



The necessary adaptation

Integrating climate change challenges into the management of protected natural areas

CLIMATE CHANGE IS ALREADY OBSERVED IN NATURAL AREAS ...

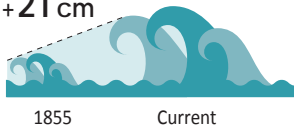
The reality of climate change can be measured due to noticeable effects on a local scale.

The examples below are taken from a large quantity of data collected around mainland France from areas close to nature reserves.

ON THE ATLANTIC COAST

Rise in sea level in the Pertuis Charentais ⁽¹⁾

+21 cm

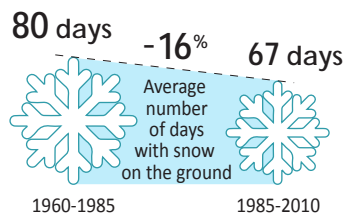


1855 Current



IN MEDIUM MOUNTAIN AREAS

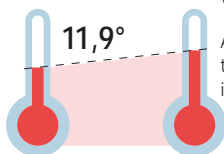
For the Mont-Dore, in Auvergne ⁽²⁾



IN FORESTS

Forêt de la Massane ⁽³⁾

Average temperature for the last 40 years



Average temperature in 2015

ADAPTATION, MITIGATION: WHAT ARE WE TALKING ABOUT?

- An activity helps to mitigate climate change if it **contributes to the stabilisation of greenhouse gases in the atmosphere.**
- An action helps with adaptation to climate change **when it limits the negative impacts of climate change or takes advantage of the positive effects.**

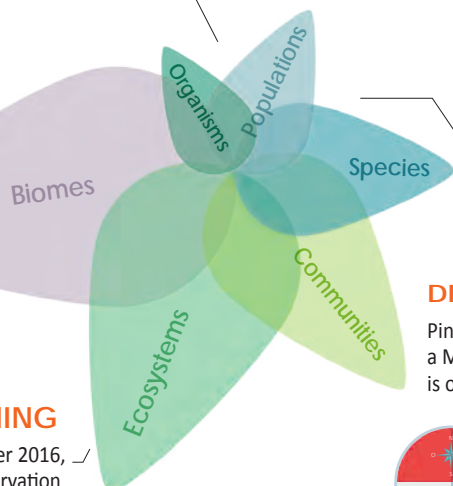
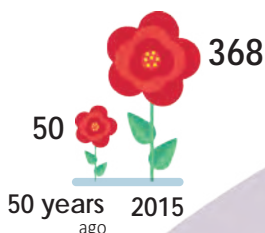
Sources: see references on the last page

- **Climate change is affecting our job as managers, here and now.**

We are facing a collective challenge: adapting our protected area management practice to this new context.

PHENOLOGY

On 1st January 2015, in England, 368 species of plants were flowering, compared to around twenty 50 years before ⁽⁴⁾.

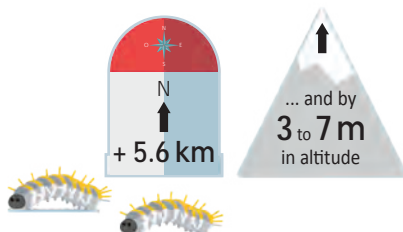


... AND HAS DIRECT EFFECTS ON BIODIVERSITY AND ECOSYSTEMS

Biodiversity is affected by the ongoing changes, across all levels, from the organism to the biome.

DISTRIBUTION AREA

Pine processionary caterpillars, a Mediterranean species, is on the move every year by... ⁽⁵⁾.



FUNCTIONING

In September 2016, of the 3,271 observation stations for waterways during the summer, **17%** were entirely dry and **8%** stopped flowing ⁽⁶⁾.

- **The effects of climate change on natural areas are already being observed in France and in Europe. It is difficult to anticipate as little is known about them. Our management must nevertheless evolve, even if not all of the relevant facts are under control.**

ALL INTERCONNECTED: INDIRECT EFFECTS WILL ALSO OCCUR

A protected natural area does not function like an isolated system:

a variety of uses (agriculture, tourism, forestry...) and many stakeholders influence the protected area from inside or from outside. Climate change shaking up “socio-ecosystems” within which protected areas exist. It creates a context in which all sectors of society must adapt.

TOURISM

Faced with the reduction in snow cover, mountain resorts use snow cannons or seek to attract tourists throughout all 4 seasons.



Credit: F. LEPAGE / CŒURS DE NATURE / SIPA

AGRICULTURE

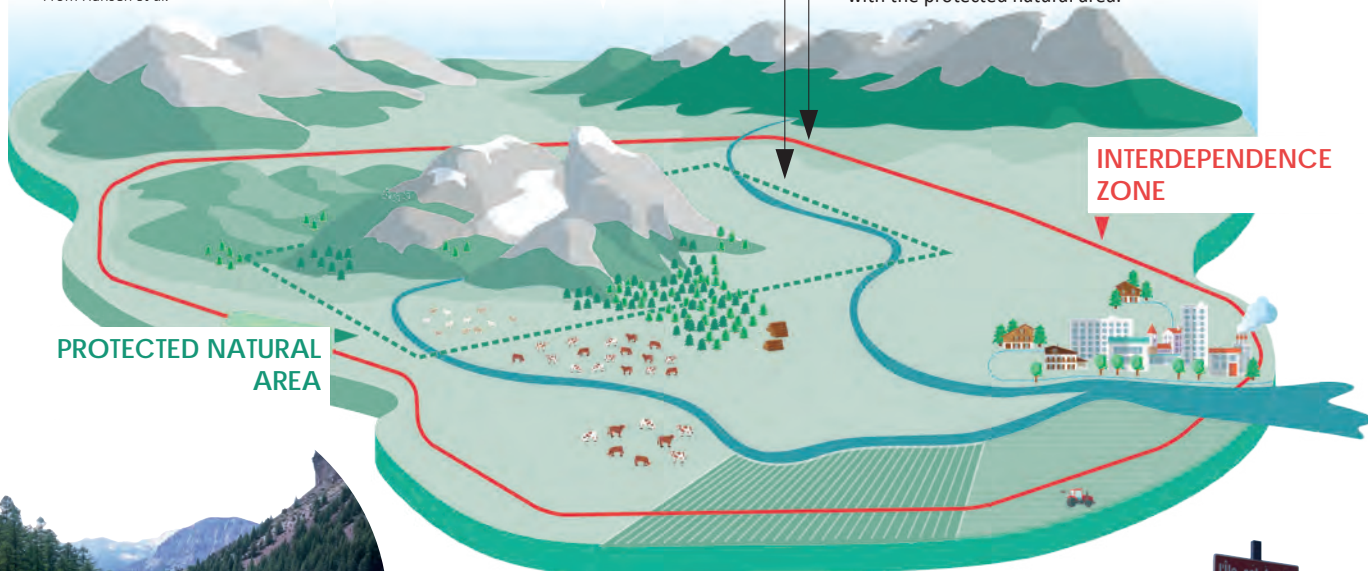
Faced with periods of drought, some farmers build backup or hillside water supplies while others use more hardy mixtures of seeds to ensure that they obtain the correct fodder, which is essential for Protected Designation of Origin.



Credit: BIOT / CŒURS DE NATURE / SIPA

SOCIO-ECOSYSTEM UNDER THE INFLUENCE OF CLIMATE CHANGE

From Hansen *et al.* (7)



INTERDEPENDENCE ZONE

PROTECTED NATURAL AREA



Credit: BIOT / CŒURS DE NATURE / SIPA

FORESTRY

Faced with the change in temperatures and in the pattern of precipitation, foresters are now advising against planting fir trees at altitudes below 700 metres and are seeking to define the modalities of forest management which will be better adapted to wood production.

URBAN PLANNING

Faced with coastal erosion and the risk of flooding, coastal resorts are building seawalls or are planning to relocate their activities.



Credit: AMICE / CŒURS DE NATURE / SIPA

• In a context of climate change, protected natural areas require a greater degree of reflection in terms of interdependence with the way land is used as well as with other stakeholders.

Options for adaptation taken by some stakeholders must not create increased pressure on others, notably on natural areas. Compatible actions must be sought.

ANTICIPATE TO SUPPORT THE ADAPTATION OF PROTECTED NATURAL AREAS: LIFE NATUR'ADAPT

Currently, in France and in Europe, adaptation is not sufficiently taken into account due to a lack of appropriate tools. Réserves Naturelles de France and a partners network have decided to address these issues and to put forward the **LIFE NATUR'ADAPT project**.

"A dynamic collective learning process for Climate Change Adaptation in Europe's protected Areas"

THE NATUR'ADAPT PROJECT

Natur'Adapt aims at triggering a transition towards the adaptive management of protected areas while laying the foundations of a dynamic collective learning process. It will provide managers with methodological tools which will be trialed and tested on pilot sites. Within 10 years, RNF is seeking to guide 80% of Nature reserves with adaptation to climate change through adaptative management, planning and governance.

Principles of the project:

RELIANCE ON FRAMEWORKS THAT HAVE BEEN TESTED IN OTHER CONTEXTS

Solutions exist at international level. Adaptation has become a dominant tendency in the management of protected natural areas in countries such as the USA and Mexico.

RELIANCE ON THE REQUIREMENTS AND EXPERIENCE OF MANAGERS

The aim is to develop operational tools that meet the requirements and are best adapted to the practices of users. The main tools developed will provide several layers of implementation that are adapted to the situations and resources of administrators.

RELIANCE ON COLLECTIVE INTELLIGENCE AND PARTNERSHIP

One of the project's strengths is the cross-expertise provided by ten partners with a wide and complementary range of skills. This expertise is enriched by a network of stakeholders that has progressively been set up. The user of these tools is both the co-creator and the tester of the solutions.

RELIANCE ON EXPERIMENTATION

The tools developed (prototypes) are trialed on six pilot nature reserves, which are partners in the project, then tested on fifteen other protected natural areas.



Credit: AVAREZ / CŒURS DE NATURE / SIPA



Credit: DAMOURETTE / CŒURS DE NATURE / SIPA



Credit: DAMOURETTE / CŒURS DE NATURE / SIPA

Protected natural areas,
places of experimentation for local ecological transition,
laboratories providing solutions for territories

**Are you the manager of a protected natural area?
You can get involved in the project.**



Project coordinator



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Partners involved in the project



Project co-financers



The NaturAdapt project has received funding from the LIFE Programme of the European Union

LIFE 17 CCA/FR/000089-LIFE #CC #Naturadapt

References:

- (1) Gouriou, T. (2012) "Évolution des composantes du niveau marin à partir d'observations de marégraphie effectuées depuis la fin du 18^{ème} siècle en Charente-Maritime", Thesis, University of La Rochelle, 492p
- (2) Serre, F. (2015) Les singularités du climat et son évolution récente dans le massif des Monts Dore et dans la réserve naturelle nationale de Chastreix-Sancy Parc naturel régional des Volcans d'Auvergne, 48p
- (3) Garrigue, J. et al. (2016) Climatologie - Analyse des données 2015, Travaux de la Massane, Volume n° 106, 34p
- (4) www.mnhn.fr
- (5) www.inra.fr
- AFB (2017) Waterways flow during the summer months, Summaries n°15, 12p, www.eaufrance.fr
- (7) Hansel et al. (2014) Exposure of U.S. National Parks to land use and climate change 1900 –2100 ; Ecological Applications, 24(3), Ecological Society of America, pp. 484-502