

## Adapting to climate change in the 'Val de Sully' sites

### VULNERABILITY ASSESSMENT AND ADAPTATION PLAN SUMMARY

#### CONTEXT

In 2021, [the Conservatoire d'espaces naturels Centre-Val de Loire](#) (CEN-CVL) has been selected to participate in the test phase of [the LIFE Natur'Adapt](#) project alongside 14 operators. **The Val de Sully** (558 ha), made up of 10 sub-sites spread over 30 km, is the area of the **Loire** that the CEN-CVL manages along the Loire between Gien and Châteauneuf-sur-Loire. Composed of alluvial woodlands, sandy grasslands, meadows, ponds, wet herbaceous environments, etc., this site represents all of the known natural environments of the Middle Loire. It is home to a remarkable fauna and flora, with almost **121 species threatened** in the Centre-Val de Loire region. The site benefits from 8 management plans which served as a basis for the analysis of the vulnerability of the Val de Sully's biodiversity to climate change.

#### VULNERABILITY ASSESSMENT

Particularly exposed to the effects of climate change, these habitats have been confronted over the last four years with increasingly extreme climatic phenomena: drought, heat waves, reduction in water resources, etc. These climatic excesses are rapid and brutal, leaving no time for the vegetation to adapt, while we are already seeing changes in the composition of the vegetation communities and the arrival of animal species from the south of the Centre-Val de Loire region, such as the Reed Cricket.

**Global warming has been going on** for several decades, with **an increase in average temperatures of +1.63°C in the Loiret since 1959**. The number of hot days (>25°C) has also increased significantly (+22 days since 1959) and there has been a sharp **increase in water stress** on vegetation in summer and autumn (evapotranspiration down by +6.8 mm/decade in the summer period). These climatic factors will have an impact on the management of water in the Loire by the dams in order to maintain a minimum flow from spring to autumn. **Low water in summer will be much longer and more severe, while floods will be more frequent in winter.**

The impact of these climate changes on habitats and species will be profound and long-lasting in the coming decades. Habitats will therefore change in their composition and structure, affecting species. In order to analyse these climatic phenomena on the biodiversity of the Val de Sully, we have chosen, in agreement with our Scientific Council, **to study the potential evolution of the functionality of natural habitats rather than species**. This approach seems to us to be more appropriate because species depend on natural habitats in a good state of conservation to carry out their reproduction cycle. We analysed **the evolution of the functionality of the 7 habitats with ecological challenges** identified in the management plans: alluvial woodlands, wet hay meadows, wet herbaceous vegetation, alluvial ponds, herbaceous vegetation of wet mudflats, mesophilic meadows and sandy grasslands.

We based our analysis on **the factors influencing the good conservation status of the habitats** listed in the management plans, which we assessed in relation to the potential effects of climate change. **The fragility of the river ecosystem of the Loire is exacerbated by these climatic changes**, particularly **the incision of the riverbed** which modifies the river dynamics in depth. This factor, which is essentially due to the development that has accumulated in the bed of the Loire since the Neolithic period, is by far the most significant. The drop in the alluvial water table, which is expected to be in the region of 20 to 30% in the coming decades, will also have a major impact on wetlands and aquatic environments.

Climate change will aggravate the degradation of habitats linked to the current dysfunction of river dynamics. **The most threatened habitats are wetlands and alluvial woodlands**, which have a vital need to be connected to the water resource, in particular to the alluvial water table. Some of these will disappear and evolve into mesophilic environments, while others could potentially move to more favourable topographical levels, close to the alluvial water table, within the active bed of the Loire. This situation will require the State services to take

account of these environments and their fragility as part of the management of the bed of the Loire.

## ADAPTATION PLAN

The sites benefit from 8 management plans which served as a basis for the analysis of the vulnerabilities of the Val de Sully's biodiversity to climate change. All the management operations that the CEN-CVL carries out on the site it manages are planned, described and financially evaluated in the management plans. **The adaptation plan was therefore based both on the vulnerability assessment and on the operations planned in the 8 management plans.**

The impact of climate change on natural habitats was developed in the vulnerability assessment after a climatic analysis, **highlighting the high vulnerability of the natural habitats most dependent on water resources, such as ponds, wet meadows and alluvial woodlands.**

Other **non-climatic factors influence** the habitats, starting with the **incision of the bed of the Loire and the dams** built upstream which support a minimum low water flow or stop floods. These two factors have the greatest impact because they have direct consequences on other factors such as the lowering of the alluvial water table which follows the incision of the river bed.

**Anthropogenic pressures** can have negative effects on habitats with an **increase in visitor numbers**, especially in sectors accessible by motorised vehicles. The risk of direct negative impact on the habitat can become significant in the most frequented areas (trampling, waste disposal, etc.). The **increase in the risk of fire** in the woodlands and wasteland along the Loire is mainly linked to human use, which is conditioned by easy access. In the coming decades, this risk factor will become increasingly important, which will necessitate a reduction in access to the Loire and perhaps a strengthening of regulations.

**The maintenance of the herbaceous environments** depends closely on **the involvement of the farmers** with whom the CEN-CVL enters into partnerships to maintain the mown meadows and carry out grazing. These two activities are fundamental for the sustainable management of grasslands in an agricultural context

where there are very few farmers. With the increase in droughts, it is expected that **the productivity of the grasslands will decrease**, which could dissuade some breeders from engaging with the CEN-CVL, due to a lack of sufficient yield.

This situation may call into question an exchange of services partnership between the farmers and the CEN-CVL, which will require other strategies (grazing or mowing services, in-house herd management, etc.).

New milder and especially drier climatic conditions will require new specifications, for example bringing forward the dates of mowing and organising, in certain cases, winter grazing, which could become the rule in the coming decades.

The management of habitats carried out mainly on the **Public River Domain** in partnership with **the State services** will require greater consultation for the management of wetlands and woodland. In the long term, these habitats will only be able to develop in the bed of the Loire and in the river annexes that are best connected to the alluvial water table. It will then be necessary to reconcile maintenance objectives to ensure the proper flow of water with the preservation of natural habitats dependent on the water resource.

Raising awareness among the public, schoolchildren and local stakeholders will be necessary thanks to educational materials (videos, webinars, conferences, exhibitions, various events, field trips, etc.). Signage on the sites must consider the risks linked to global warming, which will need to be integrated into projects to open the sites to the public.

**ENTIRE DOCUMENTS AVAILABLE  
HERE:**

[Vulnerability assessment \(FR\)](#)

[Adaptation plan \(FR\)](#)

