



A European
programme
to rehabilitate the
Jura peatlands
2014 • 2021



Life
tourbjères
du Jura



Contents

Precious peatlands	4
An ambitious peatland rehabilitation programme	6
Studies before the works begin	8
Keeping the peatlands wet	10
Effective works	12
The peatlands, a new source of local pride!	14
14 Natura 2000 sites, 32 municipalities, 55 peatlands	16
Very positive outcomes!	18

Keeping the peatlands wet to restart the peat accumulation process: mission accomplished for the Life Jura Peatlands programme!

PROGRAMME PROFILE



Nom : Life Jura peatlands
Durée : 7 years (from June 2014 to November 2021)
Budget total : €8,560,600€
Localisation : Jura mountains, Franche-Comté

Coordinating beneficiary: Conservatoire d'espaces naturels de Franche-Comté

Associated beneficiaries: Établissement Public d'Aménagement et de Gestion de l'Eau Haut-Doubs Haute-Loue, Parc naturel régional du Haut-Jura, Association des amis de la Réserve naturelle du lac de Remoray, Syndicat mixte Doubs Dessoubre et DREAL Bourgogne-Franche-Comté

Financial partners: Union européenne, Agence de l'eau Rhône Méditerranée Corse, Région Bourgogne-Franche-Comté, Départements du Doubs et du Jura.






Peatlands account for
3% of the
WORLD'S LAND



There are an estimated
100,000 hectares
of peatland in Metropolitan FRANCE
or the equivalent of one-fifth the area
of the Department



The JURA MOUNTAINS are
one of the areas of Western Europe
with the most peatlands:
530 including **340**
in FRANCHE-COMTÉ

*These are small peatlands that form quite
a dense geographical network.*

Precious peatlands

Most of the peatlands in the Jura mountains of Franche-Comté are situated at altitudes between 700 and 1,200 metres, over an area stretching 150 kilometres from north to south. They form a vital part of the Jura mountain landscapes.

A PEATLAND is characterised by soil which is constantly saturated with water where peat forms and accumulates. Peat is a bed of organic material consisting of dead vegetation that is only partly decomposed due to lack of oxygen.

Services rendered

With their multiple functions, peatlands provide many services:

They help to regulate surface water by acting as a sponge, absorbing huge quantities of water to slow water flows.



They are home to specific and endangered fauna and flora.



They constitute a stock of carbon trapped in the soil which must be kept out of the atmosphere.



They play a role in filtering and purifying water, providing a natural water resource that it is essential to preserve.



They represent a veritable archive of scientific information on the history of human activities and the climate, thanks to the plant fragments and pollens trapped in the layers of peat.



Damaged, endangered environments

Historically considered by humans as unproductive, unhealthy and even dangerous areas, peatlands were exploited in different ways to make them economically productive:

- extraction of peat, using rudimentary but quasi-systematic methods, to be used as fuel for domestic heating from the 18th to the 20th century;
- drainage and straightening of water courses to dry out the land;
- infilling, planting of trees, pollution, creations of lakes, rubbish dumps, etc.

In addition, in the last few decades the effects of climate change and atmospheric pollution have also taken their toll.

Some of these past actions are still affecting the general functioning of these ecosystems: drying out, deterioration of the peat, areas turning to scrub, closure of the environment, loss of biodiversity, etc.

Restoring peatlands to limit the effects of climate change

Peatlands account for 30% of all the world's carbon trapped in the soil, although they represent only 3% of the earth's land surface. Recent studies have shown, however, that peatlands that have been drained or dried out stop storing carbon and instead begin to release it into the atmosphere, to the point where today they account for almost 5% of human-induced greenhouse gas emissions. The need to reverse their deterioration is all the more urgent as the quantities of carbon built up over the centuries are substantial.

Franche-Comté, one of France's richest regions in peatlands, has a crucial role to play in preserving these rare, threatened environments.



Extracting peat at La Pesse (39)



Traces of peat extraction pits in the peatland of the Grande Seigne (Granges-Narboz, Houtaud, 25)



A ditch dug to dry out the peatland

An ambitious peatland rehabilitation programme



The Life Jura Peatlands programme is one of the most ambitious in Western Europe. Lasting seven years, it has mobilised considerable resources to restore the hydrological functioning of numerous peatlands in the Jura mountains of Franche-Comté.

Thanks to this programme, **15%** of the peatlands in the Jura Mountains of the Franche-Comté region have seen their functioning improved.



- 55 peatlands rehabilitated, a total of 300 ha
- on 14 Natura 2000 sites
- covering 32 municipalities
- 6 organisations involved

The Douillons peatland at Nanchez (39)



Cooperating to preserve nature

Emilie Calvar, coordinator of Life Jura Peatlands at Conservatoire d'espaces naturels de Franche-Comté

The close partnership formed between the beneficiaries has been one of the keys to the programme's success. By sharing our respective skills and experience and through the spirit of collaboration between the different organisations, we were able to be more effective in defining what works were required and then implementing them. The involvement of local councillors from the outset was also essential. They supported and defended the programme and played a valuable role as intermediaries with the different stakeholders involved, facilitating the collective appropriation of the actions and their implementation.

An impact on the local economy

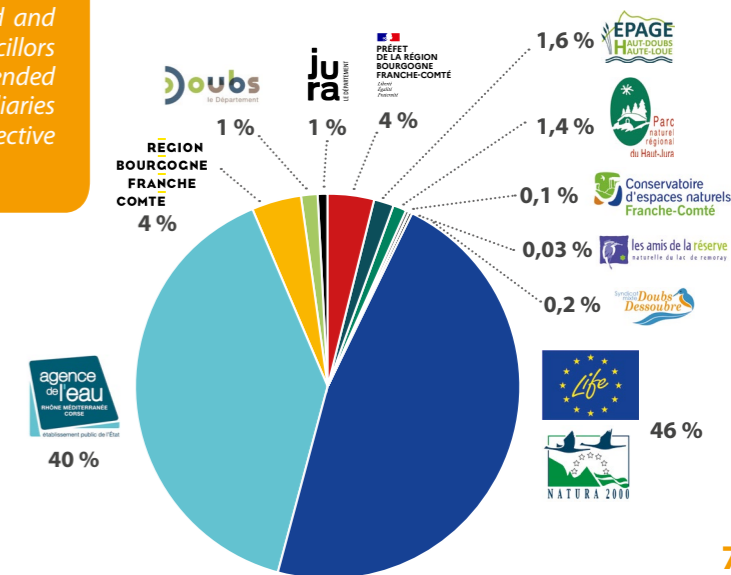
Thanks to the programme, local companies were able to develop expertise in ecological engineering in wetlands, a field in which there was initially little proven experience. Almost 90% of the providers (subject to public procurement procedures) were Franche-Comté firms. The Life project involved 5.12 full-time equivalents per year across all the beneficiaries.

About LIFE and Natura 2000

LIFE + (Financial instrument for the environment) is a European Union instrument for co-financing environmental and nature protection projects. The actions of the Nature strand target Natura 2000 sites and are intended to protect species covered by the Birds and the Fauna and Flora Habitat Directives.

NATURA 2000, is a European network of natural sites chosen for the quality, rarity or fragility of the habitats and plant and animal species they host. The aim is to preserve Europe's biological diversity while promoting regional development.

A budget of €8,560,600





Studies before the works begin

The rehabilitation works themselves are far from being the first step in a preservation project. As well as the issues of land use control, the administrative and regulatory formalities and the provision of information to local councillors and inhabitants, every site has to undergo a more or less extensive functional diagnosis phase.

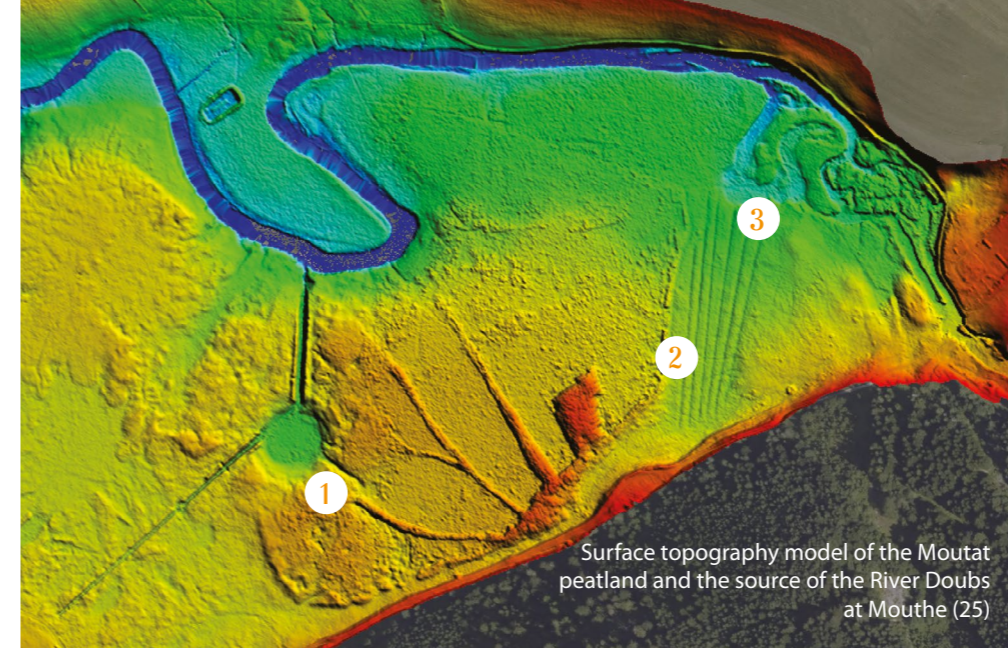
Focus on land access

This type of management or restoration project can only be conducted with the agreement of the owners of the land concerned. Acquiring land or the right to access and use these plots of land was therefore an indispensable prerequisite to the works under the programme.

After identifying the private and public owners of the


sites concerned, the project's managers started a series of meetings with them to discuss the project. The owners who agreed with the proposed project were then able to choose between signing a land management agreement or a long-term lease, or selling their land.

Peatlands are often fragmented into a patchwork of different plots. In the days when the peat was being extracted in the Haut-Jura, many of the sites were divided into small plots owned by local families. The Entrecôtes-du-Milieu peatland at Foncine-le-Haut (39), for example, is divided into 210 plots. Finding the current owners is a time-consuming endeavour!



 48 ha
of peatland PURCHASED

392 ha
of peatland PROTECTED over the medium/long term via a management agreement and 62 ha via a real environmental obligation.



Understanding the sites for more effective action: using LiDAR

To be able to rehabilitate the peatlands effectively and sustainably, it is necessary to have a precise knowledge of the context and identify the dysfunctions of each site. To achieve this, some very high-performance tools were used, such as LiDAR data. Airborne LiDAR is a precise topographic survey technique that can map the surface of the ground even where it is covered by vegetation and trees in particular. The data are acquired by an airborne laser scanner (from a plane, helicopter or drone). These images were used to precisely locate ditches, old meanders, peat extraction pits, etc.



1 Ditch draining a peat extraction pit



2 Drained peat fen



3 Cut-off meander

 Numerous nature surveys were also carried out.

It is only once all these steps have been completed that the works can begin, and still there is an element of risk: in a peatland, a part of the functioning of the system is invisible on the surface as underground hydro-ecological processes are involved. Peatlands are a bit like icebergs, there is always a hidden part, a mystery that we have to try and elucidate as far as possible.

Geneviève Magnon, project leader, Epage Haut-Doubs Haute-Loue



Keeping the peatlands wet

The programme works in a nutshell

Depending on the hydrological supply and the disruptions identified, the works were adapted to each site so that the peatlands could be effectively rewetted.

Filling in the parts of the watercourses rectified in the past

Felling of conifer plantations

Covering with peat from the site itself, then revegetation

Restoring the meandering course of the streams and rewetting

Creation of «dams» to flood and regenerate the old peat extraction pits

Neutralisation of old ditches

Effective works

The interventions were designed to restore the functioning of the ecosystem to the maximum of the technical and ecological possibilities offered by each site, the ultimate aim being sustainability. The objective of the different interventions was to treat the causes of the dysfunctions, not the symptoms.

Unfortunately some peatlands had been modified to such an extent that they could not be restored and therefore could not be included in the programme.

The impact of moving the equipment over the peatland was very limited: as a result of the ground mats used, the pressure on the soil was less than that of a human foot.



Outcomes: the programme's targets exceeded!

- 26 km of ditches neutralised > 173% of target
- 15 km of watercourses restored > 125% of target
- 33 ha of extraction areas rehabilitated > 126% of target
- 57 ha of tree cover removed > 99% of target



What a stroke of luck!

Dominique Chardon, Mayor of Malpas (25) during the works

The Life programme was a real godsend for us. The municipality had neither the knowledge nor the technical and financial means to undertake this type of work. And in fact we were not even aware of the deteriorated condition of our peatland! A few older residents could remember cutting peat or planting fir trees in years gone by. The Life project and the works planned were presented to the local council and then to the population at a public meeting. Visits were organised to the sites to allow people to ask questions and see the need to restore the functioning of the peatland ecosystems and allow the typical peatland species to reconquer the areas concerned. The benefits of the restoration were visible as soon as the works were completed, and during the drought of the following summer, the water came back, to everyone's satisfaction. No-one ever imagined that the rehabilitation would be so quick!

I hope that inhabitants who care about their environment will realise how lucky we have been to have this Life programme, which has shown us what is at stake and financed the rehabilitation works to protect these remarkable resources.

After the works...

This shows what happens after a peat extraction pit is filled in with water after blocking the ditches. The work was done on the Rousses peatland (39) in May 2018.



JUNE 2018: rapid appearance of water following a big storm



MAY 2019: pit completely filled with water



AUGUST 2021: pit almost completely covered over by a raft of sphagnum mosses

Renaturing the Gouterot stream at Bannans (25)



Neutralising ditches on the Cerneux-Gourinots peatland at Fournet-Blancheroche (25)



Rehabilitation of the Grande Seigne peatland at Hotaud and Granges-Narboz (25)



The restoration works were sometimes impressive, but nature soon reasserted itself and in no time the land was waterlogged again!

Awareness-raising

people reached by a Life event (visit, meeting, activity, projection, stand, etc.)



7 000
local people
and councillors



1 050
schoolchildren

400
students



1 060
professionals
(natural area managers,
nature guides, mountain
guides)

Media coverage



300 ARTICLES
in newspapers,
newsletters and website

50 AUDIOVISUAL
interventions



The peatlands, a new source of local pride!

Over the course of these seven years, the programme's beneficiaries have endeavoured to share their knowledge of these environments and to inform and raise the local population and councillors' awareness of the stakes involved in preserving them. Visits to the worksites, public meetings, activities in schools, nature outings, film screenings, exhibitions and all kinds of events have taken place as the work has progressed, reaching large numbers of people.

An immersion in the peatland

As well as an extensive campaign of activities for schools, nature outings were also organised. Mountain and nature guides were

given special training and they were provided with specially designed educational backpacks.



Local appropriation

The involvement of the local population and stakeholders is indispensable to the long-term preservation of the peatlands. Given the visually impressive works and the en-

suuing changes to some landscapes, numerous meetings, field visits and outings were organised to raise the public's awareness of the actions that were underway.

The film that was produced «Tourbières, trésors cachés de la montagne jurassienne» was a great success! 75 screenings, some of them outdoors, were organised all over the Jura mountains area.



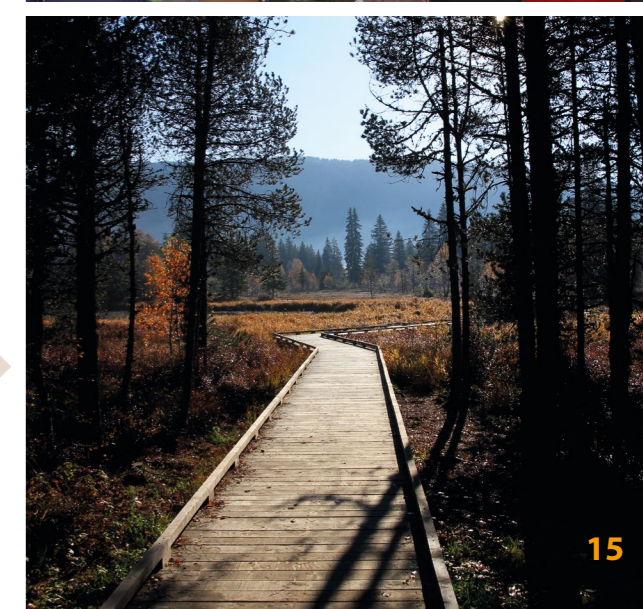
Getting the message across

Murielle Giacomino,
mountain guide

The training on the peatlands for mountain guides and nature guides really taught me a lot. It was really fascinating, as it was given by people passionate about their subject! It has changed the way I talk about the peatlands. I learned a lot more about them and I have been able to pass that knowledge on to holidaymakers and locals, introducing them to environments they would previously have passed by without stopping or realising the rich natural environment they represent. The role of carbon storage by the peatlands surprises and interests a lot the participants of my hikes because it is a very current notion which takes a new concrete example.

Some of the peatlands have been equipped with facilities to receive visitors: pontoons, platforms, rustic pathways...

2 editions of the «Tourbières en fête» event, at the Maison de la Réserve in Labergement-Sainte-Marie (25) in 2017, and at the Maison du Parc in Lajoux (39) in 2019, each offered some thirty different fun activities for the public.



14 Natura 2000 sites

32 MUNICIPALITIES

55 restored peatlands

Vallées du Dessoubre, de la Reverotte et du Doubs

SAINT-JULIEN-LÈS-RUSSEY

La Seigne (Bois du Vernois) • La Seigne Grosjean • Les Creugnots

VENNES Le Ruhier

Tourbière des Cerneux-Gourinots et zones humides environnantes, les Seignes des Guinots et le Verbois

BONNÉTAGE/LE RUSSEY/

FRAMBOUHANS La Seigne des

Guinots

FRAMBOUHANS/LES ECORCES

Les Cerneux-Gourinots • Sur les Seignes

LE RUSSEY Le Verbois sud

Vallées de la Loue et du Lison

VILLENEUVE-D'AMONT Le Marais

Bassin du Drugeon

BANNANS Gouterot • Champs

Guidevaux • La Censure

BONNEVAUX Drugeon entre Vaux et

Bonnevaux • Varot

BOUVERANS Corne du Marais • La

Sarre à cordier • Le Goux du Moulin

CHAFFOIS La Censure

FRASNE Tourbière du Forbonnet •

Forbonnet • Marais de Gu

GRANGES-NARBOZ Mont de Voyon

• Bief Voulain • Grande Seigne

HOUTAUD Bief Rouget • Grande

Seigne

MIGNOVILLARD La Seigne des

Barbouillons

SAINTE-COLOMBE La Seigne

Complexe de la Cluse-et-Mijoux

CLUSE-ET-MIJOUX Complexe de

tourbières

Lac et tourbières de Malpas, les Prés Partot et le Bief Belin

MALPAS Bief Belin • Tourbière du Lac

Vallons de la Drésine et de la Bonnavette

LABERGEMENT-SAINTE-MARIE

Champs nouveaux (secteurs Saint-Point

et Remoray) • Bas Marais de Lhaut • La

clusette • Vurpillières • Voie ferrée

REMORAY-BOUJEONS Bas marais

du Crossat Ouest

Tourbières et ruisseaux de Mouthe, source du Doubs

MOUTHE Le Moutat

Tourbières et Lac des Mortes, Chapelle-des-Bois

BELLEFONTAINE Les Grands Pins

CHAPELLE-DES-BOIS Tourbière de

la Chaumoz • Les Mortes

Entrecôtes-du-Milieu

FONCINE-LE-HAUT Tourbière de

l'Entrecôtes-du-Milieu

Combe du Nanchez

NANCHEZ / GRANDE-RIVIÈRE

Combe du Nanchez

Grandbaux

NANCHEZ Les Douillons

Vallée de l'Orbe

LES ROUSSES Les Rousses d'Amont •

Les Berthets

La Combe du lac

LAMOURA Sous la Roche • Le Boulu •

Lac de Lamoura

Plateau du Lizon

LES CROZETS Les Grands Champs

Vallées de la Bienne, du Tacon et du Flumen

LES MOUSSIÈRES La Croix Rouge

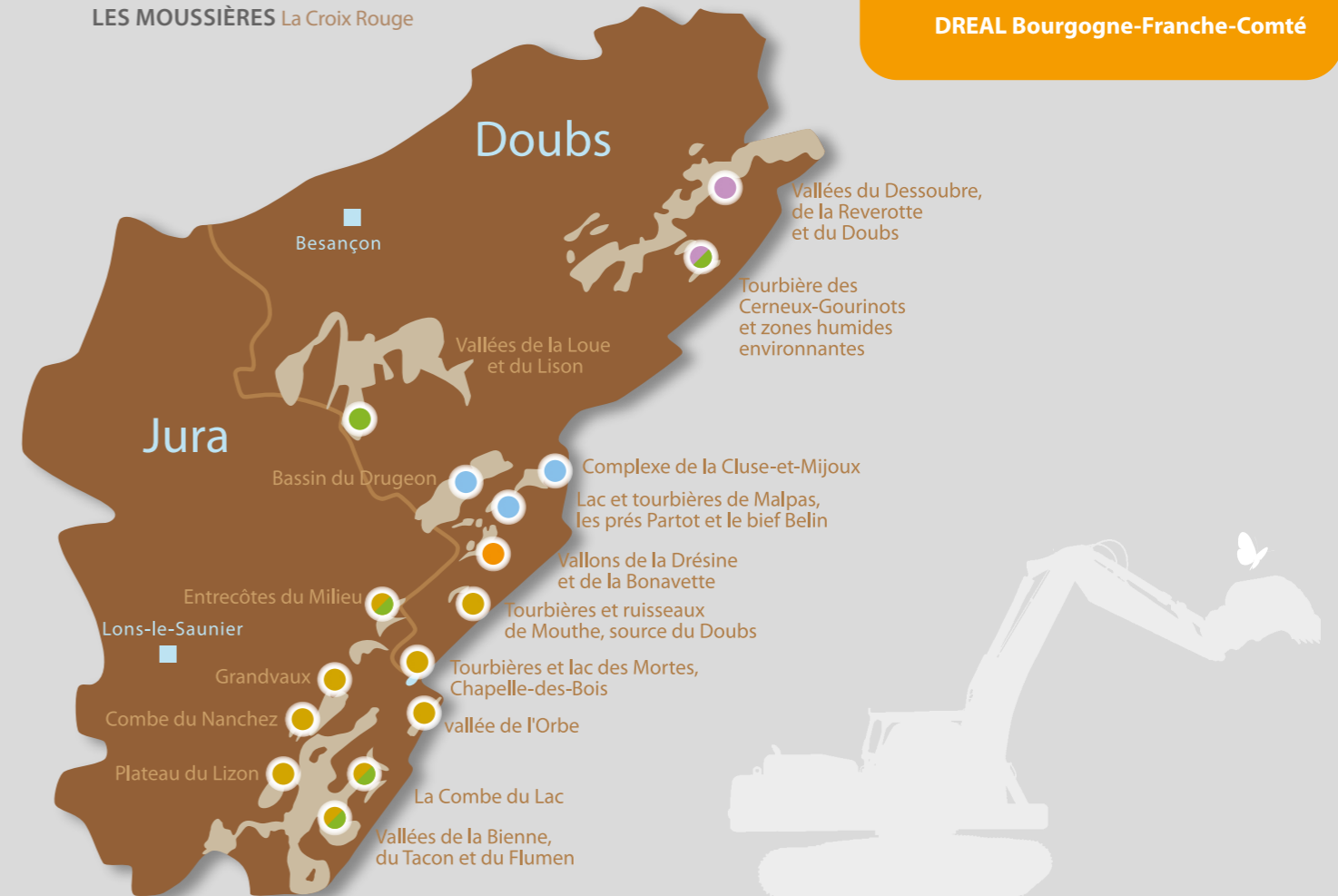
LA PESSE Sous la Semine • Le

Talonard

SAINT-CLAUDE Les Prés de Valfin

LA RIXOUSE En Praillard • Sous la

Roche



The structures involved

- Parc naturel régional du Haut-Jura
- Conservatoire d'espaces naturels de Franche-Comté
- Association des amis de la Réserve naturelle du lac de Remoray
- Epage Haut-Doubs Haute-Loue
- Syndicat mixte Doubs Dessoubre
- DREAL** Bourgogne-Franche-Comté



Marsh saxifrage

Very positive outcomes!

Although it will take several years, or even decades, for the process of peat production to restart properly, improvements have already been seen: water levels in the peatlands less affected by variations in the weather, appearance of new species of fauna and flora, etc. The objectives of the Life Jura Peatlands programme have been largely achieved, even exceeded!



Large white-faced darter

Biodiversity improved

The very specific biodiversity of the peatlands has clearly benefited from the restoration works conducted as part of the programme. This is the case, for example, for dragonflies like the large white-faced darter, a very rare species that is protected at European level. Its population has multiplied five-fold across several of the rehabilitated peatlands; it has even reappeared on certain sites.

The peatland flora has also benefited as can be seen with the appearance of the rare fen

orchid in the Gû fenland in the Dugeon area five years after the works. The almost extinct marsh saxifrage has been successfully reintroduced on the sites benefiting from the Life project. Other families of species will take longer to react to the improvement in the functioning of the peatland environments, but they are on the right path.



Sphagnum mosses are able to absorb up to 30 times its weight in water.

Better regulation of the water

The post-works follow-up shows that on certain sites the water level has stabilised, with less fluctuation, which is excellent news for restarting the process of re-establishing the vegetation needed to

generate peat. This will need to be consolidated by long-term follow-up, especially in periods of adverse climatic events.

After the Life project

Encouraged by the success of this programme and because there are still many Jura peatlands to rehabilitate, a new Life project application was submitted to the European Commission at the end of November 2021. We will know by spring 2022 if it has been accepted for implementation over the next seven years. To be continued!

The scope of this program has fostered a collective dynamic, led by EPAGE Haut-Doubs Haute-Loue and Parc naturel régional du Haut-Jura, to extend the **Ramsar «Tourbières et lacs de la montagne jurassienne» certification**, which was accepted on 2 February 2021. This international distinction recognises both the exceptional nature of our peatlands and the commitment of 52 local authorities, from Pontarlier to Saint-Claude, to enhancing and preserving them!



A shared experience

The work done in partnership with other organisations, each with their own specialist expertise, has allowed us to build up a solid body of experience which we can share with other peatland managers in France and abroad. A webcast and a report containing a more detailed account of the approach and the concrete actions undertaken are also available on the programme's website.



A real impact!

Lionel Perrin, project leader at Agence de l'eau Rhône Méditerranée Corse

The Life Jura Peatlands programme has been one of the best wetlands rehabilitation programmes than the Agence de l'eau Rhône Méditerranée Corse has seen in the last few years, especially due to its scale. The programme, which received 40% of its funding from the Water Agency, has brought real added value to these neglected and abused environments, which is even more appreciable given that here we are at the head of the Rhône-Méditerranée basin. We can definitely say that the works carried out over these seven years have had an impact on the region. In 50 years' time, we will still be talking about impact of the Life programme on environments that were formed over thousands of years.

It is also worth noting the importance of the feedback on the programme. The example of the Life programme has already provided concrete help to other programmes, enabling their works to be implemented while avoiding certain ecological engineering mistakes.

It is therefore logical that the Water Agency should support the application to the European Union to run a second programme. We must continue restoring the environment over the long term!

Life Functional rehabilitation of the Jura mountains peatlands of Franche-Comté

LIFE13 NAT/FR/762 • 2014 / 2021

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Life
tourbieres
du Jura

Coordinating beneficiary

Associated beneficiaries



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