TOUR DU VALAT

ACTIVITY REPORT 2022

Tour du Valat

Research institute for the conservation of Mediterranean wetlands

TOUR DU VALAT TEAM

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EDITORIAL

100 YEARS **Luc Hoffmann, the founder of the Tour du Valat, the man who embodied the international movement to protect wetlands, would have turned 100 this year. Other symbolic anniversaries will be celebrated in 2023: the centenary of the 1st International Congress for the Protection of Nature, the 75th anniversary of the International Union for the Conservation of Nature. These are all good occasions to stop, look back, and appreciate what we have accomplished.**

"A large stinking and fertile bubo, infected by the exhalations of its lagoons[1]". "Corrupt marshes from which industry must deliver the Camargue[2]". In the 19th century, this was the prevailing perception of wetlands, in the Camargue and elsewhere. Facing this situation, the overall goal was "to restore order to nature" whose "sudden and violent convulsions have converted fertile fields into foul lagoons". The draining of these wetlands was glorified as civilizing work: "Nothing will stop the march of a government accustomed to working wonders, and zealously drawing attention to how men are able to transform material objects, the power of their genius and moral force[3]". To accomplish this work, the physical sciences were summoned, which, "every day more audacious and more powerful, will impart their efficient assistance". The path was sketched out, and until the 1960s the main issue was to "improve", and to "enrich" these spaces doomed to dereliction and desolation. These wetlands would be destroyed, filled in, and drained, so that they would finally have some economic value.

Today, however, our perception has been largely reversed. These "lands of water" are increasingly considered as places of abundant and prodigious biodiversity; providers of Nature-based Solutions to the major challenges facing our societies: climate change, water supply, food security... Our "life insurance policy" that will protect us from the combined climate and biodiversity crises. This spectacular turnaround is rooted in multiple factors, especially the role of science. Science has been able to emancipate itself from its previous status as a tool at the service of a political vision to become a widely shared knowledge base, ethically supervised, allowing us to better understand the world and our place in it, contributing to policies without being their instrument. Proven scientific expertise, willingness to dialogue, commitment, perseverance, and a good dose of courage. These are the ingredients that enabled a few avant-gardists to turn the tide in the 20th century. To change the way society looks at things. To begin reconciling humans with nature.

However, if thanks to these precursors the image of wetlands has radically changed, their fate is still as worrying. Scientific expertise has demonstrated the incompatibility of our development model with the planet's limits. Every day it provides more reliable, precise, and alarming projections. Yet public policies are not encouraging the transition forcefully enough. Resistance is growing from many actors whose interests are being called into question, and who refuse to reinvent themselves facing the inevitable. It is up to us now to draw inspiration from these precursors and pursue and expand their actions.

That is the Tour du Valat's commitment. With a team of high-level scientists - women and men - young and committed, develop high-quality science, share its results widely, engage in dialogue to illuminate the paths of the future and travel together along them.

ANDRÉ HOFFMANN
PRESIDENT

JEAN JALBERT
DIRECTOR GENERAL

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1 Emmanuel Le Roy Ladurie, Paysans de Languedoc. Paris, SEVPEN, 1966, p. 132
2 François Poulle, Étude de la Camargue ou Statistique du delta du Rhône envisagé principalement sous le rapport des améliorations dont il est susceptible, 1817
3 Carrion Nizas, rapporteur for the French law on draining marshes, 16 September 1807

THE TOUR DU VALAT

Created more than 70 years ago by the visionary naturalist and philanthropist Luc Hoffmann, the Tour du Valat has 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 natural heritage can be reconciled, the Tour du Valat has for many years been developing research and integrated management programmes that favour exchanges between wetland users and scientists, and promote wetlands benefit to decision makers.

OUR ORGANISATION

The Tour du Valat is a non-profit foundation with two management bodies that handle its governance: the Board, made up of three colleges – the Founders, Ex-officio members, and Qualified personalities – and the Science and Conservation Council, a body of internationally acclaimed scientists from major fields of wetlands research and conservation.

OUR LIFEBLOOD

The Tour du Valat team included 86 talented individuals in 2022 with an additional 6 doctoral students hosted on a non-contractual basis (3 women and 3 men), which in all represents 72 full-time equivalent positions (31 women and 41 men).

Five volunteers in European Solidarity Corps of Spanish, Georgian, Finnish and Italian nationality joined us. Four volunteers in Service Civic began their volunteer internships to bolster the five who were already present.

Finally, as is the case every year, we offered eleven university or engineering school students the opportunity to complete their internship with us, thereby continuing to strengthen the scientific culture at the Tour du Valat.

Meeting of the Science and Conservation Council of the Tour du Valat, 14 November 2022
© Tour du Valat

1954
FOUNDED BY LUC HOFFMANN

86
EMPLOYEES

AROUND
1 645 scientific
PAPERS PUBLISHED

100
PhD

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

ORGANIC
AGRICULTURE AND
AGROECOLOGY

CO2

LOW EMISSIONS
thanks to local waste recovery such as rice husk for inulation and heating

WETLANDS,
are very productive
yet highly threatened areas

-35%* Throughout the world

-48%* In the Mediterranean Region

*Between 1970 and 2015 according to the latest report of the MWO (MWO2) and the Ramsar Global Wetland Outlook.

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Left to right

JAOUAD GRII, NICOLAS BECK, LOÏC TENDRON, FRÉDÉRIC CASTELLANI, DIMITRI GLEIZE, ALEXIA BAUMANN, DAMIEN COHEZ, JULIEN BOURJAILLAT, ANTHONY OLIVIER, ROGER KÄSLIN, MARION LOURENÇO, YANNICK MICHELIER, CÉDRIC CAIRELLO | LUDOVIC MICHEL (ABSENT)

The Tour du Valat Estate's team

"We are women and men committed every day to managing a 3,000 hectare estate located in two distinct geographical parts of the Camargue, fully aware of how fortunate we are to work in such exceptional areas and the importance of our missions."

THE ESTATE

The Tour du Valat Estate covers nearly 2,918 hectares in two different geographical areas in the Camargue: the Tour du Valat Estate, near the village of Le Sambuc, a commune of Arles, Bouches-du-Rhône, 2,817 ha, 1,845 ha of which is a regional nature reserve; the Petit Saint-Jean Estate (101 ha) in the part of the Camargue located in the Gard Department very close to Aigues-Mortes.

This estate feature a wide range of natural environments characteristic of the Camargue: large temporary marshes, sansouïres, salt meadows, and fossil dunes at the Tour du Valat, and a large grove of stone pines, thickets, and grasslands at the Petit Saint-Jean. Exceptionally rich natural heritage is found in these highly diverse environments: many rare and threatened species have their last refuges in the Camargue. In order to preserve and better understand them, numerous monitoring operations and inventories are regularly carried out. The Estate's team works to ensure optimal conditions for maintaining biodiversity. The research programs implemented on the Estate aim to better understand the functioning of environments and species in relation to the role of human activities.

TRADITIONAL ACTIVITIES (LIVESTOCK, AGRICULTURE...)

The Tour du Valat has its own open range livestock on the central part of the site and other parts of the Estate are grazed by the herds of well-known local ranchers. In 2022, 350 cattle and 70 horses grazed on the site. On the Petit Saint-Jean Estate, a small herd of around thirty Raïole ewes (a species with a very low population, originating from the Cévennes) has been introduced to control vegetation in the vineyards, the meadow orchards, and the sectors in which there is a high risk of fire propagation (along local roads). In addition to this herd, mares live in the marshes in the winter, and a herd of Aubrac cows feeds on regrowth herbage there from September to December.

AN AMBITIOUS PROJECT TO "SHOWCASE" AGRO-ECOLOGY

On the Petit Saint-Jean Estate, the agricultural plots are cultivated according to the principles of agroecology with various productions: grapes, hay, potatoes and sweet potatoes, olives, almonds, and pomegranates. The 15 grape varieties currently in place enable diversified vinification. All the agricultural activities meet organic farming specifications and are part of a project in which viticulture, agroforestry, and diversified pastoralism are developed in response to current environmental issues such as climate change, and the erosion of biodiversity.

Supervised hunting also takes place on the Estate: three hunting groups can hunt according to precise rules. Lead shot was banned in 1994 for small game and in 2019 for wild boar. The hunting groups also contribute to various scientific studies by keeping hunting registers and submitting animal gizzards.

The Tour du Valat also actively participates in the local effort to regulate the wild boar population by organising hunts, shootings to protect crops, and bow hunting in the most fragile areas.

Tour du Valat Estate
© Damien Cohez

Flight of Common Cranes
© Jean Jalbert

THE BIODIVERSITY ON THE ESTATE

Many observations were made on the Tour du Valat Estate in 2022, with the identification of new species such as the Common trig *(Trigonidium cicindeloides)*, the Western Crevice-cricket *(Gryllomorpha uclensis)*, the Horse leech *(Haemopis sanguisuga)*, *Anoxia villosa* and the Antlion *(Synclisis baetica)* as well as Pallas's Leaf Warbler *(Phylloscopus proregulus)*. The Plain Tiger *(Danaus chrysippus)* was seen again as well as postnuptial Pacific Golden Plover *(Pluvialis fulva)* for the second consecutive year.

Green List

Réserve Naturelle Régionale TOUR DU VALAT

MARSH BIRD BREEDING

The work undertaken as part of the Resist project aims to restore the reedbeds of the Tour du Valat Estate (Garcines, Baisse du Rendez-vous) and the Verdier Marshes through hydraulic restoration operations that will improve the functionality and circulation of the water (on approximately 25 ha).

This work aims to regain control of water levels to ensure the good quality of bittern breeding sites; limit the amount of pollutants to ensure optimal food quality for target species (amphibians, small fish, aquatic invertebrates), and reduce the invasion of woody plants (Tamarix). As of the spring of 2022, this work made it possible to maintain high water levels that favour marsh bird breeding. The first encouraging results have been achieved, with five singing Eurasian Bittern males observed, including on the Baisse du Rendez-vous site (where the species had not been seen since 2010), and the return of the Bearded Reedling in the Garcines reedbed.

STEPPE BIRDS

The Moncanard steppe confirmed its attractiveness. The Collared Pratincole has once again bred on the developed plots, with 18 pairs producing 21 fledglings. Lesser Kestrels came to feed in the area regularly as did Montagu's Harriers. The surprise came from a pair of Little Bustards that settled on the site.

NESTING BIRD CENSUS

The monitoring of the evolution of the nesting passerine communities on the entire Estate was initiated in 1995. It is carried out every three years by six observers. In 2022, 72 species were observed and a total of 2,610 nesting pairs.

Some species, such as the Corn Bunting, Crested Lark, Tawny Pipit, Melodius Warbler, Common Linnet, Eurasian Goldfinch, and Sardinian Warbler, are clearly increasing in numbers. Meanwhile, others such as the Eurasian Tree Sparrow, the Magpie, and the Carrion Crow hardly ever nest on the Estate.

Biodiversity inventories and monitoring were carried out on the Tour du Valat's Petit Saint-Jean agro-ecological Estate.

The inventory of insects in vineyard hedges continued in the Epig'haie project. This year's identifications bring the total number of spider species to 80, and ground beetles to 18 (including 16 species of Coleoptera, all families combined) for the grapevines.

A remarkable discovery was made of a new spider species, which is currently being described by Christophe Mazzia & al. (IMBE, University of Avignon).

The inventory of microlepidoptera (smaller moths) initiated in 2012 was completed by nione observation evenings: 250 taxa of moths were observed, 23 of which are considered rare, 14 very rare, and two exceptional in France, such as the *Tegostoma comparalis.*

Tegostoma comparalis has only been observed in three other places in France besides the Petit Saint-Jean Estate.
© Olivier Pineau

A first draft inventory of Orthoptera (grasshoppers, locusts, and crickets) has identified 14 species, including the Sand Grey Bush-cricket *(Platycleis sabulosa)* and the grasshopper species *(Calephorus compressicornis).*

In terms of breeding birds, the Western Subalpine Warbler was observed for the first time during the nesting season. The Cirl Bunting *(Emberiza cirlus)* was also observed throughout the breeding season (two singing males) for the second consecutive year.

In terms of reptiles, the analysis of Common Barn Owl pellets revealed the remains of a southern smooth snake, which was most certainly preyed upon on the site.

Sardinian Warbler
© Thomas Galewski

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COLUMBA MARTINEZ-ESPINOSA / PAULINE ROCARPIN

Research engineer / Project leader: Wetlands management and restoration

"Passionate about wetlands and understanding how these ecosystems function and the services they provide, we enjoy developing and conveying our expertise to further the ecological restoration of these environments that are essential for human beings."

THE PROGRAMME

A NEW BALANCE

In 2022, we made intense efforts to focus our actions more effectively on the four main objectives that guide our work: understand, manage, convey, and convince. While scientific excellence has always been the Tour du Valat's strength, maintaining this level of achievement requires constant adjustments. This year, we have had to cope with the retirement of several researchers who have left their mark on the history of the Tour du Valat and recruit new staff. We have also expanded the team of research technicians who play a key role in our projects, and we have actively supported the new generation of senior researchers in their efforts to obtain the accreditation to supervise research, a crucial recognition in the French research system.

Two or three of our researchers should obtain the precious HDR in 2023-2024. With 48 scientific articles published, 35 with an impact factor, two PhDs defended and 11 others in progress at, or in close collaboration with, the Tour du Valat, and several large-scale projects launched with European funding in the field of ecological restoration, the year was clearly very rich in terms of research.

As for wetland management, in addition to continuing our historical involvement in the Camargue, both on our Estate and in support of our partners, in 2022 our capacity to deploy our experience throughout the Mediterranean region, and beyond, continued to grow. Key achievements include the recognition of the inland delta of Khor Abu Habil in Sudan as a Ramsar site, thanks to the joint support of the OFB and the Tour du Valat, the revision of our agroecological project to make it more coherent and ambitious, and the approval of the RESCOM project (Making Mediterranean ecosystems more resilient), supported by the FFEM with a last contribution from the MAVA Foundation. Implementation by the Mediterranean Biodiversity Consortium will start in 2023. Along with other projects, it reflects the growing importance of ecological restoration in our programme, which will be reinforced by the adoption of the new global framework for biodiversity in Montreal in December. Several technicians, engineers, and project managers have also joined our teams working on these management and restoration issues.

Under the objective of "conveying knowledge", the Mediterranean Alliance for Wetlands and the Mediterranean Wetlands Observatory have been greatly reorganised and their strategy reassessed. The Mediterranean Lagoons Transfer Unit has refined its strategy, and the Mediterranean Waterbird Network has seen its regional importance confirmed once again. Numerous training courses were held on ecological restoration and eco-health, and our active participation in the major conferences at the end of 2022 (AEWA, Ramsar, Climate and Biodiversity) gave us the opportunity to share our experience and develop our partnerships.

Finally, the objective of "convincing" is becoming increasingly important for Tour du Valat. Likewise, with the support of our governance bodies, we have formalised our first advocacy strategy, which covers all Tour du Valat's fields of action and aims to structure its approach to advocacy with the aim of increasing the impact to effort ratio- without, of course, giving up anything in terms of scientific excellence. The creation in 2023 of a new Director of Communication, Advocacy and Development position will bolster this strategy and increase the opportunities for implementing it. Mediterranean wetlands really need it!

RAPHAËL BILLÉ
PROGRAMME DIRECTOR

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Eurasian Spoonbill ringing
© Chloé Suard

Species Conservation

The Mediterranean Basin is a biodiversity hotspot. While some taxa show positive overall trends, wetland biodiversity, which includes many endemic populations in the Mediterranean Basin, is declining. Birds, reptiles, amphibians, and fish are threatened by direct and indirect factors, including climate change, habitat destruction, pollution, disturbance from recreational activities, legal and illegal harvesting, infrastructure, insufficient water management, and invasive alien species.

Today's main conservation challenges are to produce scientific knowledge on the effects of threats on the dynamics and distribution of these populations, assess the effects of management actions, and raise awareness of experts and policy makers through key messages. In this theme, we focus on taxa for which we have had expertise for many years: birds, fish, and amphibians. Our goal is to address threats such as salinisation due to climate change and the development of energy infrastructure such as wind turbines, and dams that prevent ecological connectivity, so as to produce a positive effect on the dynamics of the populations targeted by our studies.

We have organised the theme into three complementary areas:

- the first focuses on populations with unfavourable status requiring judicious actions based on the latest scientific knowledge;
- the second deals with the direct and indirect negative effects of anthropogenic factors on wetlands, such as the increase of native or exotic predators, hunting or invasive alien species;
- the third deals with connectivity disruptions due to anthropogenic disturbances, since physical and chemical barriers are common and increasing in the Mediterranean.

JOCELYN CHAMPAGNON | COORDINATOR

PROJECTS

1 Reversing the decline of threatened populations

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Haytem Bouchri has started his PhD thesis on Marbled Teal in Morocco with support from the Tour du Valat's Mediterranean scholarship programme. He will try to better understand the movements of this nomadic species that is adapted to temporary wetlands. The Teal will be monitored using innovative GPS / 3G tags to identify the conditions triggering the movement of individuals, and to better locate the important sites for the species' annual cycle.

Eurasian Spoonbill International Expert Group in Croatia for the 10th workshop
© ESIEG (Eurasian Spoonbill International Expert Group)

The Collared Pratincole, an endangered species in France, had exceptional breeding success in 2022, which can probably be explained by the very dry conditions this spring in the Camargue.

2 Providing management solutions that improve the status of vertebrate communities

ARNAUD BÉCHET | bechet@tourduvalat.org

We published an article showing the interest of the islets built for Charadriiformes along the French Mediterranean coast. All seven species targeted by this infrastructure show better numbers and breeding success on these sites than on their undeveloped equivalents.

This assessment shows the value of these restoration efforts, which involved a large network of wetland managers. We also launched the first online course to count breeding waterbirds in the Mediterranean. Finally, we analysed the short-term effects on birds of the restoration of four reedbeds at the Tour du Valat.

3 Ensuring ecological connectivity for species migration and dispersal

DELPHINE NICOLAS | nicolas@tourduvalat.org

The year was marked by the designation for our Sudanese partners of a new Ramsar site in Sudan: the inland Khor Abu Habil Delta, just 10 years after the discovery of this exceptional site (9,500 km^2) for wintering waterbirds.
We organised the 10th workshop of the Eurasian Spoonbill International Expert Group in Croatia. This workshop assessed the progress of the action plan for each flyway and subspecies.

Within the Migralion project, which aims to understand how birds fly across the Gulf of Lion, we placed GPS tags on more than 300 birds from 32 different species.

Marbled teals on the move
© Djamel-Hadj Aissa

Focus

SPECIES CONSERVATION

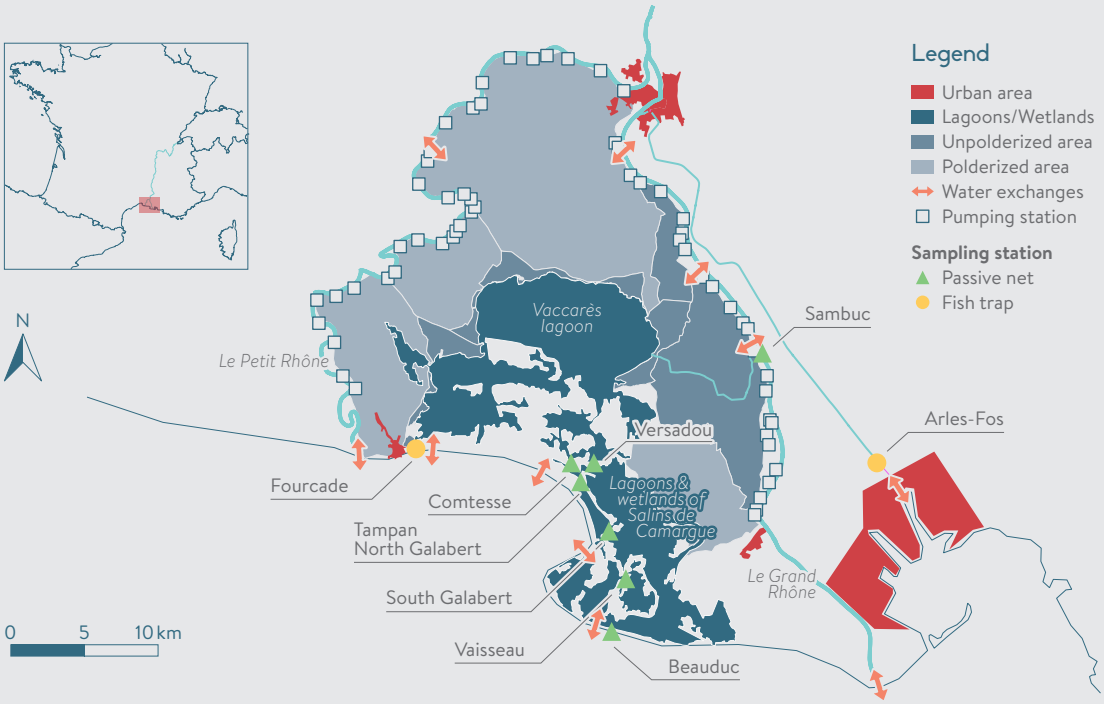
When and where do glass eel colonise the Rhone Delta? How can we help them?

The European Eel is a diadromous migratory fish species, which is born in the Sargasso Sea, crosses the Atlantic Ocean, grows up for several years in continental European and North African waters, and then returns to the sea to breed. Since the 1970s, the European Eel population has been in steep decline, and is now classified as critically endangered (IUCN, 2008). European states are obliged to implement management measures for the conservation of this species. The success of these measures depends in part on good glass eel recruitment, i.e., the ability of the young eel arriving from the sea to swim upstream and find suitable areas for growth. There is currently a lack of knowledge about the recruitment of glass eel that colonise coastal wetlands (lagoons, marshes, ponds), particularly along the Mediterranean coast.

The Rhone Delta is a lagoon hydro-system with different habitat types suitable for glass eel colonisation and eel growth. Colin Bouchard, a postdoctoral fellow at the Tour du Valat (2020-2021), analysed the recruitment and migratory dynamics of glass eel in the Camargue delta using data acquired between 1993 and 2021 at five different sites (see map). These data consisted of the number of glass eel captured by passive traps (fyke nets) and eelway traps, and also individual data (biometry and pigment stages) on some of the individuals captured.

Different Bayesian models were applied to characterise the spatio-temporal variability of recruitment at the scale of the entire delta.

Fyke net placed in the Beauduc lagoon
© Delphine Nicolas



Map of the study area corresponding to the Rhone Delta, France. The yellow symbols indicate the sampling sites according to the capture method used: fish passage (circle) or nets (triangle).

The results show little inter-annual variation, with only a final peak observed in the 2013-2014 season, as revealed by the recruitment index calculated at the European level. The period from January to April appears to be crucial for monitoring recruitment in the Camargue, even if the profile of the migration peak can vary between years (February-March in recent years). The five sites monitored have specific seasonality depending on their distance from the sea or their specificity (e.g., pumping station), which shows the importance of carrying out local monitoring throughout the delta if we want to correctly assess recruitment.

More locally, the effect of environmental variables and the management of hydraulic infrastructure on glass eel migration was analysed at the Fourcade inlet, a structure composed of 13 canal gates, which blocks the main connection of the delta to the sea (see map). The models showed that glass eel recruitment increases when outflow rates decrease or when the water level between the sea and the lagoons is zero or high (the water level in the lagoons is lower levels than the sea). These results suggest that increasing the number of open canal gates when the water levels on either side of the structure are equal or when water is entering the lagoons is a favourable management measure for elver recruitment. When the water flows out of the lagoons, adjusting the opening height of the gates and the number of open gates to reduce the speed of the current in the inlet could facilitate the entrance of elvers.

Capture-mark-recapture monitoring is necessary to better understand the migratory behaviour of glass eels according to environmental conditions and to act in their favour.

[1] *ICES (2020) Joint EIFAAC / ICES / GFCL Working Group on Eels Pulisher: ICES.*

European Eel
© Cyril Girard

PROJECT MANAGER Delphine Nicolas (nicolas@tourduvalat.org)

POSTDOCTORAL RESEARCHER Colin Bouchard (colin.bouchard@icloud.com)

PARTNERS

Technical: Association Migrateurs Rhône Méditerranée (Rhone Mediterranean Migration Association), INRAE, Greater Marseille Sea Port (GMSP), Friends of the Marshes Association, French coastal protection agency (CdL), Camargue Regional Natural Park, National Nature Protection Society (SNPN) / Camargue National Nature Reserve, Bouches du Rhône Departmental Council

Financial: Rhone Mediterranean and Corsica Water Agency, Sud PACA regional government

Field trip on Friuli island to measure the impact of plastics on Yellow-legged Gulls
© Karen Mc Coy

Health Ecology

Pollution is a major threat to Mediterranean wetlands, and it has a direct impact on biodiversity and water quality. Infectious diseases are another direct threat to some vulnerable species. Their circulation in wildlife can also have an impact on human and domestic animal health. The general objective of this theme is to contribute to limiting the impacts of pollution and infectious diseases, which are often linked, on wetland biodiversity. To achieve this goal, we are developing long-term studies that take into account the diversity of diseases and pollutants that affect the biocenosis.

This theme focuses on two areas:

- understanding the impacts of pollutants on vertebrates;
- reducing the direct and indirect impacts of infectious diseases on wetlands.

Through this research we aim to encourage practices based on more environmentally friendly approaches in order to improve the resilience of ecosystems and to limit the occurrence of major health crises. This theme is part of the “One Health” concept, which emphasises the links between human, animal, and ecosystem health.

2022 was marked by intense and successful field seasons for our ecotoxicology projects that focus on the impact of pesticides on European Pond Turtles *(Emys orbicularis)* and the impact of plastics on Yellow-legged Gulls *(Larus michahellis)*. In both cases, the number of sites sampled, and our network of partners were expanded. Large numbers of turtles and gulls were tagged, and over 200 blood samples were collected from both species. Charly Souc’s thesis, which he started in November 2022, will allow the movements of the Yellow-legged Gulls to be analysed by the 58 GPS tags placed on them this spring. Concerning pathogens, we published a new article showing that the carriage of antibiotic-resistant bacteria increases in gulls from hatching to fledging, both in terms of the proportion of individuals carrying them and in terms of bacterial diversity. We also contributed to the discovery of new strains of intracellular parasites in gulls, Babesia sp., YLG, which seem very common. Their pathogenicity is still unknown. Finally, we co-organised and hosted two fruitful exchange sessions involving researchers and managers: the “biodiversity and vectors” summer session, organised in September and supported by the MUSE initiative of the University of Montpellier, and the “seabirds and contaminants” prospective workshop in November, co-organised with the MIVEGEC unit in Montpellier.

MARION VITTECOQ | COORDINATOR

PROJECTS

1 The European Pond Turtle, a sentinel species for wetland contamination status

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European Pond Turtle
© Zepellin

In 2022, as part of Leslie-Anne Merleau's first year of her thesis, a new field campaign was extended to five sites in the Camargue in which a total of 103 blood samples were collected. In addition, a paper analysing the presence of pesticides in turtle plasma samples collected from 2018 to 2020 in the Camargue is currently being submitted. In this paper, we highlight the presence of a wide variety of pesticides circulating in the blood of European Pond Turtles. Bentazone, a commonly used herbicide, was found in the blood of 36% of the turtles sampled.

2 Yellow-legged Gulls: witnesses and actors in the dispersion of plastic and antibiotic-resistant bacteria

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A new field campaign was carried out successfully in five gull colonies: four in France and one in Spain. With the help of our many local partners, we ringed 638 birds and installed 58 GPS tags. The data collected with these devices will be analysed in Charly Souc's thesis, which he started in November 2022.

3 Antibiotic resistance dynamics

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In addition to the paper on gulls, another paper highlighting the higher diversity of antibiotic resistant bacteria carried by rodents in urban areas and sewage treatment plants compared to nature reserves was submitted. We also contributed to two major national initiatives, Abromics and Promise, which aim to develop a digital platform and other tools to facilitate the storage, sharing, and analysis of antimicrobial resistance data.

4 Trematode dynamics

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We contributed to an article on the evolutionary history of the liver fluke. It shows that contrary to the prevailing theory, this parasite did not arrive in America with the European settlers, but much earlier with large wild mammals. In addition, in collaboration with the University of Perpignan monthly field sessions began in April 2022 using new environmental DNA research approaches to describe the diversity of trematodes (the group of parasites to which the liver fluke belongs) in three contrasting sites on the Tour du Valat Estate.

Placing a GPS tag on a Yellow-legged Gull
© Jean-Baptiste Lanfranchi

Focus

HEALTH ECOLOGY

Reptiles and aquatic contaminants: a study in the Camargue to characterise population exposure and impact

Wetlands are exceptional reservoirs of biodiversity, but they also receive innumerable contaminants produced by human activities. Meanwhile, the future consequences of these many forms of contamination on aquatic biodiversity have been inadequately studied. Reptiles offer considerable potential as indicators of local pollution; however, they require further study. In this context, our project studies the contaminants present in various reptiles in the Camargue in order to advance our knowledge of wetland pollution and its impacts on the vertebrate populations living there.

The three objectives of this project are to:

- **quantify the local exposure of reptiles to aquatic contaminants;**
- **understand the impact of anthropogenic pollution on the biology of the species studied;**
- **develop a standardised protocol that can be transposed to other wetlands in France.**

European Pond Turtle
© Jean. E Roché

Between 2018 and 2020, 418 blood samples of European Pond Turtles were collected on the Tour du Valat Estate. During the same period, 272 cadavers of 10 reptile species were collected on roads in the Camargue. This sampling made it possible to characterise the multiple exposure of these reptiles to contaminants. The first striking result is the concrete evidence of the cocktail of pollutants to which the individuals are exposed. We observed the presence of a wide variety of phytosanitary products in the blood of European Pond Turtles, with 24 of the 29 target pesticides detected. Bentazone, a herbicide commonly used in rice cultivation, was present in 36.5% of the samples. Various metallic trace elements were also detected: lead, mercury, selenium, and arsenic, with higher levels of mercury and lead in older individuals. Some persistent organic pollutants (PCBs and organochlorine pesticides) were also present in the blood of the turtles (Burkart et al., 2021). Nonetheless, there were less of them and their levels were lower than those found in previous decades in fish and birds in the Camargue. Finally, other "urban contaminants" were also found in the turtles: phthalates, PAHs, and DEET. Similarly, persistent organic pollutants (PCBs and organochlorine pesticides) were detected in the flesh of two Mediterranean snake species: the Western Montpellier Snake *(Malpolon monspessulanus)* and the Ladder Snake *(Zamenis scalaris)*.

Characterising the exposure of the reptiles is an essential prerequisite for the study of the potential impacts of this multi-contamination. This study of potential impacts will be the next step in the project. It corresponds very closely to Leslie-Anne Merleau's PhD project, which will be based on a large body of data already collected: demographic (CMR), behavioural tests, photo bank (coloration), as well as various biomarkers (oxidative stress, microbiome). Our study has also enabled us to develop a standardised protocol that includes capture, biometry, marking, blood sampling, photography, and behavioural testing, which was enhanced in 2022 by environmental sampling (water, sediment, prey). This protocol will be transposed to other French wetlands starting in 2023. Our analyses will thus make it possible to compare contamination in different environments impacted by human activities, especially farming, in the Camargue, Brenne, and Nouvelle-Aquitaine. This new study phase is currently underway nationally within the ECOPHYTO 2 plan.

Report on the impact of aquatic contaminants on a reptile community in the Camargue
© Tour du Valat

PROJECT LEADERS Anthony Olivier (olivier@tourduvalat.org) and Marion Vittecoq (vittecoq@tourduvalat.org)

TEAM MEMBER Leslie-Anne Merleau (leslie-anne.merleau@ephe.psl.eu)

PARTNERS **Technical:** la Rochelle University (UMR Lienss), UMR Metis, Centre for Biological Studies of Chize (CNRS), SNPN
Financial: Rhone Mediterranean and Corsica Water Agency, Roche Fondation, Plan Ecophyto 2

Verdier Marshes
© Loïc Willm

Management and restoration of natural and agricultural ecosystems

We work at different scales and in different geographical areas to conserve the tremendous biodiversity found in wetlands. It has been shown that it is more effective to conserve existing wetlands, while it is often difficult or even impossible to restore destroyed wetlands to their previous state. However, when damage or destruction has already occurred, restoration can be proposed as an option to improve wetland functions and biodiversity.

We use these two approaches to ensure sustainable wetlands now and in the future. Our management activities to conserve existing wetlands are constantly evolving in response to changing circumstances. All our management and restoration activities take into account of global changes, including climate change and socio-economic activities, to respond to new threats and find suitable alternatives. By looking beyond strictly protected areas, we can assess and improve existing activities to find solutions that take into consideration both the human and natural aspects of wetlands.

The Tour du Valat land, including the Tour du Valat, Petit Saint-Jean and Verdier Estates, are veritable open-air laboratories where we test different management and restoration techniques. This year we were able to actively restore some key habitats such as reedbeds and temporary marshes. We also worked with local private and public landowners to continue our management and restoration activities on over 3,000 ha of wetlands in the Camargue.

LISA ERNOUL | COORDINATOR

PROJECTS

1 Wetland management and restoration

LISA ERNOUL | ernoul@tourduvalat.org

The start of a new European Horizon 2020 project (WaterLands), the end of the MAVA projects, and the retirement of some key staff members have re-oriented our management and restoration activities. We organised and disseminated an international restoration training seminar targeting wetland managers, which included virtual visits of restored wetlands in the Camargue. Fact sheets and a guide for decision-makers were also created.

We continued to assess the hydraulic management schemes for hunting marshes that could be the most compatible with Mediterranean biodiversity (MediCyn). of two Camargue sites (Petit Badon and Cassaïre) to increase the impact of restoration activities, and started monitoring programmes for reptiles, amphibians, and birds. Additional work was carried out to characterise the conservation status of agro-pastoral habitats of emblematic Natura 2000 sites, including the Camargue. Significant work was also carried out on the Verdier Marshes, to improve hydraulic management and encourage bird nesting and the revival of local fishing activities.

We continued the co-management of the EMSC (former Camargue saltworks), owned by the French Coastal Protection Agency (CdL), in partnership with the Camargue Regional Natural Park and the National Nature Protection Society (SNPN). We mainly carried out field campaigns and helped coordinate the implementation of a hydraulic works programme. After two years of preparation in collaboration with the co-managers and the CPIE Rhône-Pays d'Arles (centre for environmental initiatives), the new management plan for the site was finalised. An ambitious consultation process carried out with the support of the CPIE enabled local stakeholders to contribute to the definition of objectives and actions for the next ten years.

2 Studying and promoting agroecology

ARNAUD BECHET | bechet@tourduvalat.org

Bat shelters installed on the Petit Saint-Jean agroecological farm
© Hugo Fontes

Agroecology activities were developed both on the Tour du Valat and Petit Saint-Jean Estates, and throughout the Camargue with a network of local farmers. We have developed an innovative cropping plan to experimentally test more biodiversity-friendly farming approaches on 20 ha of rice fields. Monitoring systems have been deployed in Camargue farm fields. A new arachnid species was identified (Epig'haie project, Fondation de France (FdF)), and the monitoring of bats in Camargue rice fields (Camargue en Bio project, FdF) led to the discovery of a new species for the Camargue (the Western Barbastelle bat).

Pierre Mallet defended his PhD thesis on the role of infrastructure and agroecological practices on biodiversity conservation in the Camargue rice fields. His work provides tools and recommendations for planning the ecological restoration of the Camargue agricultural landscape. The Alpina-Savoie project enabled us to install 80 nest boxes for different bird species on 12 different farms, and this work will continue as we improve farmers' commitments to biodiversity-friendly land management.

Dilara Arslan successfully defended her PhD thesis that shows how the transition from a landscape shaped by extensive farming to one dominated by intensive irrigated agriculture has changed the composition and abundance of bird communities in the Gediz Delta (Turkey).

Use of a damselfly as a flagship for the restoration of temporary Mediterranean ponds

Damselflies and dragonflies are widely used in wetland conservation. They are easy to identify, not very diverse, and their biology is well known. Their species assemblages provide information on the conservation status of their habitats as well as on how this status is positively or negatively changing. Some species, such as the Dark Spreadwing *(Lestes macrostigma),* are restricted to a particular habitat type. This threatened and charismatic species breeds only in temporary brackish waters, a type of wetland that has suffered greatly from human activities in recent decades. Using it as a flagship for the restoration of temporary brackish ponds in the Mediterranean is therefore relevant.

IMPROVING OUR KNOWLEDGE

Our research focuses on its detailed ecology, with the aim of effectively managing and restoring its habitat. We now know that it has a real preference for the Sea Club-Rush *(Bolboschoenus maritimus)*, not only because the females place their eggs there in June more effectively than in other plants, but also because this plant offers the embryos a better survival rate until they hatch the following March. Second, although the larvae develop in brackish water, it has been found that the salinity should not exceed 4-6 g/L at the time of hatching, otherwise their growth rate and size at emergence will decrease, and the consumption of energy reserves will increase once they reach the adult stage. These negative effects likely impact their lifespan and reproductive success.

Lestes macrostigma mating
© Philippe Lambret

Lestes macrostigma larvae are more abundant in temporary ponds that are refilled late in the autumn (from November onwards), and in small ones (200-1,000 m²), suggesting that adults prefer them. The reason for this preference seems to be that the larvae are more sensitive to aquatic predators. In addition, deeper, and therefore less warm, waters mean that the larvae grow less rapidly and therefore are larger when they emerge. These elements entail the "specifications to meet" for successful habitat restoration operations for this species.

EXPERIMENTAL HABITAT RESTORATION

Digging a temporary Mediterranean pond
© Philippe Lambret

In parallel to this research, restoration projects were undertaken starting in 2012. Ponds dug within the framework of the National Biodiversity Strategy were left to be colonised naturally by plants and insects. *Lestes macrostigma* has reproduced successfully in several of them, but using plants installed on the edges of the ponds before they were dug. The installation of aquatic plants (hydrophytes) has been very slow, and that of plants used for oviposition (helophytes) almost non-existent. In another project carried out in partnership with the Marseille-Fos Euro-Mediterranean port, hydrophyte and helophyte seeds were sown in dug-out ponds. Here, the hydrophytes have grown more quickly, but helophyte growth remains unsatisfactory. Further studies are underway to find a way to encourage the rapid growth of Sea Club-Rush in the restored habitats. Finally, shoots containing *Lestes macrostigma* eggs were introduced into a pond that has favourable hydrology and salinity but had not yet been colonised. Two months later, adults emerged successfully, suggesting that this method could be used for reintroduction projects.

FUTURE PROSPECTS

New restoration projects are being set up along the Mediterranean coast within the framework of the National Action Plan for threatened dragonflies, coordinated by the OPIE (agency for insects and their habitats), and its application in the PACA region, coordinated by the Tour du Valat. These projects should eventually increase the number of Mediterranean temporary pools and favour the associated fauna and flora. Other dragonfly species with their own ecological characteristics will be used as flagship species for the restoration of other types of wetlands.

Philippe Lambret
© Zeppelin

PHD STUDENT Philippe Lambret (lambret@tourduvalat.org)

SUPERVISORS Robby Stoks (KU Leuven, Belgium) and Patrick Grillas (Tour du Valat)

PARTNERS Katholieke Universiteit Leuven, Greater Marseille Sea Port (GMSP), Friends of the Marshes Association, Tour du Valat regional nature reserve, Agency for insects and thier habitats (Opie), WWF France, Rhone Mediterranean and Corsica Water Agency, DREAL PACA

RETROSPECTIVE 2022

© Perrine Gauthier

ECO-ACTOR

The Tour du Valat has become an Eco-Actor of the Camargue Biosphere Reserve.

© Tour du Valat

A WONDERFUL SITE

A new observation platform on the Grenouillet marshes, thanks to financial support from the Sud Provence-Alpes-Côte d'Azur Region.

© Chloé Suard

RINGING

Studying, ringing, and monitoring Eurasian Spoonbills.

© Wetlands International

A JOYFUL MEETING

Gathered for their annual meeting at the Tour du Valat, the leaders of Wetlands International seem to be delighted!

© Tour du Valat

FESTIVE ATMOSPHERE

Close Encounters of the Third Kind, in partnership with the Citron Jaune, National Street Arts Centre.

© Fany Period

UNUSUAL!

What is this "box on legs" doing?
It's trying to become invisible to the flamingos.

© Tour du Valat

MOTHER CHRISTMASES

Barbara and Corinne

© Tour du Valat

PLAYING HOOKY AT THE TOUR DU VALAT

The "Biodiversity and vectors" summer school, supported by the University of Montpellier's MUSE initiative.

© Tour du Valat

WARM WELCOME

Delegation of the Moroccan Association for Ecotourism and Nature Protection (AMEPN).

© Tour du Valat

DOWN BY THE BAY

Capitalisation session in Sardinia, with partners from the MAVA Foundation project "Improving the conservation of coastal wetlands".

©Tour du Valat

"ADOPT A FLAMINGO"

Our team organises activities for the many sponsors who attended the event.

Monitoring the evolution of the permanent connection between the sea and the Beauduc lagoon, South of the former Camargue saltworks
© Loïc Willm

Wetland dynamics and water management

Climate change is exacerbating current environmental problems in the Mediterranean Basin, due to a combination of changes in land use – in particular the conversion of natural wetlands to urban and agricultural areas or artificial wetlands – unevenly distributed water resources, and increasing pollution.

Land use and water management choices and policies are complex processes resulting from many socioeconomic factors. They involve stakeholders who sometimes have conflicting interests. In addition, the socio-economic and political context tends to generate short-term responses that do not adequately address long-term environmental problems.

In this context, our team carries out research aimed at:

1. informing and raising the awareness of decision-makers, stakeholders, and site managers of the changes affecting Mediterranean wetland habitats (losses, conversions, hydrological alterations);
2. helping them justify their water management choices:
   - with the best possible compromise for all the issues and uses of these areas (biodiversity, human activities);
   - by not focusing on resolving only short-term problems, but also considering long-term ones.

OLIVIER BOUTRON | COORDINATOR

PROJECTS

1 Understanding the spatial and temporal dynamics of wetlands

ANIS GUELMAMI |
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At the Mediterranean Basin level, the AlonWetlands project was launched, with funding from the Centre National d'Etudes Spatiales (French space study center, CNES) and the French Biodiversity Agency (OFB) through the Space Climate Observatory (SCO) programme. This project aims to strengthen the wetland monitoring system set up by the Mediterranean Wetlands Observatory (MWO). Using Artificial Intelligence algorithms, maps and indicators will be developed from Earth Observation data, then integrated into a Mediterranean wetlands geoportal; a simple, interactive, and scalable decision support tool.

On the same spatial scale, we will develop an innovative cartographic approach aimed at better targeting areas where lost wetland habitats can be recreated, based on the mapping of Potential Wetlands (PW). The result is a pan-Mediterranean map indicating the probability of the presence of wetland habitats, as well as an estimate of the effort required to recreate those that have been transformed.

Finally, locally, the spatialized monitoring carried out for the Sebou (Morocco) and Medjerda (Algeria/Tunisia) river basins, has made it possible to better highlight the role of wetlands as Nature-based Solutions; in particular, to mitigate some of the effects of climate change.

2 Informing water management

OLIVIER BOUTRON |
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Field monitoring was carried out for the European REST-COAST project (www.rest-coast.eu) to estimate the consequences of abandoning the sea walls to the south of the former Camargue saltworks (EMSC) on the geomorphological evolution and the hydrological and salinity regime of this site. The consequences for the dynamics of terrestrial and aquatic vegetation were also studied. For her first year of doctoral studies (Aix-Marseille University), Cécile Puigserver developed morphological modelling tools that will provide additional information that is complementary to the field data.

We continued to support several managers of three lagoons, using the GAMELag modelling tool to help them develop strategies that reduce nutrient flows. The 2021 Water Framework Directive (WFD) monitoring campaign report was finalised in 2022.

Rose Rodier's started her PhD project in collaboration with the "Management and restoration of natural and agricultural ecosystems" team. She aims to model the effect of farming and climate changes on the hydrological and salinity balance of the Camargue Delta.

Closing workshop of the MAVA projects on the preservation of freshwater ecosystems in the Mediterranean (7-9 Nov. 2022 - Tepelen, Albania)
© Teresa Zuna

Photogrammetry to study the geomorphological evolution of the EMSC (former Camargue saltworks)

Drone activity at the Tour du Valat started in 2018 to meet the needs of ornithological monitoring and to take panoramic photographs of natural habitats. While the interest of this aerial photography for the Tour du Valat is now well established, the drone can be an additional technical and scientific asset when combined with photogrammetry. The latter provides scientifically interesting results, because they can be measured in terms of distances, surfaces, and volumes that are geographically located in space.

Drone photogrammetry has become an extremely powerful tool for mapping and topography. Compared to other existing solutions, which are much more expensive and time consuming, it can cover large areas very quickly and accurately (centimeter level) with a considerable saving of time.

In the framework of the European REST-COAST project (https://www.rest-coast.eu), photogrammetric measurement campaigns are regularly carried out in the southern part of the EMSC site to study its geomorphological evolution.

Drone piloted by Loïc Willm (Tour du Valat) in the southern part of the EMSC
© Antoine Arnaud

METHOD

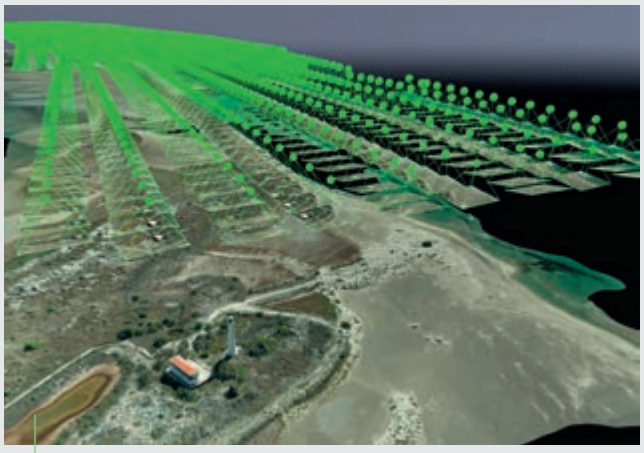
The drone follows programmed flight plans in which it crisscrosses the study area, taking photos at intervals of time or distance so that they are highly overlapping. The difference between the photos that are close provides for stereoscopy (reproducing a perception of relief from two flat images) that is used to determine the "depth" of each pixel.

Thanks to this image overlay process, photogrammetry software is able to assemble a large set of images and produce digital renderings quickly. With these series of interlaced photos (often several hundred per flight) three-dimensional point clouds can be created.

Measurements can then be taken on these point clouds (distances, surfaces, volumes) or 3D models can be created as well as orthophotographs (geometrically rectified and geo-referenced aerial photographs) and digital surface models (topography). These results can then be easily integrated into Geographic Information Systems and serve as reference maps.

In some cases, the final digital model must be precisely calibrated in space, requiring the use of Ground Control Points (GCPs). These are visible markers positioned on the ground in the area to be investigated. Distributed evenly over the entire area to be covered, they each have precise location information. These GCPs are then manually selected in the photogrammetry software..

As part of the EMSC management plan and the REST-COAST project, the Tour du Valat has also been monitoring the development dynamics of perennial and annual Salicornia scrub since the end of salt farming activity and the return to a more natural hydrological system. In 2022, field monitoring was greatly facilitated and digital habitat polygons gained in precision through the production of reference orthophotographs (3 cm pixel) over a very large area: more than 700 hectares.



3D view of the eastern part of Beauduc beach and lighthouse: each green dot represents the position of a photograph taken by a drone

© Loïc Willm

PROJECT LEADERS Loïc Willm (willm@tourduvalat.org) and Antoine Arnaud (arnaud@tourduvalat.org)

TEAM MEMBERS Raquel Ambrosio de la Iglesia, Olivier Boutron, Emilie Laurent and Cécile Puigserver

PARTNERS **Scientific:** Co-managers of the EMSC: Camargue Regional Nature Park and the National Society for the Protection of Nature (SNPN)
Financial: Restcoast project/European Union

Sardinia
© Tour du Valat

Science-Society Interfaces

Mediterranean wetlands are a rare and threatened ecosystem. Yet they are sources of effective and inexpensive solutions to the climate and biodiversity crises. It is therefore urgent to restore large areas of wetlands while ensuring the protection of those that still exist. Fortunately, throughout the Mediterranean, people are speaking out to give these exceptional environments a second chance. The Tour du Valat supports them by leading several networks of stakeholders involved in the conservation of wetlands and their biodiversity.

We have observed that the anthropogenic pressures that directly degrade Mediterranean wetlands, such as soil artificialisation, intensification of agriculture, pollution, overexploitation of water resources, and illegal hunting, are often rooted in poor governance.

Decision-makers who are ill-informed and/or unconvinced of the importance of wetlands will not take the measures needed to ensure the preservation of these ecosystems. Our theme group includes several science-society interfaces whose mission is to inform and raise awareness of decision-makers and society of the need to restore and protect wetlands and to train civil society organisations to better defend and manage them.

THOMAS GALEWSKI | COORDINATOR

PROJECTS

1 The Mediterranean Wetlands Observatory (MWO)

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The MWO develops and synthesises knowledge on the status and trends of wetlands in Mediterranean countries to inform and convince society to take action that will preserve these environments. In 2022, we made significant progress in mapping Mediterranean wetlands, both existing ones and those that may have disappeared, thus providing crucial information that will guide new ecological restoration projects.

2 The National Biodiversity Observatory (NBO)

CHRISTIAN PERENNOU |
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Within the framework of the NBO led by the French Biodiversity Agency, the Tour du Valat continued to facilitate a “Wetlands” thematic group, and to develop 5 new indicators to better monitor the status of wetlands and their biodiversity in France, as well as the pressures they face and the services they provide.

3 The Mediterranean Waterbird Network (MWN)

LAURA DAMI | dami@tourduvalat.org

The MWN is working on improving knowledge of migratory waterbirds, with a particular focus on building the capacity of organisations in charge of monitoring in Mediterranean countries. In 2022, the MWN focused on securing funding for the network’s different activities, while ensuring international training in bird counts open to all Mediterranean countries, organising a discussion workshop between the 15 partner countries, and making two presentations of scientific results to the European Birds Census Council and to the AEWA MOP8.

4 The Mediterranean Wetlands Alliance (MWA)

LORENA SEGURA | **CHRISTIAN PERENNOU**
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The MWA federates civil society to increase the visibility of wetlands in the Mediterranean area, particularly in national and regional policies. It brings together 32 NGOs and research centres from 17 countries. In 2022, its activities included the development of communication and fundraising strategies, advocating for the “Red Alert” mechanism to build advocacy campaigns for the Lake Marmara wetland in Turkey which is threatened by agricultural projects, and to prevent the construction of the “Pisão” dam in the Tagus River Basin in Portugal. The setting up of new projects will make it possible to envisage the resumption of a second training cycle for 15 Mediterranean NGOs, and new, more numerous and substantial conservation micro projects.

5 Mediterranean Lagoons Transfer Unit consortium

VIRGINIE MAUCLERT |
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Blue Crab
© Dimitri Veyssière

The Tour du Valat has been managing one of the five Lagoons Transfer Units since 2001, in partnership with the Occitanie Nature Area Conservancy and the Corsican Environmental Office. This stakeholder support system aims to promote the preservation and restoration of lagoons and their peripheral wetlands in the French Mediterranean. In 2022, at the request of institutional stakeholders, the Lagoons Transfer Unit Consortium is mobilising these stakeholders to combat, based on research and monitoring, the Blue Crab, an invasive species originating from the American Atlantic coast.

The Mediterranean Waterbird Network: Supporting and coordinating waterbird counts throughout the Mediterranean

The Mediterranean Waterbird Network (MWN) is a pan-Mediterranean project started in 2012 to support and coordinate waterbird counts within the activities of the AEWA African Initiative.

Waterbirds include many bird species, most of which are migratory and ecologically dependent on wetlands for at least part of their annual cycle. The Mediterranean Basin plays a crucial role for these species, especially during winter when wetlands in much of Europe are frozen. Their synchronized monitoring, in different countries in mid-January ensures comprehensive knowledge of their conservation status, as well as that of the wetlands. International cooperation across their entire migratory range, as provided by the AEWA, is therefore crucial for the conservation and management of migratory waterbird populations and their native habitats.

The MWN initially arose from a collaboration between the Tour du Valat, the French Biodiversity Agengy (OFB, formerly ONCFS), and the national coordinators of winter waterbird census in five North African countries (Morocco, Algeria, Tunisia, Libya and Egypt). Its initial aim was to:

- improve and develop the quality and quantity of waterbird data in North Africa, through training, development of new tools (e.g., an ornithological guide in Arabic, a shared database), support for data entry and verification, and the search for additional funding;
- enhance data and fieldwork in North Africa, through scientific publications (Sayoud et al., 2017; Dakki et al., 2021) or ones for the general public, while improving the visibility of the people involved in monitoring.

Flock of Sanderling in Algeria
© Djamel Hadj-Aissa

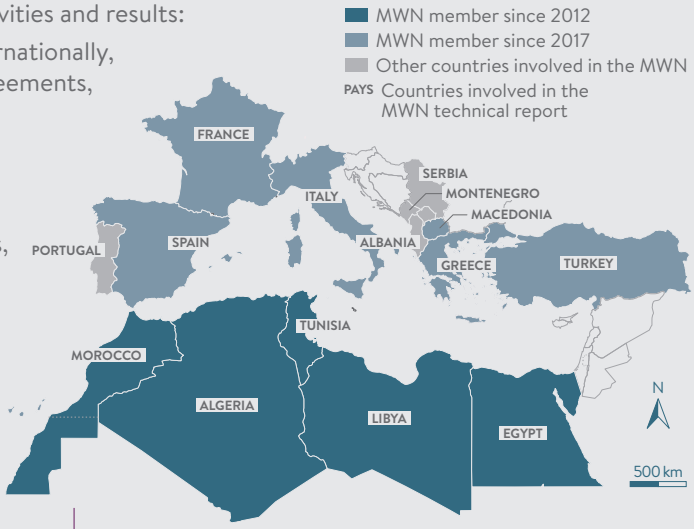
Bird counting and observation training in Tunisia
© Tour du Valat

In 2017, once the North African database had been improved and the scientific articles successfully published, the network chose to gradually open up to ten other Mediterranean countries for scientific exchanges in order to improve knowledge of the status of waterbird populations and monitoring operations throughout the Mediterranean Basin.

In 2023 the network will work to produce conservation recommendations with the addition of new components: the monitoring of illegal hunting activities carried out in parallel with the January waterbird counts (for 8 countries), as well as the development of more advanced statistical models to better estimate population trends of rare species in North Africa (through a thesis that will be conducted until the end of 2025).

The MWN also collaborates with three important international initiatives, which allows for a wider dissemination of its activities and results:

- **Wetlands International:** to enhance data internationally, and have a direct impact on international agreements, in particular the AEWA agreement;
- **the Mediterranean Wetlands Alliance:** to actively contribute to the conservation of wetlands in this region through training and capacity building of civil society organisations, as well as through support for the issuing of "Red Alerts" that warn society of threats to specific sites;
- **the Mediterranean Wetlands Observatory (MWO):** to produce joint scientific articles at the Mediterranean level to better guide wetland conservation measures in the Mediterranean. In a recent study (Popoff et al. 2021), for example, the MWN and the MWO were able to highlight the possibility of extending the network of RAMSAR sites in the Mediterranean, which could improve the conservation of wetlands and waterbirds, especially in the Maghreb countries where this protection status seems to be quite effective (Gaget et al. 2020).



Countries whose associations are members of the MWN
© Tour du Valat

PROJECT LEADER Laura Dami (dami@tourduvalat.org)

TEAM MEMBERS Khalil Baddour, Giorgi Giorgadze (European Solidarity Corps volunteer), Pierre Defos du Rau (OFB) and Thomas Galewski

PARTNERS **Technical:** GREPOM - Morocco, Les Amis des Oiseaux - BirdLife in Tunisia, Direction générale des Forêts (DGF) - Algeria, Association Nationale Algérienne d'Ornithologie (ANAO), Libyan society for Birds (LSB), Egyptian Environmental Affairs Agency, Nature Conservation Sector (EEAA-NCS) - Egypt, Ornithological research Center (ORC) - Turkey, Hellenic Ornithological society (HOS) - Greece, Albanian Ornithological Society (AOS), Macedonian Ecological Society (MES), Bird Protection and Study Society of Serbia (BPSSS), Natural History Museum of Montenegro (NHMM), Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA) - Italy, LPO - France, SEO BirdLife - Spain, Instituto da Conservação da Natureza e das Florestas (ICNF) - Portugal
Financial: the French Ministry of Ecological Transition and Territory Cohesion, the French Development Agency (AFD), The French Facility for Global Environment (FFEM)

© Hervé Hôte / Agence Caméléon

AMÉLIE HOSTE

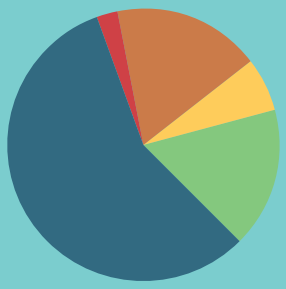
PhD student

"I enjoy studying the growth of the fascinating and enigmatic European Eel in the mosaic of habitats that constitute the Camargue."

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.

PUBLICATIONS 2022



We published a wide range of articles in international journals, with 45 publications by the end of 2022, 33 of which had an impact factor, for an average impact factor of 4,53.

Our activities are not limited to our scientific publications, and our publications are diversified both in terms of nature of the documents (see figure above) and target audience (scientists, site managers, technicians, students, the general public, and others).

SCIENTIFIC PUBLICATIONS	**45**
PHD	**2**
BOOKS / CHAPTERS IN BOOK	**14**
STUDENTS REPORTS	**5**
TECHNICAL DOCUMENTS	**13**

Find all our publications by scanning this QR Code!

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:

- 6,400 publications and theses;
- 490 different periodicals of which 71 are running;
- 51,270 offprints, booklets and reports.

Thanks to our library portal, tourduvalat.centredoc.fr, the centre enables any internet user to:

- discover the most recent publications by Tour du Valat researchers;
- carry out bibliographical research in the document collection;
- 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...

INFORMATIONS

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.

Ph. +33 (0)4 90 97 29 76 / biblio@tourduvalat.org
Document portal : tourduvalat.centredoc.fr

CONVEYING & CONVINCING

In addition to our numerous scientific publications and technical reports, every year we carry out numerous transfer and advocacy activities. These undertakings are essential for furthering our mission "to ensure the conservation and wise use of Mediterranean wetlands by improving our understanding of how they function and mobilising a community of stakeholders".

CONVEYING

TRAINING COURSES AND SYMPOSIA

We regularly organise training activities as well as symposia, conferences, webinars, and seminars.

For example, in june 2022, Tour du Valat organised a training workshop on "ecological restoration of wetlands" for nature managers and practitioners. This training took place on line (streaming and podcasts), and included "virtual field visits". This workshop was supported by the MedWet Initiative, within the "Strengthening Mediterranean wetlands restoration for nature and people" project, which is coordinated by WWF Spain and funded by the MAVA Foundation.

Find the synthesis online: https://tourduvalat.org/en/projects/a-look-back-at-the-ecological-wetland-restoration-training/

All the participants of the 5th International Limnology and Oceanography Days (JILO)
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CONFERENCES AND SEMINARS

The 17th Society of Wetland Scientists (SWS) Europe section conference was organized in collaboration with the Tour du Valat on the theme of "Linking wetland functioning and biodiversity through Nature-based Solutions".

A SYMPOSIUM FOR SCIENTISTS AND NATURE MANAGERS, AS WELL AS LOCAL AUTHORITIES AND GOVERNMENT AGENCIES

For the 5th International Limnology and Oceanography Days (JILO) held in Corte, the Mediterranean Lagoons Transfer Unit consortium participated in this research-management platform. The symposium, organised by the University of Corsica and the Corsican Environmental Office (OEC), brought together researchers and local stakeholders (nature managers, local authorities, and state agencies).

Luma Ateliers Parc, Arles
© Tour du Valat

Our annual conservation biology lecture, initiated to pay tribute to the work of Heinz Hafner for the conservation of waterbirds and wetlands, was given in 2022 by David Gremillet, Research Director at CEFE-CNRS Montpellier and Research Associate at the University of Cape Town.

His lecture entitled “Eco-grief: from mourning to marveling through environmental storytelling” is available for replay at:
https://vimeo.com/780756712

As part of the **14th Camargue and Rhône Delta Festival,** Jean Jalbert, General Manager of the Tour du Valat, Fréderic Lamouroux, Director of the Pont de Gau ornithological park and Jamy Gourmaud, “epicurean” and sponsor of the festival, discussed the theme of scientific vulgarisation.

CONVINCING

SIGNIFICANT INVOLVEMENT IN MAJOR INTERNATIONAL EVENTS

Jean Jalbert during his intervention at the COP27 on climate
© Tour du Valat

During the autumn of 2022, the Tour du Valat was significantly involved in the MOP8 AEWA on the conservation of African-Eurasian migratory waterbirds, COP14 Ramsar on wetlands, COP27 on climate, and COP15 on biodiversity. These were all opportunities to share its experience and develop partnerships.

In this context, the Tour du Valat, the Ramsar Association France, and the French Committee of the IUCN published the appeal “Wetlands are our ‘life insurance’ against the combined climate and biodiversity crises”, to give new impetus to the protection of wetlands.

“RESTORING MEDITERRANEAN WETLANDS”

The new handbook for decision-makers for sustainable management and ecosystem restoration by 2030

This handbook guides nature managers in the development and implementation of wetland restoration initiatives: sharing experiences; case studies of “nature-based restoration” as well as tools and methodologies. It has been developed by the Tour du Valat, WWF Spain, MedWet, MedSea, and the Mediterranean Small Islands Initiative, within the MAVA Restoration / Wetland based solutions project.

The handbook is available here:
https://shorturl.at/koqAR

MOBILISING FOR MEDITERRANEAN WETLANDS

The Mediterranean Wetlands Alliance, through its “Red Alert” mechanism, relayed information several times on how civil society organisations were mobilising. For example, actions were organised concerning the Lake Marmara region, recognised worldwide as one of the 305 key biodiversity areas and 184 important bird areas in Turkey. www.medallianceforwetlands.org

www.medallianceforwetlands.org

You can find all our achievements on our website www.tourduvalat.org and on our documentary portal tourduvalat.centredoc.fr

MEDIA

In 2022, 138 media stories covered our activities: 6 television reports, 7 radio programmes, 81 press articles, and 36 web articles. The threats faced by wetlands were the most common topic this year. For World Wetlands Day, an interview with Jean Jalbert published in La Provence (reproduced in an AFP dispatch and by several national newspapers), recalled that wetlands are disappearing three times faster than forests.

The consequences of climate change, particularly in the Camargue, (rising water levels, the impacts on wine growing) were the subject of several articles. Yet, wetlands are the ecosystems that make the greatest contribution to humanity, particularly facing the societal challenges posed by the combined crises of water, climate, and biodiversity. This final issue was emphasised in a series of articles published when the "Wetlands are our 'life insurance' against the combined climate and biodiversity crises" appeal was launched.

Locally, the Greater Flamingo is still the media star, with reports on its courtship dancing, how it is ringed, and our "Adopt a Flamingo" program! After two difficult years, marked by the Covid crisis, several events were held in 2022 and reported in the press: the traditional "Open Day" organised by the Tour du Valat on 6 February, as well as the "Close Encounters of the Third Kind" evening held at the Tour du Valat in collaboration with Citron Jaune. The Tour du Valat also played an active part in the Camargue and Rhone Delta Festival, and in the "In the Arms of the Rhone" events organised by the Centre Permanent d'Initiatives pour l'Environnement (environmental initiatives centre), as well as in science cafés and other events.

TOUR DU VALAT 2.0

The number of subscribers on Facebook, Twitter, and LinkedIn is constantly increasing.

At the end of 2022, the Tour du Valat Facebook page had 4,220 subscribers (+530 subscribers), while 2,110 people followed us on Twitter (+241 subscribers). The LinkedIn page had 3,408 followers (+1193 followers). Finally, the Tour du Valat and "Adopt a Flamingo" Instagram accounts had 1,452 and 624 followers respectively.

On average, each publication on Facebook is seen by more than 735 users, and results in 42 interactions (shares, likes). The Twitter account records 264 views and 10 interactions (retweets, comments) per publication on average. Finally, on LinkedIn, the publications are seen by 622 users and generate 41 interactions on average. 120 videos are online on our Vimeo channel, with over 6,100 views in 2022.

MOST POPULAR AND SHARED PUBLICATIONS ON SOCIAL MEDIA

- Campaigns for World Wetlands Day, World Biodiversity Day, and World Migratory Bird Day
- Tour du Valat Projects and activities (monitoring, research, life on the Regional Nature Reserve, scientific projects)
- Our participation in COP14 of the Ramsar Convention, COP15 of the Convention on Biological Diversity, and COP27 of the United Nations Framework Convention on Climate Change
- Flamingos and our "Adopt a Flamingo" program
- Information relayed by our partners and by the media
- Ads for jobs, internships and civic service positions

2022 IN NUMBERS

4,220 FOLLOWERS | **280** PUBLICATIONS | **205,909** VIEWS | **11,756** ENGAGED USERS

2,110 FOLLOWERS | **274** TWEETS | **72,209** VIEWS | **2,736** ENGAGED USERS

3,408 FOLLOWERS | **218** PUBLICATIONS | **135,669** VIEWS

1,452 FOLLOWERS | **88** PUBLICATIONS | **23,727** VIEWS

© Hervé Hôte / Agence Caméléon

Left to right

ALEXIA BAUMANN, QUENTIN BETENCOURT, MATHIEU AUNEAU, CÉLINE DECAUX, CHLOÉ LEFEBVRE, LISEL LOSCHENKOHL, VINCENT VUILLERMET, INÉS LARROQUE DE CASTRO, MARGOT METAYER-ROUCHALEOU, GIORGI GIORGADZE, CAROLINA HADDEN, LÉNA MARCHAL, SARA SCOTTO | MAIJU YLÖNEN (ABSENT)

Service Civic and European Solidarity Corps volunteers

"We are happy to be here, in an ideal setting where we devote our time to protecting wetlands, as part of a volunteer experience that combines sharing, discovery, and personal development."

© Hervé Hôte / Agence Caméléon

JEAN-JACQUES BRAVAIS

Administrative and Financial Director

"The Tour du Valat Foundation is truly a unique organisation. It has been a great pleasure for me to contribute to its activities as the Administrative and Financial Director for nearly 20 years! In my previous jobs, assets and capital had numbers or bar codes. At the Tour du Valat, some have a name like 'Joker', the horse on our manade!"

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
- AFD - French Development Agency
- FFEM - The French Facility for Global Environment
- FAO - Food and Agriculture Organisation

NATIONAL PARTNERS IN FRANCE

- Ministry of Ecological Transition and Territory Cohesion
- Ministry of Agriculture and Food
- Rhone Mediterranean and Corsica Water Agency
- OFB - French Biodiversity Agency
- ANRT - French National Association for Research and Technology
- CNRS - French National Research Centre
- Civic Service Agency

TERRITORIAL PARTNERS

- South Region Provence-Alpes-Côte d'Azur
- Bouches-du-Rhône Departmental Council
- Camargue Regional Nature Park
- National Society for the Protection of Nature

OUR PRIVATE PARTNERS & SPONSORS

Founded by Luc Hoffmann in 1994, the MAVA Foundation, whose mission has been to federate strong partnerships to conserve biodiversity for future generations, will close its doors in mid-2023. Its very generous support has been crucial to the Tour du Valat's development, which, at the end of this superb adventure, would like to express its deep gratitude to the MAVA Foundation, its advisory board, and entire team.

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.

A manufacturer of pasta and semolina using organic durum wheat grown in the Camargue, Alpina Savoie 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.

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

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 foundation supports useful initiatives in the field of collective solidarity, knowledge sharing, and promotes terroirs and built - or natural heritage. It chose to support the creation of a web platform dedicated to our Tour du Valat flamingo sponsorship program which enables us to raise public awareness and contributes to the preservation of biodiversity in Mediterranean wetlands.

The Fondation de France supports two multi-disciplinary research projects at the Tour du Valat. Currently, a project applied to agricultural production systems aims to develop an agroecology showcase site on the Petit Saint-Jean Estate in a part of the Camargue located in the Gard, and more specifically a community composting unit.

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.

Terre de liens and Léa Nature / Jardin BiO foundations support a project to introduce chiropterans (bats) into our organic vineyard at the Petit Saint-Jean Estate, as a crop aid to combat grape worms.

The Lemarchand Foundation is extending its support to the Mediterranean Lagoons Transfer Unit Consortium for three years, to ensure the conservation of coastal wetlands by mobilising a community of stakeholders. The main objective of this partnership is to give tools to key players so they can better assess the conservation status of lagoons, raise awareness of the issues, and increase the political will to better preserve them.

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

A historically established company in the Camargue, Listel wishes to become increasingly involved in the preservation of this territory. As part of its global strategy to enhance the species richness of this very special nature and as part of its ethical approach, it wishes to help safeguard biodiversity in the Camargue.

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

LUMA Arles supports us through a project to host foreign students so we can raise their awareness of the impacts and consequences of climate change, and teach them about Nature-based Solutions. Other collaborative work is implemented within the framework of a multi-activity partnership agreement (Atelier LUMA's pilot algae farm, organisation of events and international conferences at LUMA Arles, and hosting of artists).

Roche supports the Foundation's health-environment program through the "ONE HEALTH" approach, which takes into account the close links between human health, animal health, and ecosystem health, as well as raising public awareness of wetlands and their issues.

Continuing a partnership initiated 15 years ago, the TotalEnergies Foundation supports our research programme through a project to restore reedbeds and monitor biodiversity in marshes, as well as the Mediterranean Wetlands Observatory.

As part of a partnership on wetlands restoration in mainland France, WWF France supports several field projects: restoration of agricultural wastelands on the Cassaïre and Petite Forêt sites in the Camargue with the Friends of the Vigueirat Marsh, restoration of degraded wetlands for and through the conservation of the Lestes macrostigma and other endangered damselflies and dragonflies, and the evaluation of intra-lagoonal hydro-ecological continuity within two restoration projects on for the emblematic and endangered European Eel.

BUDGET & GOVERNANCE

The budget for the year 2022 amounts to 6,056,000 €

EXPENDITURE

2,923,000 € have been allocated to the scientific programmes, including **874,000 €** or the "Species Conservation" theme **83,000 €** for the "EcoHealth" theme, **686,000 €** for the "management and restoration of Natural and Agricultural ecosystems", **386,000 €** for the "Wetland Dynamics and Water management", **697,000 €** for the "Science-Society Interfaces", and **197,000 €** for shared scientific activities (scientific management, conferences, training, transfer, project development, etc.).

765,000 € have been allocated to the management of the estates (Tour du Valat and Petit Saint-Jean).

458,000 € 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.).

200,000 € have been allocated to managing the Tour du Valat library, principally the purchase of books and scientific journals.

1,709,000 € have been allocated to ancillary services, which include financial and administrative services, the canteen, building maintenance, and the repairs workshop.

EXPENDITURE IN EUROS

• Scientific programmes	**2,923,000 €**
• Estates management	**765,000 €**
• General management / communication	**458,000 €**
• Building rehabilitation Tour du Valat & Petit Saint-Jean	**200,000 €**
• Ancillary services (administration, library, maintenance, canteen…)	**1,709,000 €**
TOTAL	**6,056,000 €**

RECEIPTS IN EUROS

• Core funds	**537,000 €**
• Agreements with private organizations	**3,400,000 €**
• Agreements with public organizations	**1,649,000 €**
• Revenues from the estate	**260,000 €**
• Various revenue (canteen, accommodation…)	**210,000 €**
TOTAL	**6,056,000 €**

LA TOUR DU VALAT RECEIVES ITS FINANCING FROM A NUMBER OF SOURCES

- **46%** of its receipts come from the MAVA Foundation (2,800,000 €)
- **27%** of its receipts come from partnership agreements with public organizations (1,649,000 €)
- **9%** of its receipts come from its own funds, held by the Pro Valat Foundation (537,000 €)
- **8%** of its receipts are revenues from the estate, canteen, accommodation (470,000 €)
- **10%** of its receipts come from partnership agreements with other private organizations (600,000 €)

BOARD

COLLEGE OF FOUNDERS

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

COLLEGE OF EX OFFICCIO MEMBERS

- **Marie-Cécile Lenglet**
  Sub-prefect of Arles, representing the French Home Office
- **Jean-Luc Parrain**
  Regional Academic Delegate for Research and Innovation representing the Ministry of Higher Education, Research and Innovation
- **Sébastien Forest**
  Regional Director for Environment, Planning and Housing (PACA), representing the Ministry of Ecological Transition and Territorial Cohesion
- **Patrick de Carolis**
  Mayor of Arles, representing the Town Council of Arles

COLLEGE OF EXPERTS

- **Dr. Gordana Beltram**
  Ministry of the Environment and spatial Planning, Slovenia
- **Dr. Clairie Papazoglou**
  Associate Secretary, Consultant in European policies for NGOs, Cyprus
- **Antonio Troya**
  Treasurer, Director of the International Union for the Conservation of Nature - Center for Mediterranean Cooperation, IUCN Med - Malaga, Spain
- **Dr. Tobias Salathé**
  Secretary, Ramsar Senior Advisor for Europ, Gland, Switzerland
- **Thymio Papayannis**
  Honorary member, MedWet senior adviser, President of MedINA, Greece

SCIENCE AND CONSERVATION COUNCIL

- **Dr. Patrick Duncan**
  President, Research director CNRS (French National Centre for Scientific Research), Laboratory of Chizé (retired), France

Members of the Board, 6 December 2022
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- **Prof. Debbie Pain**
  Vice-president, Honorary Professor, School of Biological Sciences, University of East Anglia; Honorary Research Fellow, University of Cambridge, United Kingdom
- **Prof. Wolfgang Cramer**
  Research Director (CNRS), Professor of Global Ecology, Mediterranean Institute for marine and terrestrial biodiversity and ecology (IMBE), France
- **Prof. Nick Davidson**
  Nick Davidson Environmental, United Kingdom & Institute for Land, Water & Society, Charles Sturt University, Australia
- **Prof. Phoebe Koundouri**
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  Head of the Land Biodiversity Team WWF France, France
- **Dr. Ana Rodrigues**
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- **Prof. Timothy Swanson**
  Professor of Economics, Centre for International Environmental Studies, Switzerland
- **Dr. Ruth Cromie**
  Chair of Technical Committee for UNEP Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), United Kingdom
- **Prof. Elena Kazakou**
  Professor of Comparative Ecology of Organisms, Communities and Ecosystems, Montpellier SupAgro, France

TO JOIN US

No matter how small, all of your donations make a difference and help the Tour du Valat continue working for the common good. There are several possibilities to support wetlands research and conservation.

More than 2,500 sponsors have already joined the adventure and adopted flamingos. The more people who adopt a flamingo, the more the species will be monitored, understood, and protected in the Mediterranean.

So, why don't you adopt a flamingo now?
monflamant.com

ADOPT A FLAMINGO

The Tour du Valat invites you to "adopt a flamingo" for a year, or more if you feel like it. A fun way to learn more about this mysterious bird. It is also an original way of preserving the wetlands that these birds love so much and without which they obviously cannot live.

Just browse through our website monflamant.com and you're sure to find just the right flamingo for you. There are many to choose from: you can adopt one of our mascots, discover the fabulous stories of our four flamingo families, and find the one that best corresponds to you, or choose a flamingo according to his or her age and sex... and give him or her the name of your choice.

TAX-DEDUCTIBLE SUPPORT

The Tour du Valat Foundation is recognised as a public interest organisation and is therefore entitled to receive donations. 66% of your donation is tax deductible up to a limit of 20% of your taxable income (for French residents). A 100 € donation will only cost you 34 € after tax deduction.

MAKE A DONATION OR BEQUEST

If you share the same values as the Tour du Valat, if you appreciate the quality and independence of our work, and if you are convinced that a healthy natural environment is essential for building tomorrow's world together, you can act in the long term and support us in our work by making a donation or a bequest to the Tour du Valat Foundation. We will assist you in this process, in accordance with the law and with respect for individuals.

For further information, do not hesitate to contact our specialist Anne Ackermann:
04 90 97 20 13 / ackermann@tourduvalat.org

WE NEED YOU!

To support our work and learn more about our different activities, you can visit our online payment platforms:
tourduvalat.org/en/support-us/faire-un-don **and** www.monflamant.com

VISITING US

TOUR DU VALAT ESTATE

Private estate open exceptionally on occasions each year to the general public:

- on World Wetlands Day (February);
- on the Festival of the Camargue and the Rhône Delta (May);
- together with the Bureau des Guides Naturalistes (BGN), paying guided visits on reservation.

Two sites are also open to the public on a permanent basis:

- the Verdier Marshes, located north of the village of Le Sambuc on D36;
- the Grenouillet Lagoon observation platform located on the road from Fiélouse to Le Sambuc that links D36 road to the Vaccarès Lagoon, just north of the Tour du Valat.

PETIT SAINT-JEAN ESTATE

Tour du Valat agro-ecological farm and wine estate, where guided tours and wine tasting are organised:

- during the "Farm to Farm" event (April);
- on the Festival of the Camargue and the Rhône Delta (May);
- in partnership with Passion Nature Camargue - paying visits and tastings on reservation;
- together with the BGN, paying guided visits on reservation;
- group visits possible on reservation at petitsaintjean@tourduvalat.org

If you wish to receive information about the programmes and other events organized at the Tour du Valat for the general public, you can apply by filling in the form on our website please contact us at: secretariat@tourduvalat.org

WWW.TOURDUVALAT.ORG

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