

15 LIFE  
ON LAND



## PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS

cnrs

### The CNRS supporting the 2030 Agenda – a few examples:

**With global change, from climate change to increasing urbanisation, terrestrial ecosystems are subject to multiple stresses and are becoming increasingly vulnerable. Maintaining biodiversity is crucial for the survival of humanity, yet it is declining. Plant and animal species are changing, moving and becoming rare, and actually disappearing from certain ecosystems. It is vital that we preserve biodiversity and develop conservation and sustainable management policies for the most critical ecosystems (such as forests, wetlands, arid areas and mountains) to ensure the social and economic development of human populations and their survival. The work carried out at the CNRS, from the study of paleoenvironments to ecosystem modelling, reveals the dynamics of living organisms.**

**Their interactions in a variety of contexts and the relationships between humans and their environment are taken into account. The development of ecological engineering and nature-based solutions offers promising alternatives for protecting and restoring ecosystems in all their complexity.**



### THE DISAPPEARANCE OF FRANCE'S BIRDS

Research monitoring bird populations in the French countryside is indisputable: they are disappearing at an alarming rate. On average, their populations have shrunk by a third in the last 15 years. These losses have gathered pace over the last two years, confirming the trend.

National data are corroborated by the research conducted in the 'Plaine & Val de Sèvre' Workshop Zone (ZA) by the CNRS. Since 1995, researchers from the Centre d'études biologiques in Chizé have been monitoring 160 10-hectare areas of a cereal plain representative of the French farming regions.

In 23 years, all species of birds on the plain have seen their populations decline: lark numbers have fallen by a third and, with eight out of ten individuals having disappeared, partridges are close to being wiped out. This decline affects all species of birds in agricultural environments and can be linked to with the near disappearance of insects.

It is now urgent that all agricultural stakeholders work together to accelerate a change in practices.

**Find out more:** [www.cebc.cnrs.fr](http://www.cebc.cnrs.fr)

### ENSURING THE SURVIVAL OF ELEPHANTS IN LAOS, AN ECONOMIC ISSUE

In Laos, Asian elephant populations have halved over the last 30 years, largely threatened by their 'commodification'. The dynamics of their populations depend on the country's socio-economic practices and those of the animals' owners.

Over the past 20 years, the country's shift to a market economy has prompted an intensification of elephant work to the detriment of their reproduction. The gestation period of the animal (22 months) followed by the suckling period means reproduction is incompatible with work. In addition, there are significant exports of Laotian elephants for tourism.

Researchers have built a bio-economic model to assess the long-term impact of socio-economic strategies on the viability of the species. They demonstrated that if the current export of elephants does not change, it will lead to the extinction of the species in Laos. The introduction of compensation for farmers during their animals' gestation period allow the species to survive.

**Find out more:** [www.cnrs.fr/fr/assurer-la-survie-des-elephants-au-laos-une-question-deconomie](http://www.cnrs.fr/fr/assurer-la-survie-des-elephants-au-laos-une-question-deconomie)

## A RESEARCH STATION IN THE HEART OF THE AMAZON

The Nouragues Ecology Research Station, a CNRS scientific base, is located in the Nouragues Nature Reserve in French Guiana. The COPAS (Canopy Operating Permanent Access System) inaugurated in 2014 is a unique tool for studying the biological and physico-chemical components of the canopy in a low-altitude cloud forest. It is the ideal place to study the functioning of tropical forests and their biodiversity and it welcomes up to 150 international scientific visitors per year. The station is part of some national and international environmental and ecosystem observing networks.

Find out more: [www.nouragues.cnrs.fr](http://www.nouragues.cnrs.fr)

## THE LIVING AS A MODEL

The bio-inspired approach developed by teams of researchers, chemists, physicists, ecologists, biologists or engineers, provides solutions and inventions serving health, robotics, aeronautics and optics and is the source of new materials and new resources. For example, the use of biomass, carbon sequestration and the implementation of diversified and decentralised sources are just some of strategies adopted by living systems. Biological systems favour a minimalist approach and optimal information management to minimise energy costs and resource consumption and to increase adaptability and resilience.



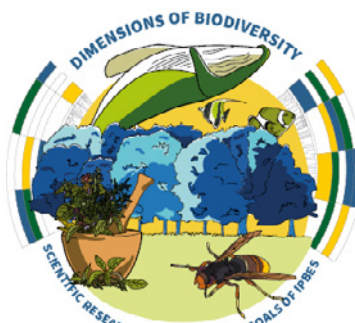
*The radiation from the wings of the morpho butterfly helps lower the temperature and could be a solution for photovoltaic cells.*

## UNDERSTANDING AND MOBILISING TRADITIONAL KNOWLEDGE AND PRACTICES: A KEY TO SUSTAINABLE USE

Traditional knowledge is the knowledge of the status, evolution, use and maintenance of biodiversity, associated with the lifestyles that have contributed to the richness of this biodiversity. The work published in *Knowledges of Nature* in 2017 provides a comprehensive overview of the state of knowledge on Africa, the Americas, Asia-Pacific and Europe-Central Asia.

## EXPERTISE FOR THE IPBES

The CNRS is particularly involved in the work of IPBES, the United Nations Intergovernmental Panel on Biodiversity and Ecosystem Services, taking part in its steering bodies and participating in the French negotiating unit, and of course, writing and proofreading reports. The last report, submitted in May 2019, emphasised the dangerous decline of nature and the ‘unprecedented’ and accelerating rate of species extinction.



*On 25–26 April 2019, the CNRS held a symposium on biodiversity just before the IPBES Conference in May 2019.*

The current global response is insufficient and major changes are required to restore and protect nature. The knowledge produced by researchers must inform policy decisions.

Find out more: [bit.ly/IPBESReport](https://bit.ly/IPBESReport)

## THE PELAGIS OBSERVATORY

The Pelagis Observatory contributes to world efforts to characterise the state of conservation of the marine megafauna and has just made 180,000 elements of observation data public, along with their geographic positions across the 11 million km<sup>2</sup> of marine waters under French sovereignty, in the Atlantic, Pacific and Indian Oceans. The OBIS-SEAMAP (Ocean Biogeographic Information System – Spatial Ecological Analysis of Megavertebrate Populations) online database, which hosts this information and makes it easily accessible worldwide, is a global archive of distribution data for mammals, birds, turtles, rays and sharks, developed by researchers at Duke University (USA).

Find out more: [www.observatoire-pelagis.cnrs.fr](http://www.observatoire-pelagis.cnrs.fr)  
[seamap.env.duke.edu](http://seamap.env.duke.edu)

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