87% decrease in CO2 emissions and 70% decrease in heating costs, because we now use wood, some of which is produced on the Tour du Valat Estate, instead of heating oil and natural gas.



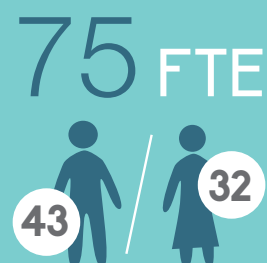
TRANSPORT POLICY

- Facilitation of carpooling and public transport for commuting between home and work;
- Our car fleet is being optimised by decreasing the number of vehicles and purchasing fuel-efficient and low maintenance cost vehicles of the same type;
- Purchase of an electric vehicle, use of electric and mountain bikes on the Tour du Valat Estate;



OUR LIFE- BLOOD 2018

Our fund raising success enabled us to welcome two more PhD students to the team: Suzanne Catteau in partnership with the Rhône-Mediterranean-Corsica Water Agency and David Vallecillo in partnership with the Fondation François Sommer, and also one postdoctoral associate: Oscar Sanchez Marcouzet in partnership with the Secity Mexico (Secretariat for science technology and innovation) and one project leader, Lorena Segura-Champagnon, with financial support from Wetlands International European Association (WIEA).



Four European Voluntary Service and nine Civic Service volunteers joined the team in 2018, contributing their enthusiasm and invaluable assistance to the Tour du Valat's scientific activities. One of them was given a fixed term contract at the end of her voluntary period, building upon her experience as "Wetland Ambassador" among us. We also hosted 15 young, dynamic university interns.

In 2018, the Tour du Valat team consisted of 82 employees, together with five PhD students and two associates with an external contract, in all the equivalent of 75 full-time jobs.

"Thanks to all of you for your commitment to the Tour du Valat
and to Mediterranean wetlands."



Us

Direction

- Jean Jalbert
DIRECTOR GENERAL
- Dr Patrick Grillas
PROGRAMME DIRECTOR
- Olivier Pineau
DIRECTOR OF THE ESTATE
- Jean-Jacques Bravais
ADMINISTRATIVE AND
FINANCIAL DIRECTOR

Species Conservation Department

- Dr Arnaud Béchet
RESEARCH SCIENTIST,
DEPARTMENT
COORDINATOR
- Dr Jocelyn Champagnon
RESEARCH SCIENTIST
- Dr Marion Vittecoq
RESEARCH SCIENTIST
- Antoine Arnaud
RESEARCH TECHNICIAN
- Thomas Blanchon
RESEARCH TECHNICIAN
- Pascal Contournet
RESEARCH TECHNICIAN
- Laura Dami
PROJECT LEADER
- Clémence Deschamps
PROJECT LEADER
- Dr Benjamin Folliot
PHD STUDENT, UNIVERSITY
OF MONTPELLIER (FUNDING
ONCFS)
- Christophe Germain
PROJECT LEADER
- Yves Kayser
RESEARCH ASSISTANT
- Dr Delphine Nicolas
RESEARCH SCIENTIST
- Dr Émeline Sabourin
PHD STUDENT, UNIVERSITY OF
MONTPELLIER (CO-FUNDING
TOUR DU VALAT / LABEX
CEMEB)

- Timothée Schwartz
PHD STUDENT (FUNDING CIFRE -
ÉCOLE PRATIQUE DES HAUTES
ÉTUDES – CEFE MONTPELLIER)
- Marie Suet
PROJECT OFFICER
- David Vallecillo
PHD STUDENT, UNIVERSITY
OF MONTPELLIER (FUNDING
FRANCOIS SOMMER FOUNDATION)

Ecosystem Modelling, Restoration and Management Department

- Dr Brigitte Poulin
RESEARCH SCIENTIST,
DEPARTMENT COORDINATOR
- Dr Lisa Ernoul
RESEARCH SCIENTIST,
DEPARTMENT COORDINATOR
- Nathalie Barré
RESEARCH ASSISTANT
- Nicolas Beck
PROJECT LEADER
- Dr Olivier Boutron
RESEARCH SCIENTIST
- Olivier Brunet
FARM MANAGER
- Julie Campagna
PHD STUDENT, UNIVERSITY OF
ANGERS (FUNDING TOUR DU
VALAT, UNIVERSITY OF ANGERS,
AGENCE DE L'EAU)
- Tania de Almedia
PHD STUDENT (FUNDING
REGION PROVENCE - ALPES-
CÔTE D'AZUR, UNIVERSITY OF
AVIGNON AND THE PAYS DU
VAUCLUSE)
- Nathalie Chokier
RESEARCH TECHNICIAN –
COMMUNICATION OFFICER
- Hugo Fontes
RESEARCH ASSISTANT
- Antoine Gazaix
PHD STUDENT, UNIVERSITY OF
MONTPELLIER (CO-FUNDING
TOUR DU VALAT / SNCF RÉSEAU
OC'VIA)

- Manon Hess
PHD STUDENT, UNIVERSITY OF
AVIGNON AND THE PAYS DU
VAUCLUSE (CO-FUNDING
CIFRE)
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RESEARCH TECHNICIAN
- Philippe Lambret
PROJECT LEADER
- Dr Gaëtan Lefebvre
RESEARCH ASSISTANT,
IT MANAGER
- Émilie Luna-Laurent
RESEARCH TECHNICIAN
- Virginie Mauclert
PROJECT LEADER
- Dr François Mesléard
RESEARCH DIRECTOR
- Dr Cannelle Moinardeau
PHD STUDENT, UNIVERSITY OF
AVIGNON (FUNDING COMPAGNIE
NATIONALE DU RHÔNE)
- Marc Thibault
PROJECT LEADER
- Loïc Willm
RESEARCH ASSISTANT

Mediterranean Wetlands Observatory Department

- Dr Ilse Geijzendorffer
RESEARCH SCIENTIST,
DEPARTMENT COORDINATOR
- Suzanne Catteau
PHD STUDENT, BORDEAUX
MONTAIGNE UNIVERSITY
(FUNDING AGENCE DE L'EAU
RMC / TOUR DU VALAT / CIFRE)
- Dr Laurent Chazée
INTERNATIONAL PROJECT
LEADER
- Sara Fraixedas
POST-DOCTORAL
RESEARCHER
- Élie Gaget
PHD STUDENT (TOUR DU VALAT/
MUSEUM NATIONAL D'HISTOIRE
NATURELLE)



Going on Eurasian
Spoonbills ringing
© B. Solgrain

- Dr Thomas Galewski
PROJECT LEADER
- Anis Guelmami
RESEARCH ASSISTANT
- Clément Merle
PROJECT OFFICER
- Dr Christian Perennou
PROJECT LEADER
- Nadège Popoff
PROJECT OFFICER
- Dr Alain Sandoz
RESEARCH SCIENTIST
- Dr Niger Taylor
POST-DOCTORAL
RESEARCHER

Estate Management

- Damien Cohez
DEPUTY DIRECTOR OF THE
ESTATE – CONSERVATOR OF THE
RESERVE
- Julien Bourjaillat
GARDIAN
- Cédric Cairello
ESTATE TECHNICIAN
- Frédéric Castellani
ESTATE TECHNICIAN
- Dimitri Gleize
ESTATE TECHNICIAN
- Roger Käslin
MECHANIC - ESTATE
TECHNICIAN
- Marion Lourenço
TECHNICIAN - GUARD
- Yannick Michelier
ESTATE TECHNICIAN
- Ludovic Michel
ESTATE TECHNICIAN
- Anthony Olivier
TECHNICIAN - GUARD

Support Services

- Anne Ackermann
EXECUTIVE SECRETARY
- Muriel Arcaute-Gevrey
FRIENDS OF THE TOUR DU VALAT
ASSOCIATION MANAGER
- Nicole Bonfils
ACCOUNTANT
- Arnaud Charbonnier
COOK
- Barbara Comabella
CLEANING OFFICER
- Corinne Cuallado
COOK
- Florence Daubigny
EXECUTIVE SECRETARY
- Marie-Antoinette Diaz
SECRETARY
- Kamel El Bachir
ACCOUNTANT
- Roberta Fausti
LIBRARIAN
- Rosalie Florens
EXECUTIVE SECRETARY
- Stéphanie Gouvernet
CLEANING OFFICER
- Coralie Hermeloup
COMMUNICATION MANAGER
- Laura Marre-Cast
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- Jean-Claude Pic
CHIEF ACCOUNTANT -
MANAGEMENT
- Josiane Trujas
CLEANING OFFICER
- Gwenaël Wasse
COMMUNICATION OFFICER
- Sanae Zinouni
ACCOUNTANT

Students

- Hélène Baudel, Chikh Salah
Salaheddine, Aurore Fayard,
Amélia Garde, Amélie Granger,
Hajar Guejjoud, Fanny Guillaud,
Cloé Joly, Clément Le Gac,
Nicolas Martin, Audrey Mazza,
Stéphane Mutel, Baptiste
Segura, Sandy Vérin.



Erasmus+

European Voluntary Service

- Hugo Soares Ferreira, Sofia
Ribeiro Lopes, Sonya
O'Laughlin, Lauren Redmond.

Erasmus

- Irène Badone, Sara Lindberg.



Civic Services

- Marine Didier, Hugo Laurent
Vidieu, Dorian Milesi, Simon
Renaud, Corentin Rollet, Justine
Rouchon, Florent Sabatier,
Hugo Soares Ferreira, Benjamin
Solgrain.

Fixed Term Contracts (short period)

- Océane Bouvier, Alina Cotutiu,
Kristell Dever, Emeline Girault,
Anne-Sophie Hervy, Lisa Paix,
Olivier Rey-Marbat, Sofia Ribeiro
Lopes, Géraldine Simon.

To join us

In order to help the Tour du Valat to continue its actions for the common good, we need your support. There are several ways to provide it.

JOIN THE FRIENDS OF TOUR DU VALAT ASSOCIATION

The association was founded in 2014, on the occasion of the 60th anniversary of the Tour du Valat. Its mission is to create a space that brings together those who share the values and the objectives of Tour du Valat. This great network gathers people who have worked, or still work, with the Tour du Valat as well as people who share similar values and are keen to support nature conservation. Joining the association means having the opportunity to take part in a range of “nature” activities while debating and discussing possible solutions to address our shared environmental concerns.

You can join us via our website:

<https://amistourduvalat.org>

You can also contact us at:

amis@tourduvalat.org /  [amistourduvalat](https://www.facebook.com/amistourduvalat)



Friends of
Tour du Valat

MAKE A DONATION OR BEQUEST

Because the Tour du Valat's values are dear to you, and you appreciate the quality and independence of its work, you can act on a long-term basis and help us to shape its future by making a donation or bequest to the Tour du Valat Foundation. Again, you will benefit from tax rebates. Don't hesitate to contact us for further information:

partenariat@tourduvalat.org

THE PETIT SAINT-JEAN ESTATE

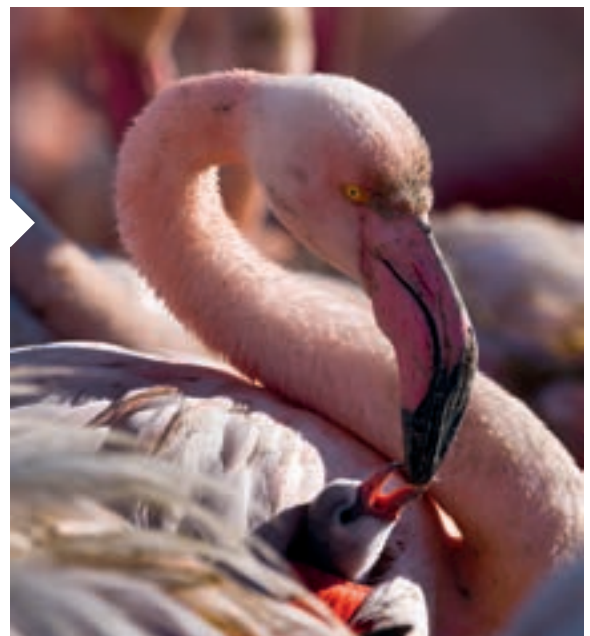
Thanks to the generosity of Mr Bernard, the Tour du Valat has become the owner of an estate in the Gard Department whose total area of 101 hectares includes a remarkable pine wood (50 ha), marshes (24 ha), and agricultural land (26 ha). In keeping with the spirit of its donor, the Tour du Valat is using the site for an agroecological partnership project aimed at developing a productive, sustainable, resilient and autonomous agricultural system based on synergies with natural habitats.

ADOPT A FLAMINGO

If, like us, you are under the spell of this wonderful bird and want to contribute to the protection of this species, why not adopt a flamingo? This is an original way to learn about flamingos while supporting their conservation.

By adopting a flamingo, you will be informed where your flamingo is throughout the year and learn plenty of facts about the species.

66% of your gift is tax deductible up to the limit of 20% of your taxable income.



MAKE A DONATION

Every donation, even small, can make a difference!

Donations help us study Mediterranean wetlands and continue our efforts to better understand and protect them.

If you share the values of the Tour du Valat, and appreciate the quality and independence of its work, support us!

TAX-DEDUCTIBLE SUPPORT

The Tour du Valat Foundation is recognised as being of public interest and therefore authorised to receive gifts of money. 66% of your gift is tax-deductible up to the limit of 20% of your taxable income. A gift of 100 euros will thus only really cost you 34 euros after tax deduction.

1 WITH A €25 DONATION

€8,50 AFTER FISCAL DEDUCTION IN FRANCE

© Hello-Van Ingen



You can fund the ringing of a young flamingo. This is a great way to help us produce better knowledge to improve the conservation of this iconic species.

2 WITH A €50 DONATION

€17 AFTER FISCAL DEDUCTION IN FRANCE

© Tour du Valat



You contribute to the development of an agroecological project. We can plant 10 meters of hedges, including fruit trees and melliferous shrubs, that enhance biodiversity in agricultural areas.

3 WITH A €100 DONATION

€34 AFTER FISCAL DEDUCTION IN FRANCE

© J.E. Roché



We can sample and analyse the blood of European pond terrapins (*Emys orbicularis*) to monitor pollutants (heavy metals, PCB). Thanks to these results we can monitor water quality and contamination in Camargue.

2 WITH A €500 DONATION

€170 AFTER FISCAL DEDUCTION IN FRANCE

© I. Badone



You contribute to the purchase of an Argos tag that is used to equip a spatula or an ibis. This tag is a fabulous source of information as it allows the monitoring of their everyday moves and their migration. This allows us, for example, to identify key areas to protect.

With your support, research and conservation of wetlands improves, for our common good as well as for future generations. To make a donation and visit our online payment system:

<https://tourduvalat.org/en/faire-un-don>



Marion Lourenço,
TECHNICIAN – GUARD

“What an opportunity to be able to roam such an amazing Nature Reserve and to be involved in managing it!”

THEY SUPPORT US

Providing realistic responses to issues in the Mediterranean region, promoting and implementing integrated management processes, mobilising the most pertinent expertise, and funding projects. All our activities require the development of strategic relations with various organisations. Today, we conduct our activities in synergy with more than 300 partners throughout the Mediterranean Basin (research centres, NGOs, governmental or supra-governmental organisations, and foundations). Establishing these solid partnerships is indispensable for achieving our objectives, and we wish to thank all of our partners and financial backers.

The Tour du Valat has created links with numerous financial partners at various levels, including the following:

INTERNATIONAL PARTNERS

- European Union
- CEPF- Critical Ecosystem Partnership Fund
- French Development Agency (AFD)
- FFEM - The French Facility for Global Environment

NATIONAL PARTNERS IN FRANCE

- Ecological Transition and Solidarity Ministry and the Provence-Alpes-Côte d'Azur DREAL (Regional Directorate for Environment, Planning and Housing)
- Ministry of Agriculture
- Rhone-Mediterranean and Corsica Water Agency
- ANRT – Association Nationale Recherche Technologie
- French Biodiversity Agency (AFB)
- CNRS, French National Research Centre

TERRITORIAL PARTNERS

- Provence-Alpes-Côte d'Azur Region
- Bouches-du-Rhône Departmental Council
- Camargue Regional Natural Park

Our private partners and sponsors



The MAVA Foundation was created by Luc Hoffmann in 1994, with the mission of establishing solid partnerships so as to preserve biodiversity for future generations. The Tour du Valat is one of the key projects backed by the MAVA Foundation, from which it receives major support.



In early 2017, the Axiome endowment fund signed a 5-year sponsorship agreement to support the awareness-raising missions of the Mediterranean Lagoons Transfer Unit, particularly those linked to World Wetlands Day and European Heritage Days.



The Fondation de France supports two multi-disciplinary research projects at the Tour du Valat. One is to develop a participative geographical information system for the Greater Flamingo that encourages a social and human approach to science. The second project, which focuses on agricultural production systems, seeks to develop a showcase site for agroecology on the Petit Saint-Jean Estate in the western Camargue.



AccorHotels has been a partner of the Mediterranean Lagoons Transfer Unit since 2004. It helps the MLTU celebrate World Wetlands Day and supports its communication campaign that promotes events in Mediterranean lagoon territories. Its employees also participate every year in a wetlands conservation project.



The CEPAC (bank) will continue to support our projects by funding an electric vehicle, and sponsoring the creation of agroforestry plots on the Petit Saint-Jean Estate, and an alternative mosquito control project that uses no insecticides.



The Heritage Foundation supports an agroforestry and agroecology project on the Petit Saint-Jean Estate. This project aims to develop a showcase site for permaculture, with the planting of berry hedges and the creation of ponds. Its overall goal is to create a model for tomorrow's farms.



A manufacturer of pasta and semolina using organic durum wheat grown in the Camargue, ALPINA supports a research project on biodiversity in agricultural habitats, in particular the development of ecological monitoring processes that can be carried out by local farmers who care about the environment, and would like to enhance the biodiversity of their farms.



EcoDDS is a non-profit company, whose mission is to foster recycling, and to collect and deal with various chemical wastes for individuals. It has made a three-year commitment to the conservation of the European Roller, and will provide support for Timothée Schwartz's dissertation. His doctoral thesis aims in particular to improve the deployment of artificial nesting boxes, which is the main conservation measure used to protect this species.



Grounded in the many common points linking the François Sommer Foundation and the Tour du Valat Foundation, a partnership has been established to develop and promote sustainable hunting practices, and engage in scientific activities that focus on wetland species.



The Gecina Foundation provides support for the Résifaune Health Ecology project, which aims to improve our understanding of the role played by wildlife in the circulation of antibiotic-resistant bacteria by studying those carried by rodents and gulls in different habitats in the Camargue.



In the framework of our development of a showcase site for permaculture on the Petit Saint-Jean Estate, which focuses on agroforestry and agroecology projects, the François Lemarchand Foundation is providing support for overhauling the irrigation network and developing niche crops.



The public works group NGE, which has already worked with the Tour du Valat Foundation on a previous project for controlling invasive alien species, is financing research on how to prevent the encroachment or re-encroachment of these species after habitat disturbance.



The “Helping hand” programme sponsored by the Nature et Découvertes Foundation provided funding for a project to fit Eurasian Spoonbills with GPS tags. This project was carried out with the school in Le Sambuc (commune of Arles), and will follow their migrations to sub-Saharan Africa.



We are partners in a hydraulic and ecological restoration project on an agricultural wasteland belonging to the GPMM, intended to favour hunting and grazing activities while preserving Mediterranean biodiversity. This project is co-financed by the ERDF and the Water Agency.



In 2017, VINCI Autoroutes (ASF south of France motorway network) signed a three-year partnership agreement with the Tour du Valat, which is intended to support its Mediterranean Lagoons Transfer Unit. This partnership reflects a common desire to promote Mediterranean lagoon habitats for the employees and users of this motorway network, through the ASF radio station and exhibitions at motorway rest areas.



Since the Mediterranean Wetlands Observatory was set up, the Prince Albert II of Monaco Foundation has helped the Tour du Valat to assess the status and trends of wetlands in the Mediterranean Basin, in particular by developing indicators concerning their water resources and biodiversity.



The Klorane Botanical Foundation and the Tour du Valat Foundation are both the work of visionaries committed to a harmonious relationship between Humanity and Nature: Pierre Fabre and Luc Hoffmann who knew and liked each other. The two foundations have a joint project to cultivate European Searocket (a medicinal plant) in the framework of the agroecology project on the Petit Saint-Jean Estate.



In the framework of an international partnership, WWF is working with Coca-Cola in its “Replenish” programme. The aim is to give back to nature and communities the same amount of water as that used for the worldwide production of its drinks. In France, this commitment has resulted in a sponsorship agreement between Coca-Cola and WWF-France for a project aiming to improve the hydrological and biological exchanges in the lagoons and marshes on the former Camargue saltworks site.



Continuing our partnership initiated ten years ago, this year the Total Foundation provided support for our Greater Flamingo research programme. It also supported our monitoring of the Slender-Billed Gull, a modelling project on the site of the former saltworks in the Camargue, the monitoring of biodiversity in marshes, as well as the Mediterranean Wetlands Observatory.



In the aim of preserving a very rare plant species, *Lythrum thesioides*, which has been identified at only two sites in the Gard, a partnership was created with OC'VIA (construction company) and the SNCF (train company) to fund a doctoral thesis on the ecology of this species. This project falls within the framework of the measures accompanying the construction of a high-speed train line.

Hosted organisations

The Tour du Valat is hosting five partner organisations in its premises.

Friends of Tour du Valat Association



The association has been created for the 60th Anniversary of the Foundation and links many an employee, intern, partner be it private or public, friend, who share the values and the philosophy of Tour du Valat. Its goal is to unite, advance, promote and support the action of the foundation through this vast network of people linked professionally as well as personally.

Find out more: <https://amistourduvalat.org>

MedWet Secretariat



The MedWet initiative is composed of 26 partner countries in the Mediterranean basin and Palestine. Its mission is to promote the implementation of the Ramsar Convention's objectives and initiatives in the Mediterranean region. Since 1992, MedWet has been encouraging partnerships in order to ensure and support a rational use and an effective conservation of wetlands. In 2014, at the invitation of the French Government and with the support of the Rhône Mediterranean Corsica water agency and Fondation MAVA, the MedWet secretariat has been relocated at Tour du Valat, and works closely with the Mediterranean Wetlands Observatory.

Find out more: www.medwet.org

National Office for Hunting and Wildlife (ONCFS)



The French National Office for Hunting and Wildlife (ONCFS) is a public organisation employing 1,700 officers. Its twofold mission is to conduct studies and research on wildlife and their habitats and to ensure compliance with the laws and regulations on nature and hunting. The offices of the ONCFS at the Tour du Valat accommodate two units of the Centre National d'Etudes et Recherches Appliquées (CNERA), one of which is devoted to the smaller resident plains fauna and the other to migratory birds.

Find out more: www.oncfs.gouv.fr

Association Caribaea Initiative



The association "Caribaea Initiative" aims at contributing to the development of scientific research on biodiversity and wildlife management at the scale of the Antillean arc. Created in October 2014, the association acts to strengthen the scientific expertise capacity on animal biodiversity in the Caribbean and to support the training of future local experts, through master and PhD grants.

Find out more: www.caribaea.org

Association TAKH



Through the safeguard and study of the Przewalski horse as a flagship species, Association Takh leads a pilot conservation project which allies steppe and wetland restoration, as well as endangered species protection, to the promotion of sustainable development, on Khomyn Tal in Mongolia.

Find out more: www.takh.org/en/

Visiting us...

The Tour du Valat is open to the general public on several occasions each year:

- On World Wetlands Day, usually the first Sunday in February, Tour du Valat has an open house, with conferences, video presentations and guided tours of the Estate.
- Together with the Bureau des Guides Naturalistes (BGN), paying guided visits are organized from November till April, every second Saturday. Registration is compulsory at BGN Bureau:

☎ 33 695 907 048

- If you wish to receive information about the programmes and other events organized at the Tour du Valat for the general public, please contact us at:

✉ secretariat@tourduvalat.org

- Follow us on:

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- GRAPHIC DESIGN
AND LAYOUT:

Guillaume Baldini

- COVER
ILLUSTRATION:

Inspired by the pictures of
Jean-Marc Caschetta
and Jean Jalbert

- BACK COVER
PHOTOGRAPHY:

Benjamin Solgrain

- PRINTING:

Pure impression
Printed on paper
ISSN : 1291-0627





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