European Commission

LIFE improves NATURE

Environment

EUROPEAN COMMISSION
ENVIRONMENT DIRECTORATE-GENERAL

LIFE (*"The Financial Instrument for the Environment and Climate Action"*) is a programme launched by the European Commission and coordinated by the Environment and Climate Action Directorates-General. The Commission has delegated the implementation of many components of the LIFE programme to the Executive Agency for Small and Medium-sized Enterprises (EASME).

The contents of the publication "LIFE improves nature" do not necessarily reflect the opinions of the institutions of the European Union.

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Foreword


Photo: European Commission

LIFE is a comparatively small EU financing programme. It accounts for less than 1% of the EU budget for 2014-2020. Yet LIFE makes a big difference to EU nature.

It has supported more than 1 700 nature and biodiversity projects since 1992. The €2 billion invested in these projects has done much to implement EU biodiversity policy, in particular the nature directives (the Birds Directive and Habitats Directive).

The programme has also had a crucial part to play in bringing the Natura 2000 network of protected areas into being. Of the 27 500 individual Natura 2000 sites, more than 5 300 have at least once been targeted by LIFE project actions.

LIFE has implemented many successful conservation measures for the habitats and species listed in the nature directives. The evidence is clear to see. EU Member States and experts at the International Union for the Conservation of Nature (IUCN) regularly monitor the status of species and habitats. All the examples featured in this publication have been shown in those monitoring reports to have improved their conservation status, thereby providing evidence that investing into nature delivers tangible positive outcomes. Thanks to LIFE, unique European species such as the Azores bullfinch and the Iberian lynx have been rescued from certain extinction.

In essence, the successful recovery of species and habitats depends on people. LIFE is great at putting different stakeholders together to manage the Natura 2000 network of sites. It also improves conservation knowhow, and raises awareness by actively involving citizens, and local and regional authorities. And LIFE is a catalyst for the integration of other funding sources which can ensure that Natura 2000 sites are managed well in the long term.

From the mid-90s onwards, LIFE supported the EU's Member States as they defined the Natura 2000 network on land. More recently, the programme has played an equally vital role as they designate the marine Natura 2000 network. LIFE also helps countries meet their obligations to manage, conserve and protect Natura 2000 sites.

LIFE Nature & Biodiversity in numbers

- 50 000 project actions
- 95 000 training sessions
- 194 000 hectares of land purchased for conservation
- Millions of citizens have had their awareness raised

For the next long-term EU budget 2021-2027, the Commission proposes to increase funding for LIFE by almost 60%. This will allow more to be spent on nature and biodiversity. The new LIFE programme will continue to support projects that implement concrete conservation on the ground and promote best practices. It will also include new, dedicated 'strategic nature projects' for all Member States to improve their governance and help mainstream nature and biodiversity policy objectives into other policies and financing programmes, such as agriculture and rural development. This will ensure a more coherent approach across sectors, making sure that this small programme has an even bigger impact in years to come.

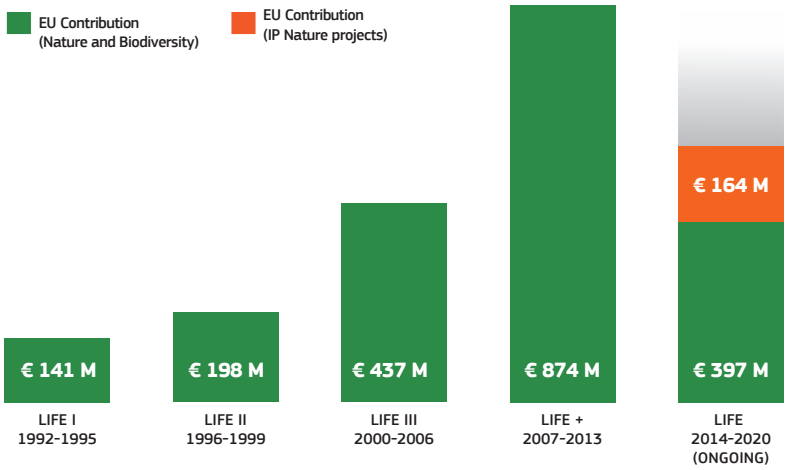
Humberto Delgado Rosa
Director for Natural Capital,
DG Environment, European Commission

Photo: LIFE08 NAT/EE/000257/Mads Fjeldsoe Christensen

LIFE and EU biodiversity policy

In 2011 the European Commission adopted a strategy to halt biodiversity loss and improve the state of species, habitats and ecosystems across the EU by 2020. LIFE has a key role to play in its implementation.

The primary target of the biodiversity strategy - full implementation of EU nature legislation – is being measured against the reports on the status of protected species and habitats that EU Member States are obliged to make under the terms of the 2 nature directives. By 2020, the assessments of species and habitats protected by EU nature law should show better conservation or a secure status for 100% more habitats and 50% more species than at the start of the decade. However, the Member States' most recent reports under Article 12 of the Birds Directive (for 2008-2012) and Article 17 of the Habitats Directive (for 2007-2012) show that the vast majority of species and habitats remain threatened, or in an 'unfavourable' conservation status.



LIFE's role in implementation

The LIFE programme is one of the main sources of EU funding for implementing the Birds and Habitats Directives and halting biodiversity loss. LIFE co-funds projects that work to conserve the species and habitats listed in the annexes of the 2 nature directives, across the entire Natura 2000 network, including marine protected areas. It also supports activities targeting threatened species or habitats that are not included in the annexes of the Habitats Directive but have a status of 'endangered' or worse in the IUCN's European Red Lists of species and habitats.

Since it was launched in 1992, LIFE has co-financed over 1 700 nature and biodiversity projects. EU support to the tune of more than €2.2 billion forms part of a total investment of €3.8 billion in nature conservation made by these projects. For the 2014-2020 funding period, LIFE has a budget of some €3.4 billion.

The EU biodiversity strategy to 2020 sets targets in 6 main areas:

- the full implementation of EU nature legislation
- maintaining and restoring ecosystems and their services
- more sustainable agriculture and forestry
- more sustainable fishing and healthier seas
- tighter controls on invasive alien species
- a bigger EU contribution to averting global biodiversity loss

Photo: LIFE06 NAT/E/000209/Manuel Moral Castro

EU Action Plan

Following a thorough evaluation of the Birds and Habitats Directives, in 2017 the European Commission adopted an Action Plan for nature, people and the economy. This is designed to improve implementation of the nature directives with the attainment of the EU's biodiversity targets in mind.

The plan focuses on 4 priority areas and comprises 15 actions to be carried out between 2017 and 2019. Its publication follows on from the "fitness check" of the nature directives, which highlighted the strategic role that LIFE plays in supporting their implementation. The action plan also enabled an increase of up to 10% in the budget for action grants for LIFE Nature and Biodiversity without affecting the total LIFE budget for 2014-20. This additional funding can also be used to help develop LIFE Integrated Projects in Member States, strengthening their capacity for larger-scale territorial action, as well as pilot projects testing tools for private land conservation.

What's next? LIFE in 2021-2027

In June 2018, the European Commission proposed a Regulation establishing a new LIFE programme for 2021-2027. The aim is to enhance LIFE so that it better contributes to Europe's environmental goals, in particular to speed the shift towards a clean, circular, energy-efficient, low-carbon and climate-resilient economy; and to halt and reverse biodiversity loss, thereby contributing to sustainable development.

Subject to approval by the Council and Parliament, the new LIFE will have a 60% budget increase (to €5.45 billion in current prices) and 4 sub-programmes:

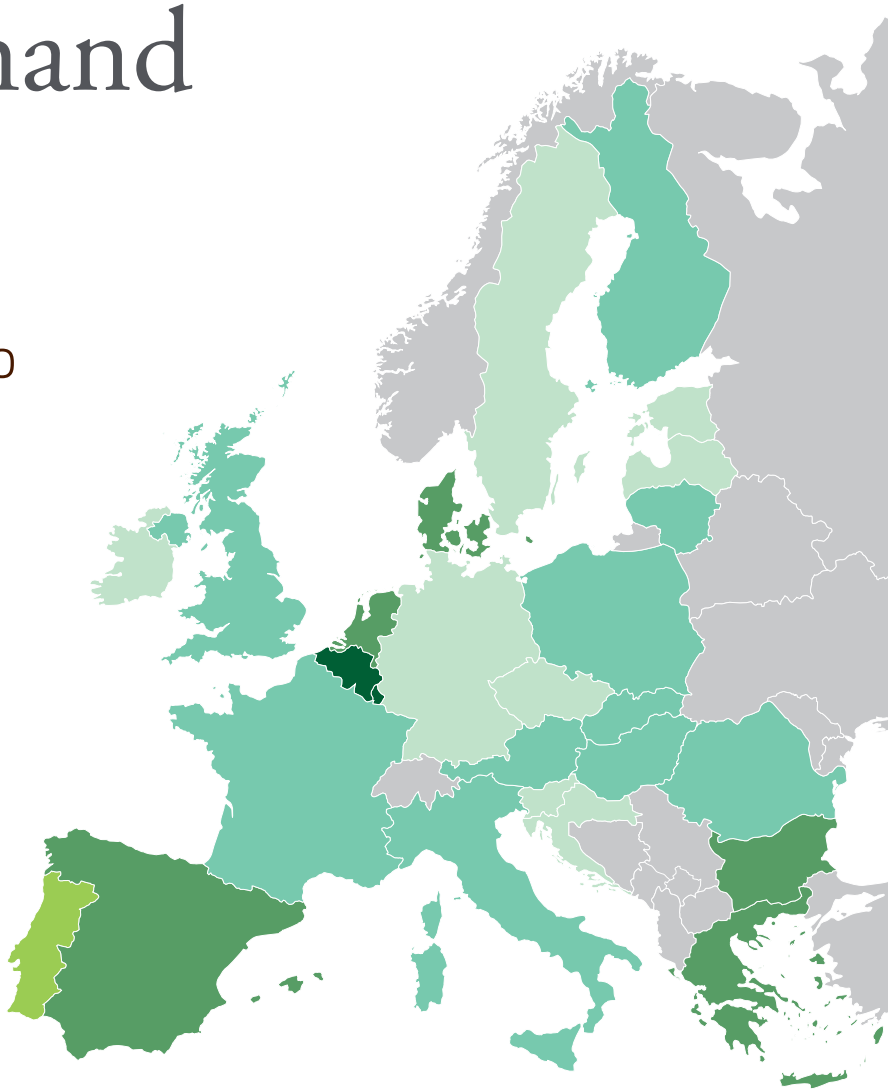
- Nature and Biodiversity
- Circular Economy and Quality of Life
- Climate Change Mitigation and Adaptation
- Clean Energy Transition

In the Commission proposal, the conservation of nature and biodiversity, including marine ecosystems, remains an important area of action for LIFE and will help contribute to EU commitments under the Convention on Biological Diversity.

A new type of project will also be introduced. 'Strategic nature projects' will support programmes of action in Member States for the mainstreaming of nature and biodiversity policy objectives into other EU policies, such as agriculture and rural development. This will involve leveraging relevant funds to implement these objectives.

LIFE and Natura 2000 go hand in hand

LIFE has been vital to EU Member States' efforts to designate and set up management of Natura 2000 network sites on land. Now it is playing an equally crucial role as they define the network in marine areas.



Natura 2000 covered by LIFE

0 - 15% | 15 - 30% | 30 - 45% | 45 - 60% | >60%

LIFE helps Member States to develop policies to structure and manage Natura 2000 and to meet their obligations under Article 6 of the Habitats Directive. For example, it is supporting the drafting and implementation of Natura 2000 site management plans across the EU.

LIFE Nature and Biodiversity projects provide excellent value for money and can support a much wider range of measures for management and restoration of Natura 2000 network sites than other EU funding instruments, including communication and outreach activities. As such, LIFE has significant capacity to develop partnerships with different stakeholders for effective and efficient implementation.

Furthermore, since 2014 LIFE Integrated Projects have opened up the possibility of accessing more money from EU, national and private sector funds to manage the Natura 2000 network. This is available to projects that implement Member States' 'prioritised action frameworks' (PAFs, see box). These are planning tools at country level that help integrate priority actions for nature into relevant EU funding programmes.

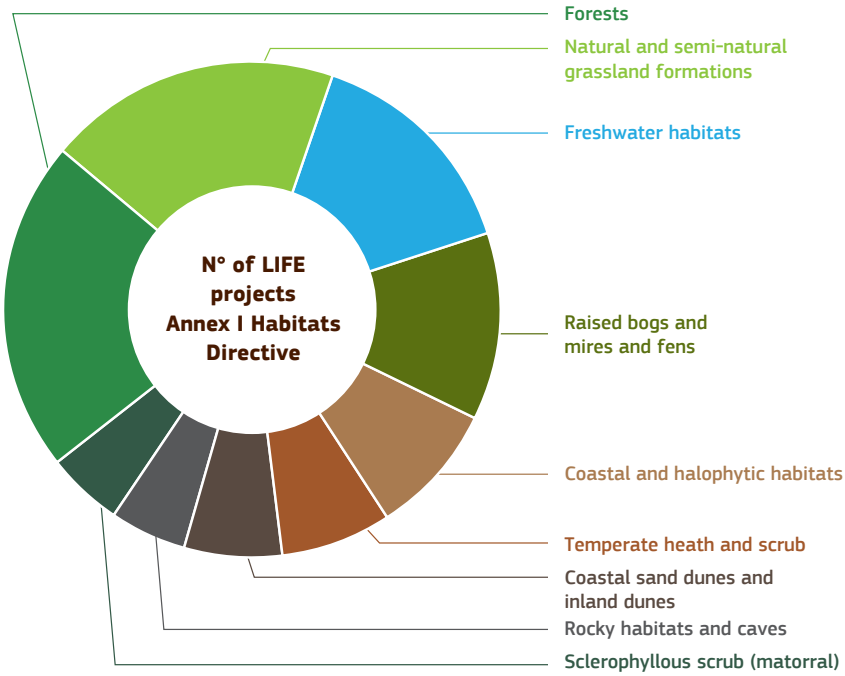
Natura 2000 PAFs - LIFE Integrated Projects

LIFE Integrated Projects (IPs) were introduced to promote a more strategic and joined-up approach to helping Member States implement key environmental and climate legislation. The 15 nature IPs funded to date plan to make use of more than €1.2 billion for Natura 2000 from EU Agricultural and Regional funds and other sources, on top of LIFE's €164 million contribution. This will fund a wider range of important actions, identified in the Member States' PAFs, across a broad geographic area or entire region.

LIFE and Natura 2000 in detail

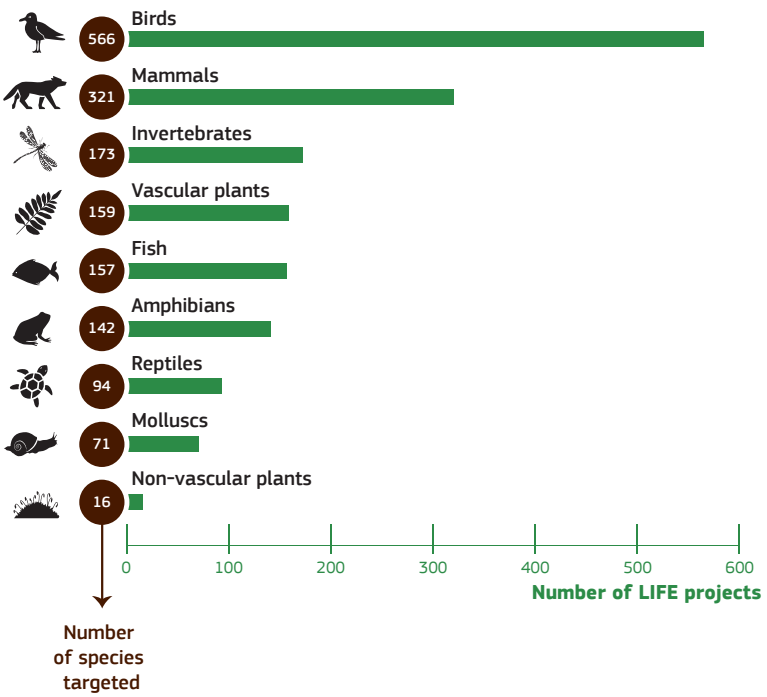
Over 5 400 Natura 2000 sites had benefited from LIFE funding by the end of 2018, or almost 20% of the network. As the map on page 6 shows, in Belgium, Luxembourg and Portugal, more than one-third of the Natura 2000 sites have been targeted by LIFE actions at least once.

LIFE has set up important restoration and management actions to improve the conservation status of habitats. As shown in the figure to the right, forests, grasslands and wetlands (the latter including bogs, mires and fens) have been the most targeted habitat types. The 2 individual habitats most often subject to interventions by LIFE projects are alluvial forests (habitat 91E0) and natural eutrophic lakes (habitat 3150), with over 200 projects each.



LIFE projects and species targeted (1992-2017)

LIFE has taken action to conserve more than 760 species listed in the annexes of the nature directives and more recently started targeting European Red List species. Projects have helped reverse population declines, even saving some species from certain extinction. As the figure below shows, one-third of LIFE projects (566) have targeted birds, with actions for 235 bird species in all. The single most targeted species is the bittern (*Botaurus stellaris*) with 80 projects, while 45 LIFE projects have worked to conserve the brown bear (*Ursus arctos*), which is the most targeted mammal.



Top LIFE targeted species (number of projects):

Birds
Botaurus stellaris (80)

Mammals
Ursus arctos (45)

Invertebrates
Leucorrhinia pectoralis (30)

Vascular plants
Liparis loeselii (21)

Fish
Cottus gobio (53)

Amphibians
Triturus cristatus (45)

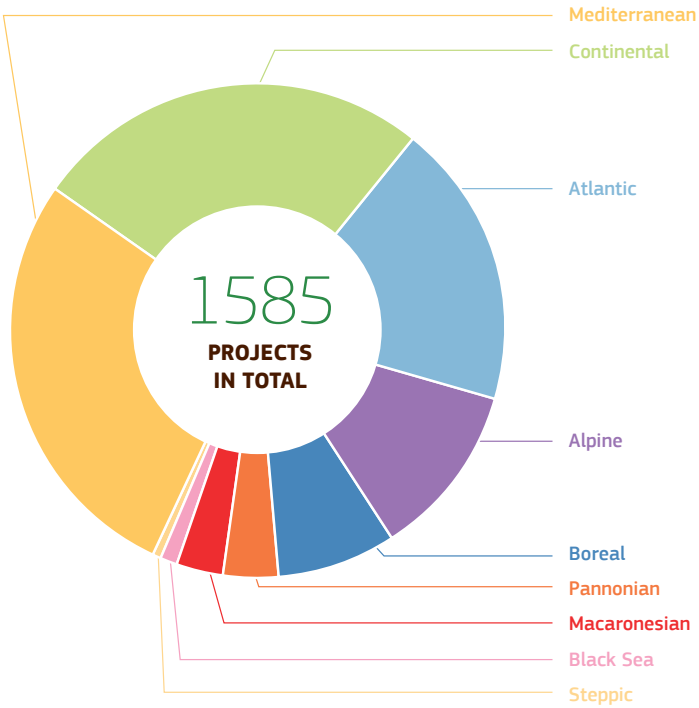
Reptiles
Emys orbicularis (35)

Molluscs
Margaritifera margaritifera (29)

Non-vascular plants
Drepanocladus vernicosus (6)

LIFE projects by biogeographical region (1992-2017)

At biogeographical level, LIFE projects have most frequently targeted Natura 2000 sites in the Mediterranean and Continental regions, followed by the Atlantic (see right). There have been 145 projects in the marine bioregions, including 56 projects in the Atlantic marine bioregion and 39 in the Mediterranean.



LIFE in numbers:

- Over 5 400 Natura 2000 sites have benefited from LIFE funding
- More than 5 million ha of land has been restored or had its conservation status improved - over 6% of the terrestrial Natura 2000 network
- More than 760 species covered by the nature directives have been targeted for conservation, some several times over
- LIFE projects have implemented almost 50 000 actions supporting nature and biodiversity across the EU
- LIFE has helped project beneficiaries acquire almost 200 000 ha of land, and organised over 95 000 training sessions
- Communication activities aimed at over 6 million people, including some 1.2 million pupils and students have raised awareness of Natura 2000.

LIFE Nature's achievements

- **The main driver and catalyst for nature conservation in the EU**
- **Promotion of dialogue and creation of stakeholder partnerships in Natura 2000**
- **Mobilisation of additional investment for Natura 2000 and biodiversity actions**
- **Enabled NGOs to build capacity in nature conservation work**
- **Stimulated local stakeholders to launch conservation actions**
- **Added knowledge, developed monitoring methods, and pioneered techniques in conservation management**
- **Raised awareness of Natura 2000**
- **Established long-term management of Natura 2000 network sites under the EU's Rural Development agri-environment scheme**
- **Integration of conservation with other policy sectors**
- **Positive influence on local economies, local communities and stakeholders**
- **Helped prepare and implement Natura 2000 network site management plans**

Improving the state of nature in the EU

Evidence shows that LIFE has made a major contribution to positive trends in the status of certain species and habitats.

Photo: LIFE06 NAT/E/000209/NEEMO EEIG/Aixa Sopeña

In 2016-17 the European Commission carried out a "fitness check" of the Birds and Habitats Directives. The Commission's report found that good progress has been made towards achieving some of the targets of the nature objectives. In particular, the terrestrial Natura 2000 network of protected areas is now almost complete. These designated sites cover 18% of the EU's land surface.

The report also acknowledges that LIFE is a catalyst for improvements in the conservation status of habitats and species. The most recent reports under Article 12 of the Birds Directive and Article 17 of the Habitats Directive reveal some positive trends or recoveries that can be attributed to targeted conservation measures set up by LIFE projects implemented in EU Member States.

This publication compiles the best examples of LIFE-led improvements in one place, demonstrating how the programme can enable measurable improvements in the conservation status of species and habitats or downgrading of the IUCN threat level. The list of examples is by no means exhaustive and should not be taken as an indicator of the overall contribution of LIFE to the state of nature in the EU.

It is hard to quantify status improvements at EU level, since this is heavily dependent on the scale and timeframe of project actions, as well as on the distributions of species and habitats. Most projects only target habitats and species at a local or regional scale, usually on one or several Natura 2000 sites. Where projects have covered the entire range, it is typically because the species is endemic or the habitat has a restricted distribution. The full impact of many LIFE projects should become more apparent when Member States fulfil their reporting obligations under the nature directives in 2019.

An IEEP "Study on identifying the drivers of successful implementation of the Birds and Habitats Directives" identified cases where one or more LIFE projects had played a significant role in improving the conservation status of species and habitats. According to the study, Member States reported that LIFE projects were by far the most important source of funding when implementing measures that have driven improvement in conservation status.

Selection process

Species and habitats were mainly selected for this publication based on a proven impact identified in Member States' Article 12 and Article 17 reporting or in the IUCN's Red List reports.

There are also several examples where LIFE project actions led to improvements at the regional and local level, even if these were not sufficient to affect the overall national reports.

Member State	Biogeographical region	Habitat and code / Species	Number of LIFE projects (1992-2017)	Conservation status at MS level
Habitats				
BE	**Continental**	4010 - Northern Atlantic wet heaths with *Erica tetralix*	**6**	***Previous: U2*** ***Actual: U2+***
UK	**Atlantic**	21A0 - Machair	**1**	***Previous: U2*** ***Actual: U1+***
PL	**Continental**	6210 - Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia)* (* important orchid sites)	**1**	***Previous: U2*** ***Actual: U1+***
Non-bird species				
ES and PT	**Mediterranean**	Iberian lynx (*Lynx pardinus*)	**26**	***Previous: U2-*** ***Actual: U2+***
HU	**Pannonian**	Hungarian meadow viper (*Vipera ursinii rakosiensis*)	**2**	***Previous: U2*** ***Actual: U2+***
BE	**Continental**	Freshwater pearl mussel (*Margaritifera margaritifera*)	**1**	***Previous: U2-*** ***Actual: U2+***
FI	**Boreal**	Saimaa ringed seal (*Phoca hispida saimensis*)	**1**	***Previous: U2*** ***Actual: U2+***
Bird species				
PT	**Macaronesian**	Azores bullfinch (*Pyrrhula murina*)	**3**	*Stable in the short term and Unknown in the long term IUCN Red List: Vulnerable (2016) Endangered (2013) Critically endangered (2009)*
AT, HU and SK	**Continental and Pannonian**	Great bustard (*Otis tarda*)	**3**	*Increasing in the short term and Increasing in the long term.*
IT and MT	**Marine Mediterranean**	Yelkouan shearwater (*Puffinus yelkouan*)	**4**	*Increasing in the short term and Increasing in the long term*
FR and ES	**Alpine**	Bearded vulture (*Gypaetus barbatus*)	**6**	*Increasing in the short term and Increasing in the long term*

Legend and colour code

Conservation Status	*Colour*	*Abbreviation*
Favourable	**Green**	**FV**
Unfavourable-inadequate	**Amber**	**U1**
Unfavourable-bad	**Red**	**U2**
Trend:	**improving (+), deteriorating (-) or stable**	

Habitats

Belgian Ardennes

Six LIFE projects have contributed to an improving trend in the condition of wet heath and bog habitats in the Belgian Ardennes.

Conservation Status art. 17 - Belgium (Continental) Habitat 4010 (North Atlantic wet heaths with *Erica tatrilix*)	*Trend:* **Improving**
Unfavourable – bad (2001-2006)	*Unfavourable – bad (2007-2012)*

About the habitats

Due to their unique biogeographical location, the Hautes-Fagnes, Tailles, Saint-Hubert and Croix-Scaille plateaux of the Belgian Ardennes are of great ecological value. The area is home to at least 15 habitats listed in Annex I of the EU Habitats Directive, including bogs and mires, heaths and grasslands. Over the last century, these have become degraded and fragmented as a result of forestry and intensive agriculture. Drainage of the wettest areas has become widespread in an attempt to install intensive spruce plantations.

Conservation challenge

Centuries of peat extraction for domestic heating has led to the loss or decline of large areas of bogs in the plateaux of the Belgian Ardennes. Rewetting is complicated by the hilly topography. The presence of spruce plantations has reduced and fragmented many valuable habitats. Any restoration work necessarily involves negotiations with forestry interests. Before the start of the LIFE projects, it was estimated that only 30% of the original peatlands remained in the Ardennes plateau, and they were in a poor state. The abandonment of traditional agricultural practices in favour of intensive farming has also had a negative impact on the condition of certain protected habitats.

What did LIFE do?

Since 2003, a strategic approach has been implemented on several Natura 2000 sites across the Ardennes to enable bogs, wet heaths and associated habitats to recover. This approach has been defined by 6 LIFE projects, including one that is still running, This first project targeting the area served as a basis for the development of an action strategy targeting all other bogs in the Ardennes. The main actions involve:

- **Removing spruce trees in order to restore once valuable habitats**
- **Preventing peat bogs becoming overgrown by bushes and trees**
- **Filling-in ditches, building peat or clay dams and scraping off the top layer of degraded peat bogs to rewet the sites and to encourage the regrowth of natural bog vegetation**
- **Sod-cutting of degraded dry and wet heaths to activate the seed bank of typical heath species**
- **Reinstating periodic mowing and grazing to maintain open habitats**

LIFE's impact

Restoration activities for wet heath and peat bog habitats take many years to be fully felt. But Philippe Frankard and his team at the Walloon regional government are encouraged by the positive signs that are especially visible at sites first rewetted almost 20 years ago. "It's a slow process because typical peat bog species can't be kept in seed banks and we have to wait for the birds to transfer them from the last intact sites that remained at the start of the conservation work," he explains.

Habitat fragmentation adds to the difficulty of encouraging the transfer of species, and some areas are still too isolated to benefit. Nevertheless, during his regular monitoring of sites, Mr Frankard commonly finds new areas being recolonised by sphagnum moss, along with cotton grass and sedges on restored peatland. "Once sphagnum starts to appear, it spreads very quickly," he says.

Photo: LIFE06 NAT/B/000091

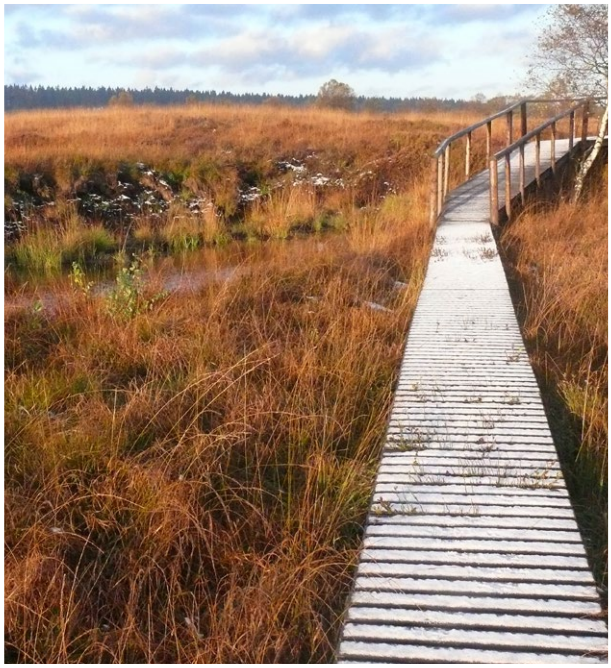


Photo: LIFE06 NAT/B/000091/Roger Herman

The techniques carried out in Belgium were pioneered in Canada, and the Belgian conservation team visited North America to see first-hand what can be achieved ahead of carrying out its own experimental measures. The LIFE project PLTHautes-Fagnes, which was launched in 2007, enabled the success of these measures to be achieved on a wider scale.

Under LIFE, nearly 1 000 hectares were cleared of conifers through cutting and further encroachment was prevented on around 480 ha. Some of these actions were facilitated by the purchase of private land and the abandonment of forestry speculation. Furthermore, Mr Frankard emphasises that the extent of the Hautes Fagnes ('High Fens') nature reserve is still increasing as forestry decreases in economic importance.

The further improvement of restored wet heaths and peat bogs is also ensured through the help of agri-environmental EU funding. The 5 completed LIFE projects in the Ardennes plateaux have restored more than 4 500 ha of bog habitats, and wet and dry heath, mainly through the removal of top soil and invasive species. Every year funds are available to add additional sites to the mosaic of restored peaty habitats, encouraging their growth and connectivity. Machine mowing of the heaths and degraded bogs is also continuing to weaken the negative impact of Molinia grass cover on the growth of native vegetation. By the end of 2013, around 125 ha of wet grasslands were subject to periodic mowing.

LIFE funds have also been used to add fencing so that nature-oriented grazing can take place on restored lands. Some 600 ha of wet heathland are sustainably managed in this manner.

The conservation measures introduced by the LIFE projects have helped fauna including the cranberry fritillary butterfly *(Boloria aquilonaris)*, dragonflies and bird species such as the common teal *(Anas crecca)* and common snipe *(Gallinago gallinago)*.

North Atlantic open habitats

(machair and the Burren)

LIFE has improved the status of the rare and valuable machair habitat in Scotland from 'unfavourable-bad' to 'unfavourable-inadequate'. It has also mobilised funds for farmers that support the long-term sustainable management of the Burren, a region in Ireland that hosts several open habitats.

Conservation Status art. 17 - United Kingdom (machair)	*Trend:* **Improving**
Unfavourable – bad (2001-2006)	*Unfavourable-inadequate (2007-2012)*

About the habitat: machair

Machair, an extremely rare coastal dune grassland, is found on the western coasts of Scotland and Ireland, mostly on offshore islands. It is formed by calcium-rich sand being blown onto acidic soil. For generations, humans have worked and moulded machair in a low-intensity crofting system that has created a mosaic of open habitats. Gradual changes in local agricultural practices have occurred that jeopardise the condition of machair grasslands.

Conservation challenge

Changes in local farming practices and a loss of traditional know-how have led to a deterioration in the condition of machair habitat, and the conservation status of associated species, particularly birds such as the corncrake *(Crex crex)*. Technological changes, including new cattle breeds, the use of heavy machinery and agro-chemicals, new silage based feeding systems and new housing systems for livestock all threaten the existence of the machair.

What did LIFE do?

- **Engaged smallholding farmers to ensure the continuation of traditional agricultural practices**
- **Promoted new techniques that address some of the farming challenges experienced**
- **Covered 70% of the world's machair**

Crofting to conserve machair grassland

In 2010, LIFE set out to improve the condition of 3 200 ha of machair habitat. A project supported crofters to ensure the continuation of traditional practices in these areas, and demonstrated what they were doing to other crofters across the Scottish islands. Continuing outreach has raised awareness of the importance of maintaining the machair, with stakeholders reporting that LIFE actions have had a strong influence on the crofting community.

During a visit by the LIFE Communications Team to the Hebridean island of Benbecula in 2011, Archie MacDonald, one of the crofters taking part in the project explained that LIFE "has helped local crofters maintain some of their traditional activities and supported people who were on the brink of abandoning some practices."

LIFE beneficiary, the RSPB, promoted the use of seaweed as fertiliser and the practice of cultivating at a very shallow level. Collecting more seaweed and laying it on the crofts with a new spreader was an area where the project really helped, because ordinarily this is "beyond the reach of the average crofter," said Mr MacDonald.

Oats, barley, rye and grass are commonly grown on machair to produce feed for cattle and sheep stock. The cropped land is left fallow for 2 to 3 years, allowing annual and perennial plants to thrive and attract seed-eating birds and nectar-feeding insects. It also provides key nesting and feeding sites for migratory wading birds such as the dunlin *(Calidris alpine)* and chough *(Pyrrhocorax pyrrhocorax)*.

Best practice implemented by the Scottish machair project helped to expand areas of late-harvesting crops while reducing areas that are insufficiently sown. Data from the project fed into the agri-environmental measures of Scotland's rural development programme (RDP). The beneficiary continued advocacy work and this has brought some further gains in the Scottish RDP for machair. Monitoring in 2018 confirmed that the project has led to further improvements in the conservation status of the machair habitat.

Photo: LIFE08 NAT/UK/000204

Photo: LIFE08 NAT/UK/000204/NEEMO EEIG/Donald Lunan

LIFE in the Burren

The Burren area in the west of Ireland is home to 5 priority habitats of the EU Habitats Directive, including limestone pavements, turloughs and semi-natural dry grasslands. Like the machair, this landscape is a result of the interaction between natural processes and systems of low-intensity agriculture. Nature in the Burren has evolved alongside low-intensity farming for almost 6 000 years. “But the scale and speed of change in agriculture over the past 50 years has been unprecedented, often with very negative impacts on nature,” says Brendan Dunford, manager of the Burren Programme. He led the first farming for conservation project in Ireland, BurrenLIFE, which from 2005 onwards brought stakeholders together by “finding a common purpose to which they could aspire”, he says. The team earned the respect of the farming community by involving it in the co-creation of environmental solutions. By piloting new systems for feeding livestock, for example, the project also brought “really good, practical science” to bear on some of the farming challenges.

Although the LIFE project has played a beneficial role in raising awareness of farming in the Burren, Dr Dunford warns that the number of farmers continues to decline and scrub encroachment is an increasing problem. The long-term prospects for the Burren thus remain uncertain. “There seems to be no slowdown in the pace of change so it’s impossible to anticipate where we will be in 50 more years. However, the big difference between today and 1970 is that there is a recognition of the importance of farming for the future of the Burren, a good structure in place to support farmers who deliver for the environment and a growing opportunity for Burren farmers to make a living from a combination of food production, nature conservation, agri-tourism and education,” he affirms.

Semi-natural dry grasslands

The project LIFE XericGrasslandsPL has contributed to an improvement in the conservation status of semi-natural dry grassland habitats in Poland.

Conservation Status art. 17 - Poland (Continental) Habitat 6210	*Trend:* **Improving**
Unfavourable – bad (2001-2006)	*Unfavourable-inadequate (2007-2012)*

About the habitat

Dry to semi-dry semi-natural calcareous ('chalky') grassland habitats are found in many parts of Europe. They are among the most species-rich plant communities and contain a large number of rare and endangered species, including many of Europe's most threatened orchid species. However, they are becoming increasingly scarce. In Poland there is an estimated 3 200 hectares of dry calcareous grasslands.

Conservation challenge

Dry grasslands have been under pressure across Europe. Land-use changes, including abandonment, afforestation, increasingly intensive farming and urban sprawl all play a part in the loss and fragmentation of this habitat. For instance, abandoned grasslands quickly turn to scrub vegetation. In Poland, invasive plant species such as the black locust *(Robinia pseudoacacia)* also pose a threat. Dry grasslands are in an 'unfavourable' conservation status in all 7 EU bioregions and they are classed as 'vulnerable' in the 2017 European Red List of Habitats.

What did LIFE do?

While LIFE project actions directly covered only 2% of dry grasslands in Poland, the project had a strong demonstration effect thanks to its habitat action plan for dry grasslands. Other actions included:

- **Removal of shrubs and trees and introduction of extensive grazing**
- **Re-instatement of targeted grazing of small, highly isolated patches of grasslands by means of sheep transported from patch to patch throughout the growing season**
- **Grassland restoration by removing invasive plants and top soil containing black locust seeds and then sowing seeds of grassland species**
- **Land purchase and land management agreements**
- **Action plans for 4 Natura 2000 sites**
- **Awareness raising about dry grasslands conservation**

LIFE's impact

The project LIFE XericGrasslandsPL focused on some of the main areas for dry grasslands in Poland, located in the lower Odra and Warta valleys and Lublin region. "We protected around 2% of the total amount of this habitat in the country," explains project manager Katarzyna Barańska.

The project team purchased land to implement active management methods (cutting of shrubs and trees followed by grazing) and persuaded other landowners to copy these conservation measures. "Indirectly, our activities have become an inspiration for other stakeholders to start proper management of grasslands," says Ms Barańska. She believes that the project's work has therefore been the main driver for the improving trend in the status of the habitat in Poland.

Photo: LIFE08 NAT/PL/000513/Katarzyna Barańska

Photo: LIFE08 NAT/PL/000513

Photo: LIFE08 NAT/PL/000513

Photo: LIFE07 NAT/IT/000507/Matteo Caldarella

Species

Saimaa ringed seal

(Pusa hispida saimensis)

One of the world's rarest seals remains on the 'critically endangered' list, but the trend is improving, thanks to LIFE.


Photo: LIFE12 NAT/FI/000367/Miina Auttila

Pusa hispida saimensis	
Conservation Status art. 17 - Finland	*Trend:* **Improving**
Unfavourable – bad (2001-2006)	*Unfavourable – bad (2007-2012)*

About the species

The Saimaa ringed seal is both one of the rarest seals in the world and one of very few freshwater seals. The subspecies lives exclusively in Lake Saimaa, south-eastern Finland. Between the early 20th century and the 1980s, the Saimaa ringed seal population declined from around 1 000 individuals to less than 120. Today, its world population is back to 370-380 seals but it remains 'critically endangered' according to the IUCN Red List.

Conservation challenge

Hunting is no longer the biggest threat to this protected species. Warmer winters as a result of climate change are leading to a scarcity of snow to build lairs in which the seal raises its young. Lairs protect offspring from the cold, predators, and human disturbance. A second significant threat is the impact of accidental bycatch and recreational fishing in Lake Saimaa.

What did LIFE do?

- **Produced a significant amount of new research data that was used for planning and targeting protective actions**
- **Created snow drifts on the lake that can serve as lairs for the seal in winter**
- **Produced guidance for fishermen and other lake users to avoid disturbing the seals**
- **Ensured various fishing groups committed to limiting the use of nets, which are hazardous for seals**
- **Produced planning guidance and created new protected areas to reduce disturbance to the Saimaa ringed seal and facilitate its return to former breeding sites**

LIFE's impact

In 2012, there were just over 300 Saimaa ringed seals. These were struggling to reproduce over winter owing to a significant reduction in snow on the frozen lakes where they make their lairs.

It was not possible to use heavy machinery to create artificial snow, so the LIFE Saimaa project got local people to shovel snow into mounds for the seals. "Local knowledge of the thickness of the ice was very useful in this activity," says project leader Raisa Tiilikainen.

Seals only produce 1 pup in any reproductive season and not every year, so the growth in the Saimaa ringed seal population shows the benefit of the LIFE project's approach. Around 260 pups have been born in the shelter provided by these manmade drifts. While the population size is still far from ideal, some of the other achievements of the project offer further grounds for hope. "Lots of the LIFE activities were included in the conservation strategy and action plan concluded in 2017 and revised fishing legislation has introduced slight changes to fishing gear requirements in line with the project's awareness campaign," says Ms Tiilikainen. According to a survey carried out in the project, 96 % of residents in the Lake Saimaa area consider seal conservation to be 'very' or 'quite important'.

The coordinating beneficiary, Metsähallitus Parks & Wildlife Finland, plans a follow-up project that could include some reintroductions as well as a continuation of the habitat creation work. Nevertheless, the impact of climate change remains very real for the seal, and the lack of snow a serious threat.

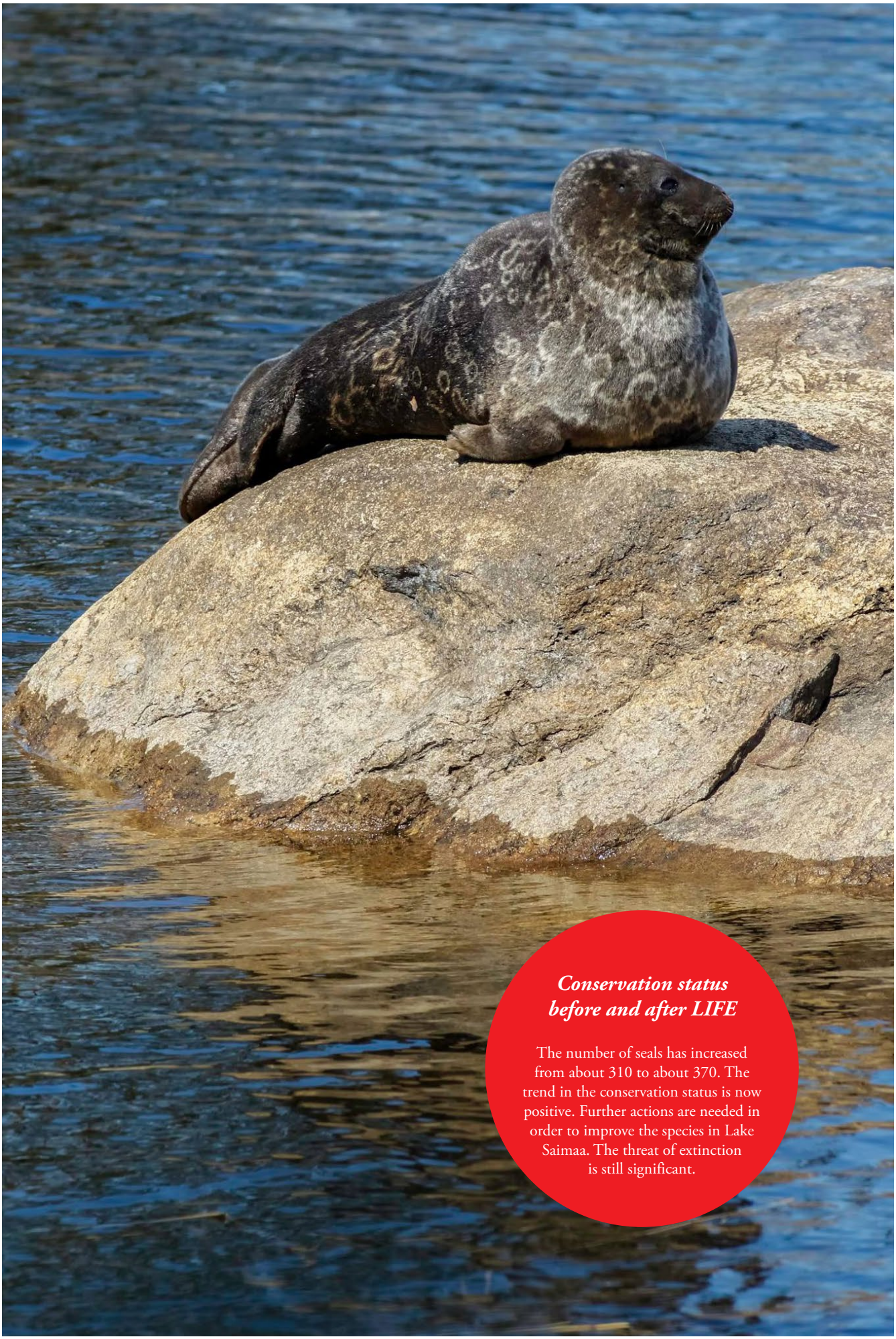


Photo: LIFE12 NAT/FI/000367/Timo Seppälainen

Conservation status before and after LIFE

The number of seals has increased from about 310 to about 370. The trend in the conservation status is now positive. Further actions are needed in order to improve the species in Lake Saimaa. The threat of extinction is still significant.

Iberian lynx *(Lynx pardinus)*

Lifting the conservation status of the Iberian lynx from 'critically endangered' to 'endangered' has been a major conservation success spearheaded by a series of LIFE projects.

Lynx pardinus

Conservation Status art. 17 - Spain and Portugal	*Trend:* **Improving**
Unfavourable – bad (2001-2006)	*Unfavourable – bad (2007-2012)*

About the species

The Iberian lynx, a geographically restricted 'sister species' of the widespread Eurasian lynx *(Lynx lynx)*, was once common all across Spain and Portugal. However, over recent centuries, and particularly in the last decades of the 20th century, its population and distribution dropped dramatically. This was a result of the fragmentation of its habitats and the population collapse of its main prey, rabbit. A census done in 2001 and 2002 revealed that the number of lynxes in Spain had declined to just 94 in two isolated populations of Andalusia and it was already extinct in Portugal.

Conservation challenge

The main challenge was to prevent the feline species from becoming extinct. This was to be achieved by encouraging private landowners to commit to land management practice that respects the lynx and by increasing populations of rabbit that had been decimated by the combined outbreaks of myxomatosis and the lesser-known viral hemorrhagic disease.

What did LIFE do?

Since 1994, 29 LIFE Nature projects in Spain and Portugal have taken steps to halt the extinction of the Iberian lynx. The main actions include:

- **Improving knowledge and understanding of conservation needs**
- **Reinforcing the size and genetic diversity of existing populations through the addition of lynx bred in captivity or relocated from elsewhere and increasing the genetic diversity of these populations**
- **Establishing new lynx populations in areas identified as appropriate with captive-bred individuals**
- **Boosting rabbit populations through construction of shelters, captive breeding and reinforcement of numbers**
- **Achieving sustainable land management agreements and engaging many of the region's large private hunting estates**
- **Persuading relevant stakeholders, particularly landowners, hunters and road users to cooperate in protecting the species**
- **Transnational cooperation with stakeholders focused on lynx conservation including regional and local administrations, NGOs, hunting associations and private companies**

LIFE's impact

Actions taken under the LIFE projects from 1994 to 2006 - such as establishing a supplementary feeding programme and tackling vulnerable habitats - helped relieve the immediate critical situation of the Iberian lynx, raising the population to 177 in 2006. It allowed for a programme of reintroductions to begin, according to Miguel Angel Simón, who led a follow-up LIFE project from 2007 onwards. Captive breeding was shown to be a viable method of maintaining a healthy gene pool, and efforts were also made to connect the populations at Doñana and Sierra Morena de Andújar to further strengthen the species.

Bringing together a large number of stakeholders in LIFE projects has been essential to the success of the conservation work, according to Mr Simón. "LIFE has helped integrate partners and ensure the participation of society in conservation, going from 5 partners in

Photo: LIFE02 NAT/E/008609/Jesús Rodriguez-Osorio

the first project to 10 in the second and 22 in the Iberlince project [which began in 2010]," he says. These partners included administrations, NGOs, hunting associations and private companies.

Iberlince also focused on recovering the historical distribution of the species on the Iberian Peninsula. It sought to transfer knowledge across Spain and Portugal, while also engaging partners in key areas, in particular four Spanish regions: Extremadura, Castilla-La Mancha, Murcia and Andalusia.

Growing upwards and outwards

A recent census carried out under the Iberlince project confirmed the consolidation of the Andalusian populations, with more than 450 individuals recorded. Monitoring also showed the genetic improvement of the Doñana populations, the reduction of persecution of the animal (i.e. poaching and trafficking) and the emergence of four additional population cores outside Andalusia in Matachel, Montes de Toledo and Campo de Calatrava (Spain) and Vale do Guadiana (Portugal). To this end, it will be important to continue to achieve connections and exchanges between populations in and outside Andalusia, encouraging reproduction of lynxes in different areas and improving the genetic viability of the population.

"Looking ahead, we will need to continue to work on improving knowhow and understanding, especially regarding possible solutions to the viral diseases affecting rabbits, and we will need to ensure that viable populations are maintained in areas where reintroductions have been carried out," says Mr Simón.

The Iberian lynx is not only worth protecting in its own right but it also serves as an umbrella species, having a beneficial impact on a range of flora and fauna. The lynx also holds great appeal to those interested in the natural world, and many SMEs have benefited from the nature conservation activities.

Although the conservation status of the species is still 'unfavourable-bad', the trend is positive, largely thanks a coordinated conservation programme that has mainly been implemented through LIFE project actions and including captive breeding in 4 centres in Spain and 1 in Portugal.

At the end of the Iberlince project, the IUCN Red List reviewed the status of the species and improved it from 'critically endangered' to 'endangered'.

Hungarian meadow viper

(Vipera ursinii rakosiensis)

LIFE projects have reinforced and reconnected small populations to help prevent the extinction of the Hungarian meadow viper.

Vipera ursinii rakosiensis	
Conservation Status art. 17 - Hungary	*Trend:* **Improving**
Unfavourable – bad (2001-2006)	*Unfavourable – bad (2007-2012)*

About the species

The Hungarian meadow viper is a subspecies of the meadow viper endemic to the lowland steppe grasslands of the Carpathian basin. It is Europe's most endangered snake, and its smallest viper. Feeding mainly on insects, it prefers grassy habitats that have both dry and wet areas. Before LIFE it was restricted to less than 500 individuals in two locations in Hungary. Four small populations have been discovered in Romania since 2002. The subspecies is extinct in Austria.

Conservation challenge

Populations declined due to habitat destruction and fragmentation, because of the conversion of steppe grassland for forestry and agriculture, and the introduction of mechanical mowing. Isolated populations lost genetic diversity, resulting in high risk of local extinctions. The Hungarian meadow viper is also persecuted, due to the perception that it is a 'poisonous snake', even though it is only mildly venomous and virtually harmless to humans.

What did LIFE do?

Two LIFE projects from 2004 to 2013:

- **Restored steppe grassland and reconverted a forestry plantation to increase the area of continuous viper-suitable habitat**
- **Created a viper captive-breeding centre and released over 500 individuals**
- **Established a genetic screening programme to reduce inbreeding depression**
- **Improved public appreciation of the endangered snake through displays at Budapest Zoo and Schönbrunn Zoo in Vienna**
- **Actions covered 82% of the EU population of the species**

LIFE's impact

"The major result of the LIFE projects was that population decline has been stopped and the viper's habitat is secured," says Bálint Halpern of MME/BirdLife Hungary who led both the HUNVIPURS and CONVIPURSRAK projects.

"We established a captive-breeding programme to maintain genetic diversity. In total, over 500 individuals were released, equalling the estimated original population before the project," he recalls. "The breeding centre is still operating. In 2018, we had 260 vipers born and saw releases at 6 locations. The captive-breeding programme has been very successful."

LIFE funded a wide-ranging habitat purchase and restoration programme, involving the removal of invasive non-native plants and a forestry plantation to increase the area of continuous viper habitat to more than 1 600 ha.

According to Mr Halpern, grassland reconstruction also boosted populations of many other typical steppe species. Management is crucial: "The structure of the grass is important. To reach a good status for the grassland we use extensive grazing and avoid mechanical mowing."

Vipers released into new habitat areas during the LIFE projects were monitored using radio tags. Released individuals were recaptured 3 or more years afterwards, confirming their survival and enabling the mapping of dispersal patterns.

"Population decline has been stopped and the viper's habitat is secured."

Photo: LIFE04 NAT/HU/000116

Photo: LIFE04 NAT/HU/000116

Photo: LIFE07 NAT/HU/000322/Christophe Thévignot

"We find new individuals not originating from our releases, so these can be vipers from existing populations moving into the restored area or the young of the released vipers," explains Mr Halpern. "There are many good signs of mixing of these neighbouring populations. After several years the area where we are recapturing the released individuals is enlarging."

Looking back, he sums up LIFE's impact as follows: "LIFE funding was fundamental for creating the basis for this conservation programme, and now its true success is the creation of a situation where the Hungarian state is handling this conservation issue as a top priority."

Hungary: population before LIFE (2003)	**Hungary: population at end of LIFE (2013)**	**Hungary: population 2018**
Estimated less than 500 individuals	*More than 500 (after releasing more than 240 individuals)*	*Estimated 500-1000 individuals (after releasing more than 500 individuals)*

Freshwater pearl mussel

(Margaritifera margaritifera)

The freshwater pearl mussel is in decline and disappearing across Europe, but conservationists report successful reproduction in one population in Belgium thanks to LIFE.

Margaritifera margaritifera	
Conservation Status art. 17 - Belgium (Continental region)	*Trend:* **Improving**
Unfavourable – bad (2001-2006)	*Unfavourable – bad (2007-2012)*

About the species

The freshwater pearl mussel can live for up to 200 years. It has a complex lifecycle with planktonic and parasitic stages. During reproduction, the larvae of this species live in the gills of brown trout or salmon, before the juvenile mussels bury themselves in the riverbed to develop. The freshwater pearl mussel is a good indicator of top-quality river ecosystems. It filtrates and cleans water and protecting this umbrella species has a positive impact on the entire river ecosystem.

Conservation challenge

Populations of the freshwater pearl mussel have been decimated across Europe over the past century, all but disappearing from many areas as a result of habitat destruction, pollution and deliberate killing in search of pearls. In Belgium, just a few relict populations remain in cleaner river basins such as the Rulles, Sûre and Vierre.

The species is very sensitive to alterations of its natural habitat, in particular to the stabilisation of artificial riverbanks and riverbed profiling for agriculture and forestry. Reproduction is dependent upon the mobility of host trout and salmon, which can be compromised by obstacles in rivers (weirs, hydropower, etc.). The larvae and young mussels are affected by poor water quality, especially nutrients and sediments from agriculture which can choke and kill young buried mussels.

What did LIFE do?

- **Covered 100% of the species' range in Wallonia**
- **Located the most harmful riverine 'black spots' for the lifecycle of the pearl mussel**
- **Improved river habitats by removing spruce trees, planting deciduous and riparian woodlands on river banks and installing fences to prevent cattle accessing watercourses**
- **Purchased land along relevant sections of the riverbank to create protected areas and/or implemented land use agreements that take into account the freshwater pearl mussel's needs**

LIFE's impact

Conservation efforts that were kickstarted by a LIFE project between 2002 and 2007 have helped address mussel habitats in Belgium that were most at risk. "LIFE has made it possible to implement good restoration actions at the right place," affirms Grégory Motte of the Wallonian department of agriculture, natural resources and the environment.

Progressive improvements begun by LIFE have resulted in freshwater pearl mussels breeding again in one of the river systems targeted (the Anlier stream). Thanks to strong partnerships forged through the LIFE project, many farmers in the project areas continue to farm without nutrient inputs that can be fatal to the mussels.

Building on LIFE's work, the Walloon government approved an investment plan for water-treatment stations that takes into account the needs of the freshwater pearl mussel. This marked the first time in Belgium that nature conservation objectives had been a determining factor at such a level of water-treatment policymaking.

Despite encouraging results, Mr Motte emphasises that the species remains "extremely fragile". On many rivers, population numbers

Photo: LIFE09 NAT/FR/000583/Hervé Ronné

are too low to hope to see young mussels appear naturally even if the habitat is restored, and it will therefore be necessary to carry out additional reintroductions and population reinforcements.

Some 400 juvenile pearl mussels from a breeding station in Luxembourg established by a later LIFE project (Ardmouperl) have been reintroduced in the stream where mussels are breeding, in order to secure a viable long-term population.

"The breeding station, like a Noah's ark, is keeping the different Walloon genetic strains alive!," says Mr Motte.

Photo: LIFE09 NAT/FR/000583/Alexandre Lamoureux

Azores bullfinch

(Pyrrhula murina)

In the Azores, LIFE has helped downgrade the threat to Europe's rarest passerine bird from 'critically endangered' to 'vulnerable' on the IUCN Red List.

Pyrrhula murina

Conservation status art. 12 – PT

Trend: **Stable**

Threatened (2008-2012)

About the species

Known commonly as the 'priolo', the Azores bullfinch is found only in natural laurel forests of the island of São Miguel in the Azores (Portugal). This true finch is 15-17 cm and weighs about 30 g. It is known for its distinctive, flute-like song. In 2002, the Azores bullfinch population was estimated at only 203 individuals. The main cause of its decline was habitat destruction due to the spread of invasive alien species, such as Kahili ginger *(Hedychium gardnerianum)*, a native of the Himalayas. This habitat loss also removed the bird's sources of food.

Conservation challenge

There were several specific challenges connected to the conservation of the 'priolo'. In particular, a lack of knowledge of effective control and eradication techniques for the different invasive alien species (IAS) in the conditions found on São Miguel (high slopes and unstable terrain). There was also inadequate legislation regarding the control of invasives and protection of native species, and a lack of awareness of the species in the Azores. Further challenges include the absence of a suitable management plan for the of Pico da Vara/Ribeira do Guilherme Natura 2000 site, where the priolo is found. Finally, it was necessary to engage a range of stakeholders to ensure sustainable land management.

What did LIFE do?

Four LIFE projects since 1994, including 3 in the last 15 years:

- **Supported the restoration and sustainable management of native vegetation and the removal of invasive plant species**
- **Focused on protecting and planting native species in core areas in order to restore the native laurel forest habitat, which is a vital source of food for the Azores bullfinch**
- **Proposed a threefold increase in the size of the Natura 2000 site of Pico da Vara/Ribeira do Guilherme on São Miguel in order to cover the whole range of the species**
- **Successfully lobbied for new legislation on control and eradication of the relevant IAS at regional level**
- **Increased awareness and support for the species by making it emblematic of sustainable tourism initiatives on São Miguel ('Lands of Priolo')**

LIFE's impact

The LIFE programme was a "great help to put into practice the actions identified in order to protect the Azores bullfinch," says Joaquim Teodósio from the conservation NGO, SPEA. This BirdLife partner organisation has coordinated the 3 projects that have targeted the species since 2003. The outcome has been a measurable increase in the priolo population (to an estimated 675-2 250 birds in 2013).

But Rui Botelho, who is coordinating the latest project, Life Terras do Priolo, which ends in 2019, cautions that "the scale of the problem of IAS on São Miguel will continue to pose a threat to the species if we fail to ensure the maintenance of the restored areas." This project is thus specifically promoting sustainable tourism as part of its efforts to ensure long-term sustainable management of priolo habitats.

Photo: LIFE12 NAT/PT/000527/Ruben Coelho

Photo: LIFE07 NAT/P/000630/NEEMO EEIG/João Salgado

Photo: LIFE07 NAT/P/000630

Great bustard

(Otis tarda)

Together with stakeholders, LIFE has improved grassland habitats and modified energy infrastructure to reduce fatal collisions, thus enabling the recovery of great bustard populations in central Europe.

Otis tarda

Conservation status art. 12 – AT and HU

Trend: **Increasing**

Secured (2008-2012)

About the species

The great bustard *(Otis tarda)* is a large, social bird species inhabiting open farmland and semi-natural grasslands. It feeds mainly on plants and insects. The global population may be as low as 45 000 individuals, mainly living in Spain. On the global IUCN Red List, it is reported as 'vulnerable' showing a decreasing population trend, however at European level the species is considered as 'least concern' due to positive prospects of the Iberian population.

Conservation challenge

The great bustard has declined rapidly in central Europe due to the loss, degradation and fragmentation of habitat, and the spread of intensive farming practices in breeding areas. In West Pannonia (Austria, Hungary, Slovakia) the population declined from at least 3 500 individuals in 1900 to some 130 in 1995. Today, the main threats are collisions with electricity power lines and other energy and transport infrastructure.

What did LIFE do?

In the Pannonian bioregion, 8 LIFE projects since 1992 have:

- **Improved great bustard habitats by setting up or improving EU agri-environmental schemes**
- **Buried power lines or made them more visible to prevent fatal collisions**
- **Provided data for planning wind power locations**

LIFE's impact

Watching a flock of 250 great bustards flying across an open landscape in Austria near the Slovak border gives a good picture of what LIFE has achieved here. In 1996, the species was close to extinction in Austria, with only a few birds locally and around 60 in the whole country. Today, over 400 birds can regularly be seen in the Parndorfer Platte-Heideboden Natura 2000 site alone.

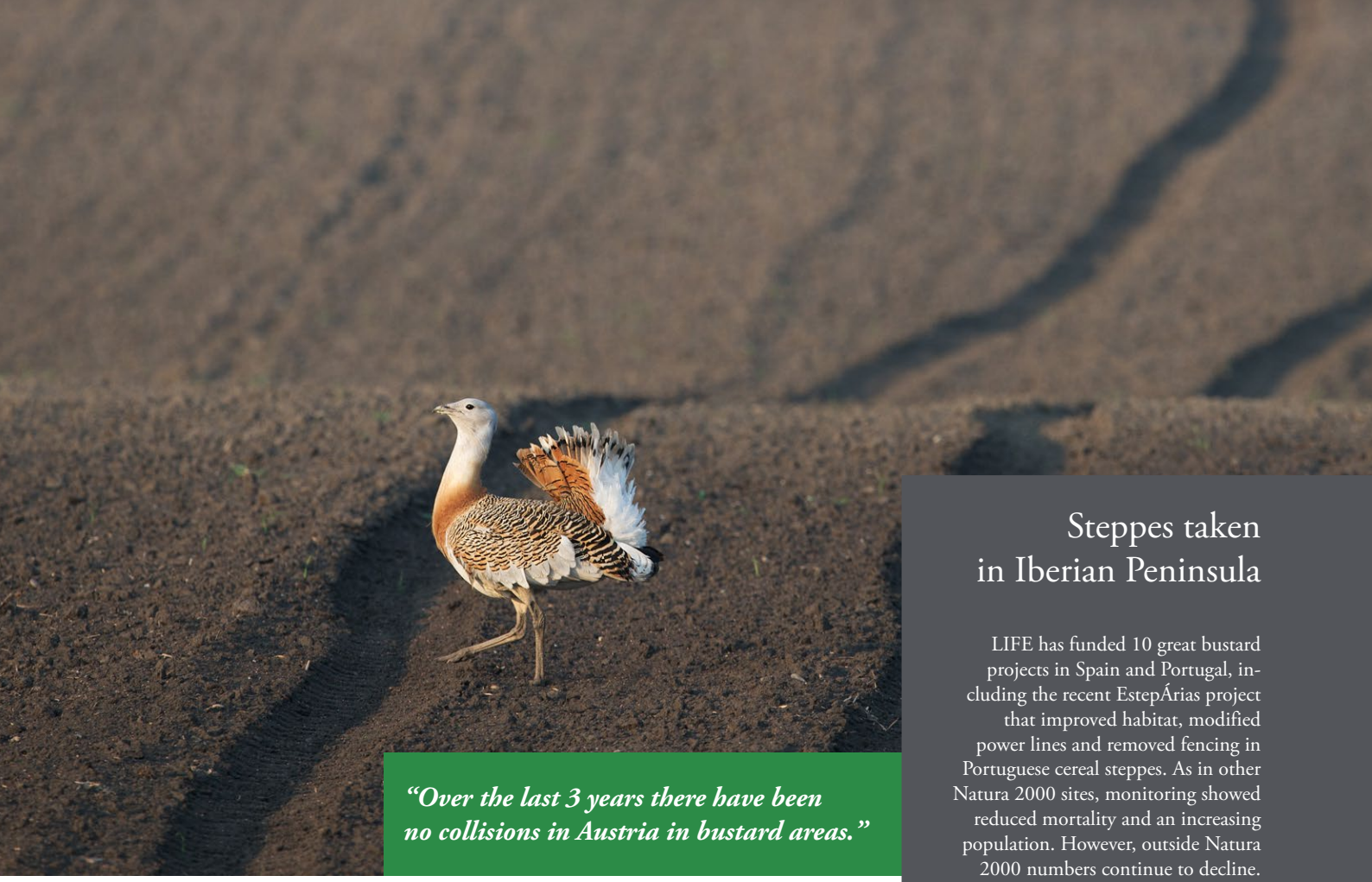
Werner Falb-Meixner, chairman of the Austrian Society for Great Bustard Conservation (ÖGG), worked with hunters in 1995 to create fallow that benefits both partridges for game and great bustards. Austria's most successful nature conservation story developed from this, he believes. From the start, LIFE projects have built partnerships.

"The main conservation challenge is finding solutions through agreements between farmers, villages, hunters and nature conservationists," he says. "It's a long process, but it has been a big success. Bringing people together has reduced conflicts."

Early success relied on agri-environment schemes, under which farmers are paid to cultivate special fallow for the great bustard. Rural Development Programmes in Austria and Hungary continue to support low-intensity grazing and post-breeding autumn mowing, which is crucial for maintaining open grassland habitat for great bustards, and enhancing biodiversity to support many bird species.

However, though populations recovered and continued to increase, the most important cause of mortality remained, namely collisions with power lines.

The main aim of 3 Austrian LIFE projects was to make power infrastructure safe, according to Rainer Raab, project assistant and previous LIFE project manager. An ongoing project sees coordinat-



"Over the last 3 years there have been no collisions in Austria in bustard areas."

Photo: LIFE09 NAT/AT/000225/Franz Kovacs

Steppes taken in Iberian Peninsula

LIFE has funded 10 great bustard projects in Spain and Portugal, including the recent EstepÁrias project that improved habitat, modified power lines and removed fencing in Portuguese cereal steppes. As in other Natura 2000 sites, monitoring showed reduced mortality and an increasing population. However, outside Natura 2000 numbers continue to decline.

ed cross-border actions taking place on a large scale in Austria and Hungary.

Around 100 km of medium-voltage power lines have been buried in bustard habitat in Austria, and around 25 km in Hungary, in collaboration with energy companies. High-voltage power lines are marked to make them more visible to flying birds.

"At the start of the Austrian LIFE projects, between 4 and 7 birds every year - up to 71% of dead birds found - were killed by collisions with power lines, but over the last 3 years there have been no collisions in Austria in bustard areas," says Dr Raab.

Wind turbines are also everywhere in this part of Austria, except in Natura 2000 sites hosting great bustards. The regional governments of Lower Austria and Burgenland, together with BirdLife Austria, agreed on places where turbines were allowed and not allowed, to protect birds. Data from LIFE was incorporated into wind turbine planning, enabling the coexistence of wind power and great bustard conservation.

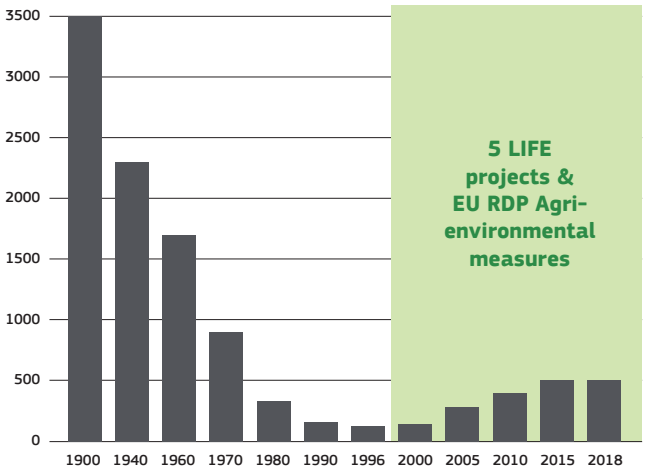
Great bustards therefore fly safely through attractive open landscapes devoid of hazardous infrastructure. Monitoring and GPS tracking has revealed flock movement between habitat types in 3 countries: small fields of diverse bird-friendly crops in Austria; large rapeseed fields in Slovakia; and extensive fallow managed for bustard in Hungary. "It is truly a cross-border population. Males can even be in Austria, Hungary and Slovakia on the same day," says Dr Raab.

"Agri-environmental schemes result in many chicks, but LIFE funding was necessary to reduce the mortality of adults. You need both," he explains. "To be honest, no one expected it was possible to extend the population in the way we have managed in the last years. It was only possible with money from LIFE."

The great bustard is also an important umbrella species. "Money spent on it is good for all nature," says Mr Falb-Meixner. For example, putting medium-voltage power lines underground stops raptors such as the imperial eagle *(Aquila heliaca)* being killed

Reporting under the EU nature directives may soon upgrade the status of the great bustard in Austria from 'critically endangered' to 'endangered', through Dr Raab cautions that the population is still unsustainable without special management measures.

West Pannonian population of the great bustard between 1990 and 2015



Source: Raab et al. (2010) and own data. Numbers for 1900 to 1990 estimated

Yelkouan shearwater

(Puffinus yelkouan)

LIFE has funded conservation measures that have improved the breeding success of this Birds Directive species, to secure its future in the Mediterranean.

Conservation status before and after LIFE

Birds Directive article 12 reporting in 2013 estimated that the total EU breeding population was between 19 000 and 29 900 pairs, with an increasing population trend. This trend is in part thanks to the efforts of LIFE projects.

Puffinus yelkouan

Conservation status art. 12 – MT and IT

Trend: **Increasing**

Secured (2008-2012)

About the species

Around three-quarters of the global population of the Yelkouan shearwater *(Puffinus yelkouan)* breeds in Italy, Malta and Greece, on islands and rocky inlets. However, as a result of low rates of adult survival and breeding success, the population declined to the extent that it was classified as 'vulnerable' on the IUCN Red List.

Conservation challenge

The main threats to this ground-nesting seabird are all connected to human activities. Introduced rats that eat the eggs and young chicks are sustained by litter left by visitors. Other causes of mortality are fishery by-catch and stranding caused by light pollution. Shearwater breeding habitats have been lost or degraded and nesting colonies are disturbed by commercial and private boats.

What did LIFE do?

Three LIFE projects in Italy and 3 in Malta have addressed the main threats to this species by:

- **Eradicating rodents**
- **Removing litter near breeding sites**
- **Controlling invasive plant species**
- **Creating partnerships and introducing measures to reduce mortality and disturbance to nesting colonies from fishing, boating and illuminated maritime activities**

LIFE's impact

The Italian Montecristo 2010 project eradicated the black rat *(Rattus rattus)* from the island of Montecristo in the Tuscan Archipelago. As a result, more nesting pairs of Yelkouan shearwater survived and their breeding success improved: 93-95% of pairs successfully bred over 2 years without the rats. The project team also removed tree of heaven *(Ailanthus altissima)*, an invasive plant degrading nesting habitat. More recently, LIFE Puffinus Tavolara successfully eradicated rodents from Tavolara Island off north-east Sardinia; actions that are being extended to other Italian islands during the ongoing LIFE PonDerat project.

The first of 3 Maltese LIFE projects focused on the largest colony of Yelkouan shearwaters (*Garnija* in Maltese) at L-Rdum tal-Madonna. It started a major rat-control programme there in 2007. The effects were immediate, with the project reporting a 10% population increase. Breeding success has been at or over 80% in each of the consecutive 12 years with rat control at this site.

The MALTA SEABIRD PROJECT conducted extensive surveys to identify key feeding areas for Yelkouan shearwaters. This information enabled the Maltese government to create 8 new marine Natura 2000 sites in 2016.

The ongoing LIFE project (LIFE Arċipelagu Garnija) is implementing further actions to secure the Maltese Islands for the species, including the replication of the rat control success story in other colonies. For example, rats were eliminated on St Paul's Islands during the 2018 breeding season; only 1 chick survived from 9 monitored breeding pairs in the year before rat control, but 7 chicks survived in 2018.

"A cave with healthy nestlings in contrast to scattered eggshells demonstrates successful LIFE-funded conservation," says Martin

Austad of BirdLife Malta, the Arċipelagu Garnija project warden.

"Currently, there is predator control implemented for half of the Maltese population to reduce this main threat on land," says Paulo Lago, a former LIFE project manager. "The main threat at sea is seabird by-catch on fishing gear, which is a big challenge as solutions need the involvement of government authorities, fishermen, researchers and conservationists."

The current LIFE project is conducting the first-ever study of the impacts of light pollution from bunkering (fuelling) vessels in front of Yelkouan shearwater colonies. This has demonstrated that shearwater colony attendance is reduced when ships illuminate the cliff faces where the birds nest. The project is also creating partnerships with stakeholders to reduce light pollution reaching the colonies from coastal roads, towns and a ferry terminal. Light pollution disorientates juvenile birds trying to fly to sea and causes them to become stranded, for instance, in urban areas where they are particularly vulnerable. Solutions include switching off unnecessary lighting at night and shading or directing light more efficiently to the spots where it is needed.

"The LIFE programme has reduced the main threats on land. The marked decreasing population trend has been stopped in the major colony and the population stabilised. By the end of Arċipelagu Garnija it is expected that the same will occur in other important colonies," says Mr Lago.

In 2018, the LIFE Arċipelagu Garnija team ringed 130 chicks and fledglings from 9 colonies. They believe that 2018 has probably been the most successful year yet for breeding in Malta, thanks to the conservation actions implemented by the LIFE projects. Yet, more still needs to be done to reduce the threat of by-catch and disturbance at sea.

The recently-completed LIFE Preparatory project, EuroSAP has developed a European Species Action Plan for the Yelkouan shearwater. And in a further sign of the scope of LIFE's impact on the species, a new project, LIFE Artina, is working to eradicate rats from Croatian shearwater colonies.

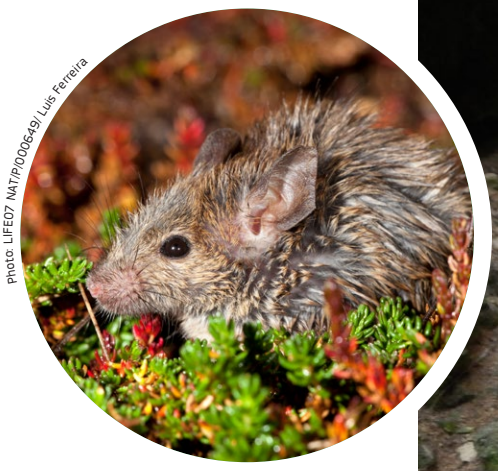


Photo: LIFE07 NAT/P/000649/ Luis Ferreira

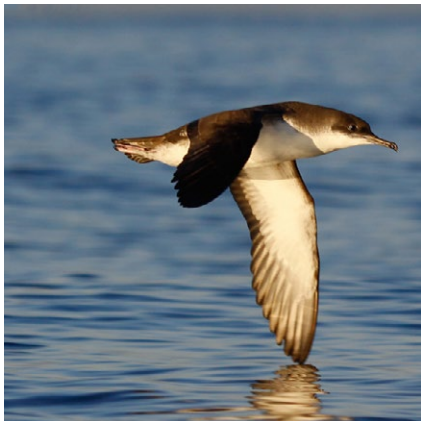


Photo: LIFE06 NAT/MT/000097

"The LIFE programme has reduced the main threats on land."

Bearded vulture

(Gypaetus barbatus)

LIFE is playing a vital role in the return of bearded vultures to mountain ranges across Europe. The IUCN Red List assessment says the population of this 'vulnerable' species is very small but increasing.

Photo: LIFE04 NAT/ES/000056

Gypaetus barbatus

Conservation status
art. 12 – FR and ES

Trend:
Increasing

Threatened (2008-2012)

About the species

The bearded vulture, the rarest and largest of Europe's 4 vulture species, once inhabited high mountain ranges across southern Europe. Also known as the Lammergeier or 'bone breaker', the bearded vulture is unique among birds in feeding almost exclusively on bones. It lives up to 40 years, flying long distances when young but returning home to breed. Typically starting breeding at eight, each pair bears, at best, only a single chick per season. In 2013, it was reported under Article 17 of the Habitats Directive that there were 170-180 breeding pairs in the EU.

Conservation challenge

Forty years ago, the species was extinct in the Alps and restricted to 40-50 pairs in the Pyrenees and tiny populations on Corsica and Crete. The main threats to address are population fragmentation, food shortages caused by changing livestock management practices, poisoning from baits laid against predators or carcasses filled with lead shot, and collision with powerlines.

What did LIFE do?

Six LIFE projects have addressed the main threats in the Alps, Massif Central and Andalusía by:

- **Rearing vultures in captivity and releasing them to reconnect populations**
- **Supplementary feeding at 'vulture restaurants'**
- **Reducing mortality from poison baits through anti-poison patrols**
- **Establishing bans on lead ammunition**
- **Making energy and ski infrastructure more visible to reduce collisions**
- **Insulating electricity cables on pylons to prevent birds being electrocuted**

LIFE's impact

"Once ambitious long-term conservation programmes for the bearded vulture start, LIFE projects follow to consolidate and accelerate them," says José Tavares, Director of the Vulture Conservation Foundation (VCF). "LIFE funding has been extremely important, because it helps focus the stakeholders around the project and gives the financial means for sustained efforts."

After the reintroduction of birds in locations across their former range, firstly in the Alps in 1986 and then in the Massif Central in France and the Sierra de Cazorla in Andalusía, LIFE projects have strengthened populations by enhancing every component of these conservation programmes.

"LIFE projects have contributed to mitigating all the main threats to the species, to monitoring, to the excellent communication work, and some of the reintroduction actions," Dr Tavares says.

In France and Spain, projects have used satellite tags to monitor vultures. "The tagging of wild birds in nests and captive-bred birds before release allows us to know exactly where they feed and to understand dispersal mechanisms, which are very important when we are trying to connect populations," he explains. Importantly, it also gives insight into causes of mortality.

VCF is now leading efforts to link populations and promote genetic flow between them, including the through the current project,

Conservation status before and after LIFE

The EU bearded vulture population is assessed as 'threatened' by the IUCN, however the trend for the breeding population is increasing in both the short- and long-term. This increase is in great part thanks to the efforts of the LIFE projects.

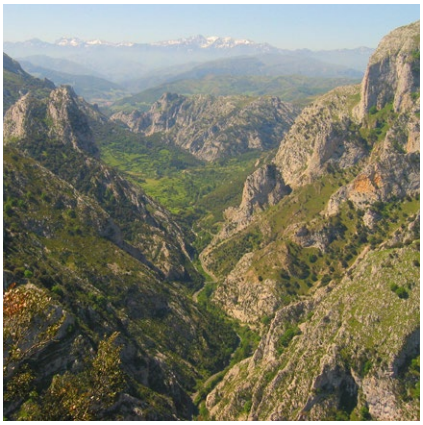


Photo: LIFE02 NAT/E/008624

Photo: LIFE12 NAT/ES/000322

"The recovery of the bearded vulture through reintroductions in Europe is one of the world's best wildlife conservation stories."

LIFE GYPCONNECT. "This in itself will help strengthen their conservation status. Connectivity will increase their genetic diversity and their resilience to change, especially climate change impacts on mountain habitats," says Dr Tavares.

Linking the Andalusian and Pyrenean populations, and linking bearded vultures in the Alps to a proposed reintroduced population at the western edge of the European range, should re-establish a functional European meta-population from Iberia to the Balkans.

"All in all, the situation is very positive. We have 170 breeding pairs of bearded vultures in the Pyrenees, the populations in Corsica and Crete are still there, and the Alpine reintroduced population is doing extremely well and now comprises 52 pairs. In Andalusía, there are already 4 breeding pairs, of which 2 bred this year. We are expanding the area and have practically tripled the number of breeding pairs in Europe from what it was about 40 years ago," says Dr Tavares. "The recovery of the bearded vulture through reintroductions in Europe is one of the world's best wildlife conservation stories."

He believes that LIFE projects are particularly good at gathering many stakeholders together and at capturing their imagination in a very positive way, more so than other nature conservation projects. For the bearded vulture and other raptors, and the wider conservation objectives surrounding these charismatic 'flagship' species, it is extremely important to be working with hunters, livestock breeders, policymakers, the tourism sector and other stakeholders who would not otherwise discuss conservation.

"Europe is the only continent where vultures, 3 out of the 4 species, are increasing and recolonising their former ranges. Elsewhere, in Asia and Africa, we are faced with a vulture crisis," says Dr Tavares. He puts the EU's success down to good legislation, namely the Birds and Habitats Directives, clear priorities through species action plans, excellent research and conservation capacity, and the funding available from the LIFE programme and other sources.

Photo: LIFE09 NAT/FR/000583/Hervé Ronné

Selected projects

Here is a list of the most recent LIFE projects of the species and habitats are featured in LIFE improving nature publication.
Arranged by theme, the list highlights projects relevant to improve the conservation status of species and habitats.
For more information on individual projects, visit the online database at: http://ec.europa.eu/environment/life/project/Projects/index.cfm

Reference	*Project Title*
4010 - NORTHERN ATLANTIC WET HEATHS WITH ERICA TETRALIX	
LIFE10 NAT/BE/000706	*Restoration of natural habitats in the "Ardenne liégeoise" region*
LIFE06 NAT/B/000091	*Rehabilitation of heaths and mires on the Hautes-Fagnes Plateau*
LIFE03 NAT/B/000019	*Rehabilitation of peat and wet habitats on the Saint-Hubert Plateau*
LIFE08 NAT/B/000033	*Restoration of natural habitats in the Lomme river bassin and in surrounding areas*
21A0 - MACHAIRS	
LIFE08 NAT/UK/000204	*Conserving machair habitats and species in a suite of Scottish Natura sites*
6210 - SEMI-NATURAL DRY GRASSLANDS AND SCRUBLAND FACIES ON CALCAREOUS SUBSTRATES	
LIFE08 NAT/PL/000513	*Conservation and restoration of xerothermic grasslands in Poland - theory and practice*
IBERIAN LYNX *(LYNX PARDINUS)*	
LIFE10 NAT/ES/000570	*Recovering the historic distribution range of the Iberian lynx (Lynx pardinus) in Spain and Portugal*
LIFE08 NAT/P/000227	*Habitat Lince Abutre - Enhancing Habitat for the Iberian Lynx and Black Vulture in the Southeast of Portugal*
LIFE06 NAT/E/000209	*Conservation and reintroduction of the Iberian lynx in Andalucia*
LIFE06 NAT/P/000191	*Lince Moura/Barrancos - Recovery of Iberian Lynx habitat in Moura/Barrancos Site*
LIFE02 NAT/E/008609	*Lince Andalucía - Population recovery of Iberian Lynx in Andalusia*
HUNGARIAN MEADOW VIPER *(VIPERA URSINII RAKOSIENSIS)*	
LIFE07 NAT/H/000322	*CONVIPURSRAK - Conservation of Hungarian meadow viper (Vipera ursinii rakosiensis) in the Carpathian-basin*
LIFE04 NAT/HU/000116	*Establishing the background of saving the Hungarian meadow viper (Vipera ursinii rakosiensis) from extinction*
FRESHWATER PEARL MUSSEL *(MARGARITIFERA MARGARITIFERA)*	
LIFE02 NAT/B/008590	*Conservation of habitats of pearl mussels in Belgium*
SAIMAA RINGED SEAL *(PHOCA HISPIDA SAIMENSIS)*	
LIFE12 NAT/FI/000367	*LIFE Saimaa Seal - Safeguarding the Saimaa Ringed Seal*
AZORES BULLFINCH *(PYRRHULA MURINA)*	
LIFE12 NAT/PT/000527	*Life Terras do Priolo - Active protection of the population of the Azores bullfinch (Priolo) and its habitas and sustainable management of Pico da Vara/ Ribeira do Guilherme SPA's*
LIFE07 NAT/P/000630	*Recovery, conservation and sustainable management of Tronqueira/Planalto dos Graminhais*
LIFE03 NAT/P/000013	*Azores bullfinch habitat recovery in Pico da Vara/Ribeira do Guilherme SPA*
GREAT BUSTARD *(OTIS TARDA)*	
LIFE15 NAT/AT/000834	*Cross-border protection of the Great Bustard in Central Europe*
LIFE09 NAT/AT/000225	*Cross-border Protection of the Great Bustard in Austria - continuation*
LIFE05 NAT/A/000077	*Cross-border Protection of the Great Bustard in Austria*
YELKOUAN SHEARWATER *(PUFFINUS YELKOUAN)*	
LIFE14 NAT/MT/000991	*LIFE Arcipelagu Garnija - Securing the Maltese islands for the Yelkouan Shearwater Puffinus yelkouan*
LIFE10 NAT/MT/000090	*Creating an inventory of Marine IBAs for Puffinus Yelkouan, Calonectris diomedea and Hydrobates pelagicus in Malta*
LIFE06 NAT/MT/000097	*SPA Site and Sea Actions Saving Puffinus yelkouan in Malta*
LIFE08 NAT/IT/000353	*Montecristo 2010: eradication of invasive plant and animal aliens and conservation of species/habitats in the Tuscan Archipelago,Italy.*
BEARDED VULTURE *(GYPAETUS BARBATUS)*	
LIFE14 NAT/FR/000050	*Restoration of connections between the Alpine and Pyrenean populations of bearded vulture (Gypaetus barbatus)*
LIFE13 NAT/FR/000093	*Reduction of the human threats affecting the Bearded Vulture*
LIFE12 NAT/ES/000322	*Conservation of the bearded vulture and its contribution to eco-system services*
LIFE04 NAT/ES/000056	*Preliminary actions and reintroduction of the Bearded Vulture*
LIFE03 NAT/F/000100	*International programme for the Bearded vulture in the Alps*

A number of LIFE publications are available on the LIFE website*: https://ec.europa.eu/easme/en/section/life/life-programme-publications*
Printed copies of certain LIFE publications can be ordered free-of-charge at:
https://publications.europa.eu/en/web/general-publications/publications

KH-AJ-18-003-EN-N

LIFE "L'Instrument Financier pour l'Environnement" / The financial instrument for the environment

The LIFE programme is the EU's funding instrument for the environment and climate action

Period covered 2014-2020

EU funding available approximately €3.46 billion

Allocation of funds

Of the €3.46 billion allocated to LIFE, €2.59 billion are for the Environment sub-programme, and €0.86 billion are for the Climate Action sub-programme. At least €2.8 billion (81% of the total budget) are earmarked for LIFE projects financed through action grants or innovative financial instruments. About €0.7 billion will go to integrated projects. At least 55% of the budgetary resources allocated to projects supported through action grants under the sub-programme for Environment will be used for projects supporting the conservation of nature and biodiversity. A maximum of €0.62 billion will be used directly by DG Environment and DG Climate Action for policy development and operating grants.

Types of projects

Action Grants for the Environment and Climate Action sub-programmes are available for the following:

> "Traditional" projects – these may be best-practice, demonstration, pilot or information, awareness and dissemination projects in any of the following priority areas: LIFE Nature & Biodiversity; LIFE Environment & Resource Efficiency; LIFE Environmental Governance & Information; LIFE Climate Change Mitigation; LIFE Climate Change Adaptation; LIFE Climate Governance and Information.

> Preparatory projects – these address specific needs for the development and implementation of Union environmental or climate policy and legislation.

> Integrated projects – these implement on a large territorial scale environmental or climate plans or strategies required by specific Union environmental or climate legislation.

> Technical assistance projects – these provide financial support to help applicants prepare integrated projects.

> Capacity building projects – these provide financial support to activities required to build the capacity of Member States, including LIFE national or regional contact points, with a view to enabling Member States to participate more effectively in the LIFE programme.

Further information

More information on LIFE is available at http://ec.europa.eu/life.

How to apply for LIFE funding

The European Commission organises annual calls for proposals.
Full details are available at http://ec.europa.eu/environment/life/funding/life.htm

Contact

European Commission – Directorate-General for the Environment – B-1049 Brussels (env-life@ec.europa.eu).
European Commission – Directorate-General for Climate Action – B-1049 Brussels (clima-life@ec.europa.eu).
European Commission – EASME – B-1049 Brussels (easme-life@ec.europa.eu).

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