

Transcript

00:00:05:03 - 00:00:25:05

James Shooter

It's midnight and I'm stood on a dirt track surrounded by coastal lagoons in southeast France. My bed is calling me, but I've been tempted out of my camper and into the night. There's a sea of glistening stars above me. But a new moon means I've lost the lunar spotlight that would normally help me navigate. The landscape has been painted black.

00:00:26:11 - 00:00:48:16

James Shooter

I can't see them. But those weird and wonderful sounds around me in the background are hundreds of roosting flamingos. One of the icons of the Camargue and a beneficiary to the restoration of these Mediterranean wetlands. It's worth missing out on a bit of shut eye to be surrounded by their calls. I am very excited to try and lay eyes on them in the morning.

00:00:49:11 - 00:01:03:03

James Shooter

I'm James Shooter, host of The Rewild Podcast, and this is Tour du Valat.

00:01:07:02 - 00:01:32:22

James Shooter

We've taken a couple of weeks to slowly travel the length of France and being the closest continental country to the UK, my home. It's hard not to draw a few comparisons whilst traveling along the roads. Firstly, there seems to be kestrels everywhere here. Each kilometre of highway seems to bring up a new territory. The beating wings of these little falcons working overtime, allowing them a few stationary moments whilst they pinpoint their next meal below.

00:01:33:18 - 00:01:51:23

James Shooter

Forgive the cliché, but when I was a lad, this is how I remember our motorways to be. Kestrels hunting along roadside verges is a sight I sorely miss. Equally there doesn't seem to be any litter piling up on French roadside verges. It's almost as if people aren't just throwing their rubbish straight out of their car windows here.

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James Shooter

Weird. As we reach the Camargue, there's a real sense of excitement as wildlife sightings kick up a notch. Cattle, little and great egrets are flying overhead. Cetti's, warblers are shouting at me from secretive spots in the reeds, joined by the anthem of the Mediterranean tree frogs singing from the ditches. I even get a rare glimpse of a pair of water rail just ten meters from the road, which is usually just out of sight and the blur of a weasel sprinting across the road, waving a small but enthusiastic flag for team mammal.

00:02:22:06 - 00:02:47:04

James Shooter

It feels like anything can happen here. One thing's for sure where there's water, there's life. I've come to this part of France to meet the team from Tour du Valat, an estate on the Camargue, dedicated to the restoration of these Mediterranean wetlands. Bonjour Arnaud. Welcome to Tour du Valat. Thank you very much. Nice to meet you.

00:02:47:05 - 00:02:47:23

Arnaud Bechet

Nice to meet you.

00:02:48:04 - 00:03:09:07

James Shooter

Yeah. This place is amazing. We're by the grand old farmhouse at the centre of 2500 hectares, a saltmarsh, wetland, lagoon and scrubland. Here the mighty Rhone River is on the last leg of its journey. Having brought fresh water all the way from the Alps to the edge of the Mediterranean Sea. Arnaud Bechet is one of the researchers here.

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James Shooter

After studying ecology and evolution from the nearby university of Montpellier, he carried out his Ph.D. in Quebec studying snow geese.

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Arnaud Bechet

And then, because of my expertise in population dynamics, I got this position at Tour du Valat to take over a long-term study on the Greater Flamingo, which was initiated in the seventies by Alan Johnson.

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James Shooter

Alan was originally from the UK but moved to the Camargue in the early 1960s. Saving the dwindling population of Greater Flamingo here became Alan's life's work. One of the main causes of decline appeared to be the erosion of the islands in which they used to nest. Alan and his team managed to entice the flamingos to manmade islands using artificial nest mounds and their numbers began to rebound. Since 1977

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James Shooter

a long term ringing project helps the team at Tour du Valat monitor the population, work that Arnaud now leads today.

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Arnaud Bechet

We realized that they were dispersing a lot between the different breeding sites in the Mediterranean. They have particular population dynamics with some sedentary birds, some migratory ones that were migrating every year across the Mediterranean to North

Africa. And we have learned a lot on these birds through this research program. Flamingos are really a flagship species for our institute, but also for the conservation of Mediterranean wetlands.

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James Shooter

Flamingos have a very important job on their hands then. These charismatic ambassadors draw in much needed attention to the wealth and health of habitats on the Camargue. Humans have, of course, had their own influence here, too, battling to control levels of salt and water in the landscape for a variety of different reasons.

00:04:55:05 - 00:05:14:18

Arnaud Bechet

Also, we have a delta which has been managed for now 150 years with several compartments and one very saline compartment for the production of salt and another more agricultural compartment where salt water has to be removed and fresh water has to be brought for crop production.

00:05:15:01 - 00:05:31:19

James Shooter

The history of the estate is a fascinating one, bought by legendary Swiss conservationist Luc Hofmann in the 1950s. A passionate ornithologist, he started to study birds at Tour du Valat, but seemingly ahead of his time, his focus soon switched beyond the perimeters of the land he had so recently acquired.

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Arnaud Bechet

Luc Hoffman, I think, earlier realized that water birds from the Camargue were connected to other wetlands in the Mediterranean. He also saw the threats that were threatening all the wetlands in the Mediterranean. So he was involved in the preservation and conservation of Doñana in the south of Spain, in Prespa Lake in Greece. And he was also involved in the implementation of the Ramsar Convention, which is the convention dedicated to the conservation of wetlands worldwide.

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James Shooter

A true pioneer for wetlands across the globe. And just like Luc, Tour du Valat as an organization now thinks much bigger than its immediate surroundings. The goal here is to better understand the natural processes at play and to demonstrate restoration efforts that work. The team at Tour du Valat are well-respected around the globe and their emphasis on sound science, empowers their advocacy work and allows them to advise other practitioners.

00:06:32:23 - 00:07:06:04

James Shooter

If rewilding is to work at scale, we need restoration teams to always be thinking beyond their own patch. Globally, wetlands have been disappearing at an alarming rate thanks

to our constant attempts to control water. Here in France, 50% of wetlands disappeared between the three decades from 1960 to 1990. After a catastrophic flooding event in the mid-19th century, the Rhone River was shackled with embankments and dikes, a fortress of flood defenses to ensure the Rhone was now controlled, stifling its interaction with the delta beyond.

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James Shooter

Since then, further manipulation of water has taken place to assist with agriculture.

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Arnaud Bechet

So that the natural dynamic process of sedimentation, erosion, all this was lost toward a more intensively managed system where all the fresh water which is brought into the delta is brought by artificial pumping, mostly for the production of rice.

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James Shooter

Intensive agricultural systems, not only attempt to control water for increased production, but the use of herbicides and pesticides can really harm natural systems and the life that lives there. But we do have to eat. So what's great to hear is that Tour du Valat has a close relationship with some of the local producers, and they're working together for the greater good.

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Arnaud Bechet

There are a lot of farmers that are now moving to organic agriculture, organic rice production. They are trying to change their practice. We assist them to change their practice and to be more biodiversity friendly in their practice.

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James Shooter

Something that has never really crossed my mind was that flamingos could be considered a nuisance. What could these fancy birds ever do wrong? They're so chic and sophisticated. Why they're not all wearing top hats. I just don't know. But if you're a freshly planted rice seed, these birds are your nemesis. And as a result, flamingos and rice farmers have been in conflict for decades.

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James Shooter

Enter science.

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Arnaud Bechet

Because of science, we are able to show and to demonstrate that flamingos were preferring the rice fields that were large and without any hedges because they were frightened by the closed areas. So we encourage farmers to replant hedges around their

fields. Those farmers that have done that now, they can tell that they have less damage and it's a kind of success story.

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James Shooter

Planting hedges might not seem like a large rewilding action. But harmonious living with wildlife is such an important feature in an increasingly busy world. So often agriculture and nature are pitted against one another. Nature must be controlled to produce food. And farming is always detrimental to nature. But farming is an integral part of our society. And so we must find ways to blur the lines between the two so that nature friendly farming can support larger core rewilding areas.

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Arnaud Bechet

We also own a herd of 300 cattle and we sell the meat. We also sell to some a few breeding horse and we sell some rice that we produce over 20 hectares and we try to be exemplary in the way we produce rice. Also, it's a way to manage habitats because the bulls they will graze important habitats for grassland birds, for instance.

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James Shooter

Where food is produced in a way that doesn't just limit its impact on nature but actually assists its recovery, it usually sells at a premium and that extra money can then get channeled back into further restoration work. It just needs a jazzy marketing campaign for people to buy into. Perhaps we'll see flamingo friendly farm food in store soon, although I wonder what that sounds like in French...

00:10:21:24 - 00:10:24:07

Google Translate

Nourriture de la ferme adaptée aux flamants roses.

00:10:24:23 - 00:10:48:10

James Shooter

Hmm. Maybe not. Perhaps I'd better leave it to the French to come up with something better. Another threat to the wider Camargue ecosystem has been wildfowling, the shooting of ducks and geese in the winter. It doesn't necessarily sound like the issue is the numbers of birds being killed, but the equipment used. Lead has by far been the most commonly used ammunition in shotguns up until now, which is incredibly toxic to wildlife.

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James Shooter

However, a landmark EU wide Ban has just come into play in February this year, meaning nontoxic ammunition must now be used in, or within 100 meters of wetlands across 30 different countries. This is a game changer and campaigners say it will take a million waterbirds a year dying from lead poisoning. I'm meeting up with Delphine

Nicolas now back at base to squeeze into a pair of neoprene waders so I can join her for some fieldwork in a nearby lagoon.

00:11:17:10 - 00:11:23:13

James Shooter

With all this water running through its veins, this is a landscape designed for fish.

00:11:25:16 - 00:11:35:05

James Shooter

Bonjour Delphine! How are you? How are you? You okay? Yes. Nice to see you. Okay. Yes.

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Delphine Nicholas

I think it must be this one, because it's big feet!

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James Shooter

I do have big feet. Will you be able to just explain quickly where we are, what we're doing, what we'll hope to see?

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Delphine Nicholas

Yes. Here we are next to the Vaccarés lagoon, and we are going to proceed to do a scientific survey. So we have several nets in the Vaccarés, in across the pond. And we will go to see what we have in these nets. So the aim is to, um, to look if we have glass eel. This was a juvenile of the European eel.

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Delphine Nicholas

It is a long travel from the sea. And so when they have just arrived from the sea, they are totally transparent. But the fact is, they travel again several kilometers to arrive here, they are already times to get pigmented. Okay.

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James Shooter

Well, so that's what recording the pigmentation allows you to do is see how fast it has travelled from the sea to here.

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Delphine Nicholas

Yeah. And if it is totally pigmented, it means that it is a glass eel, which is in the system since a while.

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James Shooter

The nets here are unbaited. They're basically long, thin tunnels that allow small aquatic life to drift into and are checked daily. And the contents are poured into a small white tray to see what's around. This lagoon is currently saltier than the sea, mainly due to the lack of rainfall over recent years. So whilst the diversity of species may not be huge.

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James Shooter

It's abundant with salt tolerant species that take advantage of the niche. Wow. Lots of shrimps. Yeah.

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Delphine Nicholas

Oh, beautiful. It's the same family of the Hippocomp.

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James Shooter

The seahorse? So, pipe fish.

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Delphine Nicholas

Yes. Yes, I think so. Exactly.

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James Shooter

Basically a straight seahorse.

00:13:50:22 - 00:13:52:05

Delphine Nicholas

Yes, exactly. Yeah.

00:13:52:21 - 00:14:03:01

James Shooter

The first two nets draw in four or five species of shrimps, two species of goby and a huge amount of pipe fish. But it's down to the last net to see if we capture the glass eels we're looking for.

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Delphine Nicholas

Glass eel!

00:14:08:09 - 00:14:10:02

James Shooter

Yaaaaay!

00:14:11:14 - 00:14:12:02

Delphine Nicholas

Yippee!

00:14:13:00 - 00:14:13:11

James Shooter

This really thin one?

00:14:14:00 - 00:14:22:13

Delphine Nicholas

Yes. So we'll take and you can see it is already quite pigmented.

00:14:22:23 - 00:14:44:22

James Shooter

Yeah, it is. Yeah. It's the end of the recruitment period for the eels. So we only capture another seven from the last net. They'll be taken back to the lab for measurements and to record their level of pigmentation before being returned to the lagoon. Combining this date with a study for eels next to the sea. It allows the team to understand the connectivity of habitats and how long it takes them to reach their destination.

00:14:45:15 - 00:14:58:04

James Shooter

The Camargue is a dreamy place for a fisheries researcher to work. There are so many elements that combine to make it rich in life beneath the surface. As I found out, though, most of Delphine's work though is on the fascinatingly weird European eel.

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Delphine Nicholas

The European eel is an emblematic species of Mediterranean lagoons, and in the seventies it was considered as a pest because it was very, very dense. But since then it has drastically declined and it's considered now as critically endangered of extinction. And its decline has resulted from a multitude of reasons.

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James Shooter

European eels are migratory and the entire population breeds in one location, the Sargasso Sea. The larvae then drift towards Europe on a 300 day, 6000 kilometre migration metamorphosing at the coast into glass eels. Their next life stage. After reaching their continental habitat, they metamorphose again into elvers, many of which migrate upstream. I've actually been swimming in Scottish rivers back home and seen these strange beings on their migration.

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James Shooter

Unlike salmon which dramatically leap up waterfalls, these elvers leave the safety of the water to wriggle up vertical rock faces to get around these natural barriers. I can tell you now my jaw was to the floor at the time, mesmerized and admittedly confused as to what I was watching. They actually took my mind off the biting cold water for a few moments.

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James Shooter

The Scottish Highlands are a wee bit chillier than the Camargue.

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Delphine Nicholas

And so that's why in Mediterranean, we have a shorter growth period and it would be between two and four years for males, and six years for females. But in the north of Europe, it will be a minimum of 20 years to produce a female. Since seventies, the continental habitats of the European eel have degraded a lot, both in terms of quality and the surface.

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Delphine Nicholas

Mostly due to contamination. Also, obstacle construction.

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James Shooter

Obstacles like large dams hinder these incredible fish as well as parasites, predation, fishing pressure and pollution. It's safe to say they're up against it. Delphine and her team are doing some pretty cool research, tagging and tracking the eels. This not only allows them to learn about the species itself, but to record results for the interconnectivity of habitats for fish across the Camargue.

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Delphine Nicholas

Telemetry survey enables us to study the movement of fish within their own environment. So the principle is to target the fish with a mark having a unique number that will be registered by listening station and this listening Station must be located at key points. So inside the aquatic habitat, so that you will be able to know if the individual came through.

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Delphine Nicholas

So such survey will enable, for instance, to study the dynamics of the eel outmigration so you can study when does it occur, if it's very punctual during the time or if it last over several months, we can try to see if we can predict it from specific environmental signals. And so this could help to implement some management action.

00:18:07:22 - 00:18:31:02

James Shooter

This capture, mark, recapture survey of European eels has been going on since 2001. Over 20 years of data being utilized to assist fish migration through the network of embankments on the Camargue. This is research, a restoration and a fine example of sound science being the foundation of work on the ground. And if you improve connectivity for eels, you improve it for other fish species to.

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Delphine Nicholas

Coastal habitats such as estuaries, lagoons or marshes are essential habitats for many migratory fish species since they play a nursery ground for the juvenile stage and these habitat, so they are appropriate for the survival and the growth of numerous young individuals that will join the reproducing stock at sea.

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James Shooter

By improving the quantity and quality of wetlands and the overall connection to the sea. Commercial fish species for the Mediterranean, such as common sole, sea bass and sea bream, will all improve in numbers too. Of course, this shouldn't be just for the purpose of fishing, but I think we'll find the large scale restoration of nature moves a lot quicker if we can showcase the economic opportunities too. Invest in nature and we all benefit. With climate change knocking at the door,

00:19:22:02 - 00:19:33:15

James Shooter

part of Delphine's research has been looking at extreme weather events on fish communities in Slovenia and in the Camargue, warmer temperatures and less rainfall can cause stressful conditions for fish in poorly connected habitats.

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Delphine Nicholas

Especially here in Camargue and fish can get trapped in unfavourable habitats, thus, again, improving connectivity with upstream river system and the sea is crucial to enable fish to join a more oxygenated, shaded and deeper refuge area depending on the salinity.

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James Shooter

Research works best when shared. Tour du Valat is one of several partners, including the Migratory Mediterranean Association and French Biodiversity Agency working on the European Eel Conservation Plan. The more our collective knowledge improves on threatened species, the better our management actions will be. When I ask Delphine her hopes for the future, she tells me she's going to answer with her dream scenario. Against all these challenges.

00:20:20:01 - 00:20:23:10

James Shooter

we definitely need dreamers on the team fighting back for nature.

00:20:24:12 - 00:20:52:21

Delphine Nicholas

For success. If I mean, I took it like a dreaming. Yeah. Yeah. So in my dream. Direct connection to the Rhone River has been restored to ensure a more regular and inhabitant quantity of freshwater inputs inside the delta of Camargue. Furthermore, the

whole agricultural producers have all turned to organic practices which ensure a good quality of the freshwater inputs.

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Delphine Nicholas

Open connection to the sea is now naturally functioning and enable the circulation of the fish fauna, the European eel is now in great habinance and it can easily circulate over the whole delta to grow and accumulate plenty of good quality energy. So it does now a good probability to reach back its reproduction sites on the other side of the Atlantic Oceans and to successfully reproduce.

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Delphine Nicholas

And even fishermen now can exploit it in a sustainable way, with good conscience.

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James Shooter

For Delphine's dream to become reality. We all have a role to play, not just those on the doorstep of the Camargue. The habitats here are under stress, and whilst the people on the ground can affect physical changes to the best of their ability, it won't be effective unless we all act to limit global warming. It's a huge battle, but I genuinely believe it's achievable if we work together on a global stage.

00:21:49:23 - 00:22:14:06

James Shooter

I'm getting back on dry land now. To join Mark Thibault, project leader for wetland restoration here. He's keen to show me the former salt works area where, after many years of manipulation, the water flows are being returned to a more natural state. Marc? Bonjour! Nice to meet you. I do.

00:22:14:06 - 00:22:18:21

Marc Thibault

I park my car. Would you spend the night here?

00:22:18:22 - 00:22:23:01

James Shooter

Yes. To the sound of the flamingos. Nice. It was very nice.

00:22:23:01 - 00:22:24:15

Marc Thibault

So that was good for sound recordings?

00:22:24:19 - 00:22:33:11

James Shooter

Yeah, yeah, yeah, it was. I went out at, like, 11, 11 p.m. last night, and they were all quite close, so it's nice to get that sounds.

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Marc Thibault

Maybe you get recordings of shorebirds as well?

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James Shooter

Yeah, I think so.

00:22:36:14 - 00:22:38:02

Marc Thibault

Dunlins or redshanks?

00:22:38:04 - 00:23:03:05

James Shooter

There's lots of calls I don't recognize, which is quite exciting. Okay. So, so every now and again I do like redshank and and yeah dunlin and, and things like that. But you know, there's quite a few that I think Oh what's that? And then I can't see anything because of the reeds. So it's hard not to get distracted by 30 or so flamingos or so.

00:23:03:17 - 00:23:10:05

Marc Thibault

What is nice is when you have very cloudy conditions like today, it's actually when the colour of the flamingo are the brightest.

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James Shooter

Yes, I can imagine that.

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Marc Thibault

Whereas if we had the strong sun, they would look a lot more whitish and dull. But when it's cloudy, like like today, it's really brilliant.

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James Shooter

Yeah, they look amazing.

00:23:22:05 - 00:23:25:08

Marc Thibault

The now is the time of the year when they start displaying.

00:23:25:10 - 00:23:45:11

James Shooter

Mhm. To be honest I thought I was leaving grey skies and high winds behind me in Scotland, especially when visiting the south of France. But if it makes the flamingos look even more glamorous, then I guess I can forgive the lack of sunshine on that front. The

weather plays an important role here across the seasons, opening up ecological niches in times of high and low water.

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Marc Thibault

When you have low pressure events, the sea flows into the lagoons, whereas during high pressure periods or when there is a strong northerly wind, the water from the lagoon will flow out to the sea and this water circulation is very important aspect of the hydrological functioning of all of these coastal wetlands. Another aspect is importance of the dry and the wet season, because here the Mediterranean climate is very dry.

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Marc Thibault

So in summer when we have high pressure system and we have strong evaporation the water level in the coastal lagoons will we will reduce a bit. And as we have exposed areas of mud, this period when the ground is not flooded is critical as it's when the salt marsh vegetation here in the Mediterranean, the seeds will germinate and the vegetation will grow.

00:24:51:14 - 00:25:19:23

James Shooter

Salicornia, otherwise known as glasswort or marsh samphire, depending on where you're from, makes up a large part of the saltmarsh here. Unsurprisingly, this is a salt tolerant plant; halophytic, if you'd like the posh version. It's edible, but again, unsurprisingly, rather salty in taste. Apparently it goes well as a side dish to fish, although I hear to some it's also known as chicken toe due to the shape of its stems, which admittedly makes it slightly less appealing.

00:25:20:16 - 00:25:44:16

James Shooter

More importantly than its taste, it makes for important breeding grounds for small songbirds. Snazzy little things like spectacled warbler, threatened across most of France are doing well here. That's down to the returning habitats. But overall, salicornia scrub is a declining feature of coastal wetlands, mainly through urban encroachment and here on the Camargue by salt works, changing the hydrology of their natural habitats.

00:25:45:06 - 00:26:10:17

Marc Thibault

Massive construction works were completed here in the 1950s onwards. Each of the lagoons were surrounded by dikes, and also dikes were built around the of coast. So in total, we have several dozen kilometres of dikes which were built for the purpose of salt production and also several pumping stations were set up for the water circulation. Up to 15 years ago

00:26:10:17 - 00:26:43:12

Marc Thibault

this used to be the largest salt work in Europe, which was covering 12,000 hectares. During several decades, the wetlands had a very artificial functioning and producing salt in industrial quantities. For example, the ponds would be filled with brine during spring and summer and these ponds would be drained in winter. Whereas here usually we have high water level in winter and low water only in summer.

00:26:43:24 - 00:26:47:13

Marc Thibault

So the hydrology was completely transformed.

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James Shooter

Now I'm not an expert in salt marsh ecology, but even I can figure out that if the seasonal hydrology of a natural system is completely flipped on its head, it's not going to be good for nature. The largest producer on the Camargue is said to supply half a million tonnes of salt a year. This isn't just so you can romantically sprinkle crystals of French sea salt on your roast potatoes.

00:27:09:03 - 00:27:22:17

James Shooter

It has many different uses in the chemical and pharmaceutical industries, from the cooking of wood chips in the paper industry to the gritting of icy roads in winter. A change of ownership, though, has meant part of the former salt works is now under restoration.

00:27:23:02 - 00:27:58:13

Marc Thibault

So here in the former salt works, what's important is that, what's important to know is that the area was purchased by Conservatoire du Littoral 12 years ago. Conservatoire du Littoral, literally it's a coastal agency. It's a state agency which is conducting a policy of land purchasing in coastal areas all over France. Basically the project is to transform these artificial salt works into a more natural Mediterranean coastal wetlands.

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James Shooter

Oh, this kind of thing fills me with hope. Actual governments taking the action they need for the benefit of nature and people. And this isn't a new thing for France. The Conservatoire du Littoral was set up in 1975 to preserve and restore a significant part of coastal natural spaces and to make them accessible to all. This feels like part of Delphine's dream scenario, except it's actually happening.

00:28:22:20 - 00:28:39:06

James Shooter

Can we all have a Conservatoire du Littoral, please? This State Department signs 3 to 400 deeds a year to bring plots into public ownership with the aim of creating a larger network of 1000 natural sites in good condition, making up 320,000 hectares by 2050.

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Marc Thibault

For example, just here we have an area. 12 years ago it was completely devoid of vegetation because in the past it used to be an area where brine salt water is very high, concentration of salt was brought there. So all the vegetation of the salt marsh has disappeared. And simply by restoring a natural hydrology with alternating flooding in winter and prolonged drought in summer, and by circulating fresh water in winter to export part of the salt that is stored in the sediments, the vegetation is recolonising this area actually quite fast and there is a very impressive landscape change.

00:29:23:11 - 00:29:59:07

Marc Thibault

The embankment of the Rhone River was achieved in the 19th century, but there is almost no natural water flowing from the Rhone river to the delta anymore. And as a consequence is that there is very little sediment input from the river as compared to the past, when the Camargue was a very wild delta and there were occasionally massive flooding events and also the Rhone River would change its course up to the sea quite regularly.

00:29:59:17 - 00:30:08:01

Marc Thibault

So you have to imagine that in the past this delta was an extremely dynamic ecosystem, which is not the case anymore today, because of the amendments.

00:30:08:05 - 00:30:37:05

James Shooter

On the one hand, the restoration of natural habitats of the Camargue seems incredibly complex to achieve. The richness of the delta is made up from subtle shifts in salinity between fresh and seawater controlled by river, tide, wind and wave to build an intricate mosaic of patchwork habitats, dynamically rotating as these forces ebb and flow across the seasons. On the other hand, one simple action above all else will return the abundance and diversity of life that the Camargue can muster: water flow.

00:30:38:10 - 00:31:15:00

Marc Thibault

So for the coastal lagoons habitat, the restoration process is a bit more complex and takes a lot more time because to have coastal lagoons with a natural hydrological functioning. These coastal lagoons should be connected to the sea, but they also should be connected to the surrounding watershed. So one first aspect is a connection to the sea, because this connection was lost during all the times this area was used for salt production because there were some dikes and of course the seawater was brought into the lagoons with pumping, but there was no natural flow anymore.

00:31:15:00 - 00:31:31:12

Marc Thibault

So we wanted to restore this natural flow as much as possible. And actually to achieve this was quite amazing, is that we haven't done anything because it is the Mediterranean Sea that has made the job.

00:31:31:23 - 00:31:53:20

James Shooter

Give nature half a chance and she'll reclaim. We'll find it's a lot cheaper too. During several sea flood events, the dikes built along the coast were breached and new channels dug out by the currents. These coastal lagoons now have a newfound connection to the sea and migratory fish have been able to recolonise them using their shallow waters as protection from larger predators of the deep.

00:31:54:05 - 00:32:01:23

Marc Thibault

Since all this is working well, even the local fishermen are impressed by the quantities of fish that are to be found in the lagoons which are connected to the sea.

00:32:02:13 - 00:32:11:16

James Shooter

It's not just the fishermen who are seemingly impressed by the increased numbers of fish. As we walk along the side of the lagoon, Mark spots one of the Camargue's star species.

00:32:12:09 - 00:32:15:22

Marc Thibault

You see this gull with the pinkish colour? Yes. It's a slender-billed gull.

00:32:16:07 - 00:32:18:20

James Shooter

That's the one. Yeah. Okay. That's the first time I've seen it.

00:32:18:20 - 00:32:30:01

Marc Thibault

Same size as black headed gull. But it's a no black on the head and we've got a nice pinkish colour. It's really.

00:32:32:12 - 00:32:58:05

James Shooter

Wow it's really pink. Now, for any gull fans out there, I apologise in advance. I must admit I don't normally get excited by them. I said it and I'm sorry, but I do make an exception for this slender-billed gull. It is a triumph of gull aesthetics, crimson red legs with a beak to match, a pastel pink waistcoat and an elongated head that blends perfectly from forehead to bill.

00:32:59:02 - 00:33:13:08

James Shooter

It looks like it might have been designed by engineers, for perfect gull aerodynamics. And here in the Camargue is the most important place in France for them to breed. Away from the power of the sea, lagoons require a bit more input to help things along.

00:33:14:10 - 00:33:42:24

Marc Thibault

But then when we go further inland, the restoration of the coastal lagoons is not as successful as we would like. It's mainly because we have been facing here in south of France, several dry events in the last few years. We have very dry conditions. We are lacking rainfall actually. It's a balance between fresh water and saltwater and in some of the coastal lagoons, which are very far from the sea, is not very satisfying. In summer,

00:33:42:24 - 00:34:02:16

Marc Thibault

sometimes we have we have too much salt concentration and it's not good for the fish. The next step is to bring fresh water from the Rhone river to the coastal lagoons, to have a better balance between saltwater and freshwater. But it will be a long process because today the Rhone river is several kilometres away from here. We have to go through private properties.

00:34:03:06 - 00:34:27:04

James Shooter

This is a big challenge, not because local people don't want to see restored ecosystems, but because the debate here is between rewilding vs disaster risk management. It's between allowing water free reign to shape the unique habitats once again and the possibility of looking out the window and seeing floods coming towards your door. Just 30 kilometres up the Rhone river is the city of Arles and its 50,000 inhabitants.

00:34:27:18 - 00:34:59:22

James Shooter

Over the next few decades, sea level rise is a very real threat. The people of Arles live at just ten meters above sea level. If I live there, I'd be nervous too. Restored ecosystems and improved interconnectivity of habitats can work towards mitigating the effects of climate change locally, but will also contribute to limiting global warming overall. Coastal wetlands that function naturally have the ability to filter pollutants from the water, store significant amounts of atmospheric carbon, and to protect communities from flooding and storm surges.

00:35:00:11 - 00:35:07:04

James Shooter

They're a vital element in reversing biodiversity loss and delivering on climate solutions. But they need space to be effective.

00:35:07:18 - 00:35:37:11

Marc Thibault

If you want resilient ecosystems, essential to have large areas which are restored, it's essential to have areas where some habitats can relocate. Otherwise, if the coastal areas

are too small, if the natural habitat, are too small in the face of sea level rise, the coastal habitats will not be able to shift inland. I'm not hiding from you that the decades to come will be quite difficult overall with global warming.

00:35:37:19 - 00:35:57:15

James Shooter

If it weren't for the nearby settlements that needed flood protection, there's a possibility the intricate patchwork of lagoons, marshes and wetlands would be able to adapt to rising sea levels and extreme weather events, by moving around and traveling further inland. But the people in the city of Arles can't be blamed for living where they do. This is not their fault.

00:35:58:04 - 00:36:17:19

James Shooter

This has been an important settlement for almost 3000 years. I can't actually tell which way this one will go. It feels weird leaving with a sense of worry rather than hope. I love the enthusiasm when Delphine talks about improving the habitats of the eels and the smile on Arnaud's face when he told me about safeguarding the future for the flamingos.

00:36:18:20 - 00:36:42:16

James Shooter

But what will also stick in my mind is a genuine concern on Marc's face when he talks about the threat of sea level rise. If anything, this perfectly epitomizes the need for large scale rewilding and of course the decarbonization of society at large. The future of Tour du Valat and the wider Camargue ecosystem, unfortunately doesn't lie solely in the hands of those that would love it most to see it stand the test of time.

00:36:43:12 - 00:37:04:05

James Shooter

It's down to all of us. If we're to stabilise the incoming threats of climate change, to secure a healthy planet for years to come, we must restore nature at a scale and pace never seen before. It's down to big rewilding landscapes, to governments across the world and every single one of us, through the choices we make in our everyday lives.

00:37:05:07 - 00:37:30:01

James Shooter

We can do this, but only if we act now and act together. Do it for the flamingos and the eels, the slender-billed gulls and the Salicornia scrub. But do it for the Marcs and Delphines and the Arnauds and Luc Hoffmans, for those that live at sea level and those that don't. I didn't mean for the Tour du Valat episode to become a kick up the proverbial butt to get on with rewilding.

00:37:30:22 - 00:37:59:13

James Shooter

But here we are. Let's get on with it. I hope you enjoyed episode four of The Rewild Podcast. A fascinating insight into the French Camargue and the vital work going on by Tour du Valat. It was to join Delphine for some field work, splashing around the coastal

lagoon and I even managed to see a half meter long European eel close to one of the nets.

00:37:59:22 - 00:38:22:11

James Shooter

They truly are weird and wonderful. Thanks to Marc and Arnaud for sharing their insights too. The music was by Andrew O'Donnell of Beluga lagoon and the artwork was created by Gemma Shooter. Tour du Valat is a member of the European Rewilding Network, a collection of groundbreaking initiatives across the continent brought together by Rewilding Europe as part of a broader rewilding movement.

00:38:23:10 - 00:38:35:21

James Shooter

This is an organisation making rewilding happen through positive action on the ground. Do join us next time as we explore the Greater Coa Valley in Portugal. Catch you next time.