European Commission

LIFE managing habitats for birds

LIFE *Nature*

Environment

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Foreword

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The conservation of Europe's birdlife has been an EU policy priority since the 1970s (the Birds Directive was first enacted in 1979, in fact). Since the establishment of the LIFE programme in 1992, which replaced the earlier ACNAT funding mechanism, EU-level support for endangered bird species and their habitats has focused on targeted practical conservation, restoration and management actions in Natura 2000 network sites throughout the Union. The objective of this publication is to highlight some specific examples of habitat management for birds funded by LIFE.

Examples cover a range of different habitats (principally wetlands, grasslands and forests), species and bio-geographical regions across the EU. Given the importance of sites all along the routes of migratory birds, there are also examples of how LIFE co-funding has been used for transnational cooperation projects managing habitats in multiple locations, as well as to track species to wintering spots in Africa and elsewhere in the EU. This will allow the development of a more integrated approach to conservation in future.

What is clear from reading the publication is that, whilst much has already been achieved in terms of implementing those cornerstones of EU nature conservation policy, the Birds Directive and Habitats Directive, we are now entering a new phase in which the goal is moving from designating and establishing Natura 2000 network sites to establishing mechanisms by which long-term management of the habitats and species found in those sites can be guaranteed.

For many of Europe's most endangered bird species, such as the aquatic warbler, without repeated human intervention (e.g. regular mowing and grazing) their preferred habitats would soon become over grown and uninhabitable. LIFE Nature & Biodiversity has repeatedly shown that it is possible to engage the support of farmers, land managers and landowners to implement farming methods that also benefit the habitats in which Europe's threatened bird populations thrive.

As this publication shows, lessons from the current funding period (2007-2013) can be taken forward by the LIFE programme during 2014-2020. They can also be used to inform the design of agri-environmental schemes that will provide farmers with the financial security necessary to persuade them to manage land in ways that also support rare birdlife and other endangered species and habitats.

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INTRODUCTION

The conservation status of birds' habitats and EU birds policy

There has been major deterioration and loss of habitats throughout the EU. This has had a knock-on effect on a number of endangered bird species that depend on these habitats. This introductory article outlines the conservation status of habitats in relation to birds, including emerging trends and threats. It also provides an overview of EU policy relating to birds.

Photo: LIFE10 NAT/FR/000197 - Louis Marie Préau

Young corncrakes were ringed and tracked following the mowing of their habitats

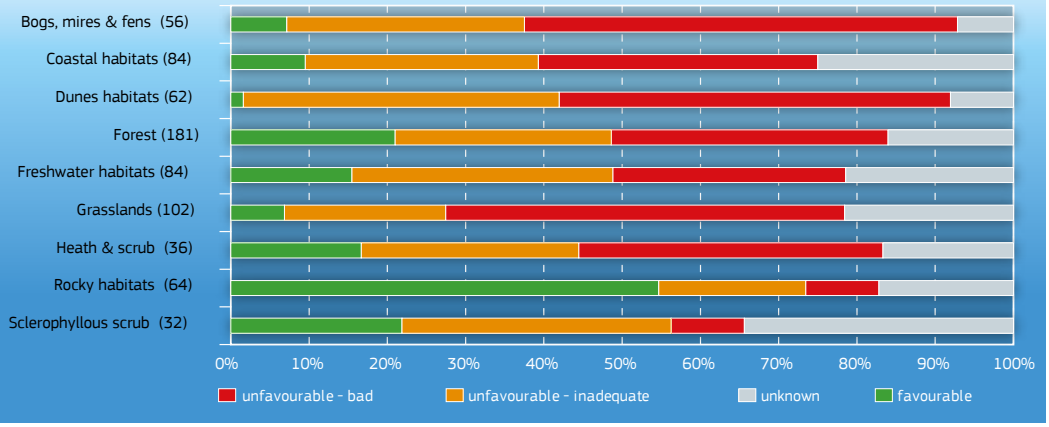
A 2004 survey by BirdLife International[1] found that, out of 448 bird species surveyed in Europe, 216 (48%) had an "unfavourable" conservation status at the EU-25 level. This also indicates that the habitats that support bird species are in an "unfavourable" condition as well.

Urban sprawl and transport networks have fragmented and reduced birds' habitats; intensive agriculture, forestry and fisheries and the use of pesticides have destroyed habitats and diminished birds' food supplies; and bird populations have been damaged by unregulated hunting and persecution.

Member States are obliged to report on the conservation status of habitats included in Annex I of the Habitats Directive (EEC/92/43), under Article 17 of the directive. The 2009 Article 17 report showed that the overall conservation status of grassland, wetland and coastal habitats is particularly poor. Grasslands are mainly associated with traditional patterns of agriculture, which are disappearing throughout the EU, and the conservation status of all habitat types associated with agriculture is significantly worse than other types of habitat: only 7% of such assessments are "favourable", in comparison with 21% for 'non-agricultural' habitats. This is caused by a shift towards more intensive agriculture, abandonment of the land and poor land management. Wetlands are being converted to other uses, and are under climate change pressure. Coastal habitats face increasing pressure from tourism. According to BirdLife, the most significant threat to Europe's bird populations comes from land-use change and habitat loss, followed by hunting and direct persecution of birds. Climate change and invasive species also pose threats to native bird populations.

1 Birds in the European Union: a status assessment. (2004) Wageningen, The Netherlands: BirdLife International.

Figure 1. **Conservation status of habitats included in Annex I of the Habitats Directive**



Source: ETC/BD EEA

In many cases, bird species are an indicator of the conservation status of habitats. The most endangered bird species rely on habitats that have been in a decline in recent years, namely traditional farmland, wetland and forests. There are also certain specialised marine/coastal seabirds that are in a poor condition.

As Figure 2 shows, birds that rely on semi-natural farmland habitats (such as grasslands) have been under pressure in the last three decades. The common farmland bird population index has shown a reduction of more than 30% since the beginning of the 1980s.

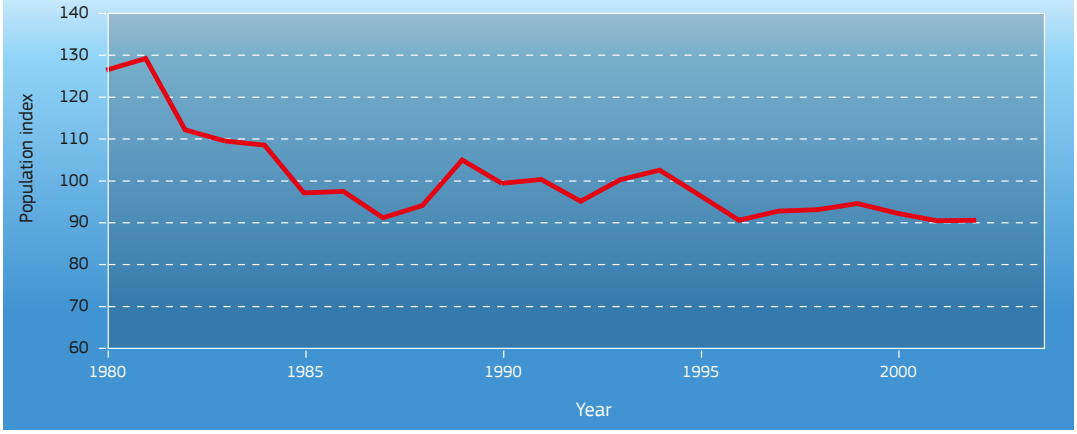
Other bird species included in the annexes of the Birds Directive[2] that have specific habitat requirements also face increasing threats. These include, for example the corncrake and the aquatic warbler, which are dependent on hay meadows with low-intensity mowing. Dry grasslands with extensive grazing support several species of falcon, as well as great bustards.

Wetland-related habitats, which are vital for numerous bird species, such as ducks (*e.g. Oxyura leucocephala*), cranes, curlews and other waterfowl, are also in a poor condition. More than 80% of a wetland habitat type- bogs, fens and mires – have been assessed as being in an "unfavourable" conservation status (see figure 1).

Although afforestation has increased the area of forest in Europe in recent years, because of intensification of forest management and plantation with non-native species, old growth forest habitats are in a poor state. Such forests are home to rare species of eagles and woodpeckers. A 2004 BirdLife survey found that 30% of bird species linked to forest habitats had an "unfavourable" conservation status.

2 Directive 2009/147/EC – this is the codified version of Directive 79/409/EEC as amended

Figure 2. **Trends in farmland bird populations in some EU countries between 1980 and 2003**



Source: EEA 2005, Pan-European Common Bird Monitoring project (EBCC, BirdLife Int, RSPB)

EU birds policy

The Bird Directive is the EU's oldest piece of nature legislation and one of its most important. It creates a comprehensive scheme of protection for all wild bird species naturally occurring in the Union.

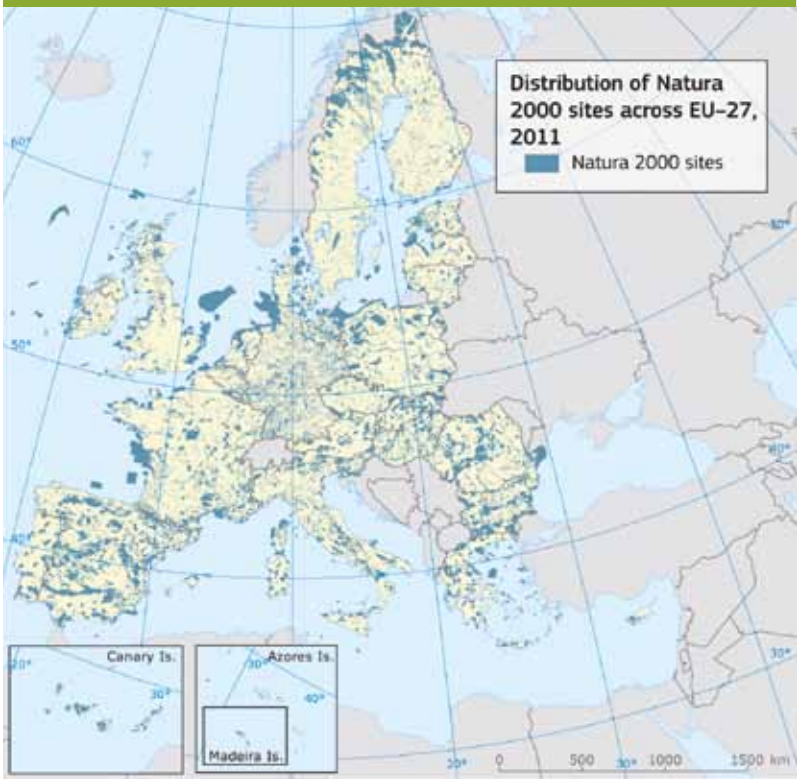
The directive recognises that habitat loss and degradation are the most serious threats to the conservation of wild birds. It therefore places great emphasis on the protection of habitats for endangered species (listed in Annex I of the Birds Directive), especially through the establishment of a coherent network of Special Protection Areas (SPAs) comprising all the most suitable territories for these species. Member States are required, in parallel with the SPAs to propose as a Site of Community Importance (SCI) any site containing habitat types listed in Annex I and species listed in Annex II of the Habitats Directive, which, together with SPAs designated under the Birds Directive, form the Natura 2000 network. This European network of important ecological sites is the centrepiece of EU nature and biodiversity policy.

As of November 2012, the Natura 2000 network covered 768 000 km^2 (17.9%) of the EU landmass and more than 217 000 km^2 (some 4%) of its seas. It includes 5 340 SPAs for birds. The range of the network is vast, from flower-rich meadows to cave systems and lagoons, and is reflected in the species and habitats listed in the annexes of the two directives. The nine biogeographical regions of the Natura 2000 network show the full range of the EU's biodiversity.

Now that the Natura 2000 network site designation is almost fully implemented at terrestrial level (there are still substantial gaps in site designation in marine environments), the focus is increasingly turning to ways of establishing the management of the sites proposed by EU Member States.

In addition to the legal protection provided by the Bird Directive, which prohibits hunting, trapping or trading of species listed in Annex I (including their nests and eggs), Member States have to identify and implement specific habitat conservation actions based on the status and ecological requirements of the habitats and species for which the Natura 2000 network sites are designated. The objective is to ensure that these species and habitat types are maintained or restored to a "favourable" conservation status across their natural range. The "favourable conservation status" notion is not mentioned in the Birds Directive but there are analogous requirements to the ones stated in the Habitats Directive. Under Article 4 (see box) all SPAs are subject to special habitat conservation measures to ensure the survival and reproduction of the Annex I birds in their area of distribution, including migratory routes (wintering, staging, and breeding areas).

Figure 3. **Distribution of Natura 2000 sites across EU-27, 2011**



Birds assessment and action plans

Article 12 of the Birds Directive requires EU Member States to report about the progress they have made in the implementation of the Birds Directive. The European Commission, in agreement with Member States, has streamlined reporting procedures in order to focus on data that inform about the conservation status of bird populations, mirroring the requirements of Article 17 of the Habitats Directive. Article 12 reports will be an important tool in the future management of bird populations and in helping Member States to set up conservation priorities.

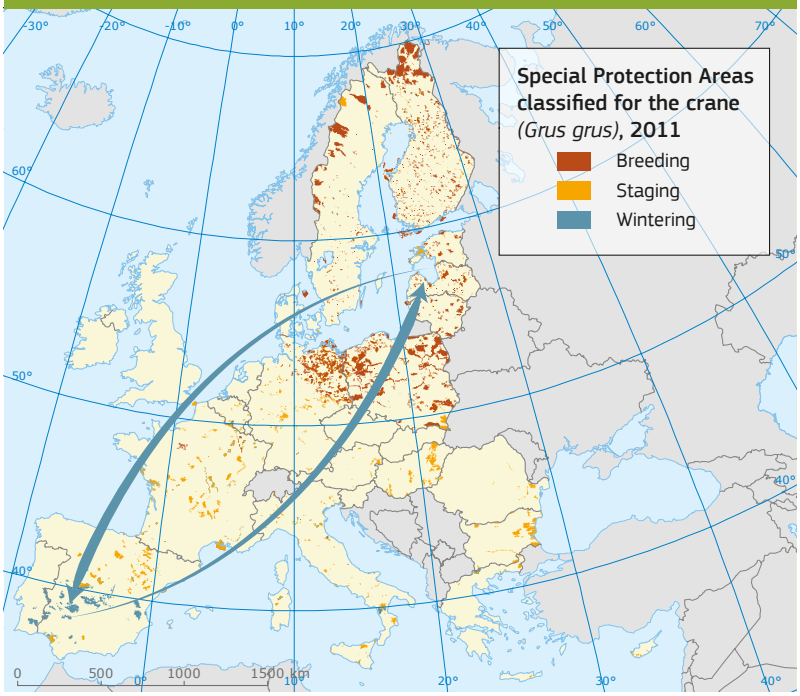
Since 1993, with the financial support of the European Commission, BirdLife international and its partner NGOs have developed and implemented Species Action Plans (SAPs) for 50 Annex I-listed bird species[3].

3 http://ec.europa.eu/environment/nature/conservation/wildbirds/action_plans/index_en.htm

Article 4 of the Birds Directive

1. The species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.
2. Member States shall take similar measures for regularly occurring migratory species not listed in Annex I, bearing in mind their need for protection in the geographical sea and land area where this directive applies, as regards their breeding, moulting and wintering areas and staging posts along their migration routes. To this end, Member States shall pay particular attention to the protection of wetlands and particularly to wetlands of international importance. Figure 4 illustrates this with regards to SPAs for the crane.

Figure 4. **EU SPAs for the crane along its migration route**



These plans provide information about the status and ecology of each species, as well as the threats they face and describe the key management actions that are required to improve their conservation status in Europe. The completed plans have also been examined and approved by the ORNIS Committee established under the Birds Directive.

The SAPs help Member States to set up suitable conservation actions for birds and can be used to identify and prioritise habitat conservation measures. Almost all the species that have a Special Action Plan have been targeted at least once by a LIFE project.

EU Biodiversity Strategy to 2020

Biodiversity loss is an enormous challenge in the EU, for this reason in 2011 the European Commission adopted a new strategy to halt the loss of biodiversity and ecosystem services by 2020[4], and improve the state of Europe's species, habitats, and ecosystems. Although the EU Biodiversity Strategy aims to halt of biodiversity loss in general, two of its six targets ("The full implementation of EU nature legislation" and "more sustainable agriculture and forestry") have specific relevance to the management of bird habitats. The Strategy aims to achieve a significant and measurable improvement in the conservation status of species and habitats protected under the two nature directives. Thus, by 2020, 100% more habitat assessments and 50% more Habitats Directive species assessments should show an improved conservation status and 50% more Birds Directive species assessments should show a secure or improved status.

The Biodiverity Strategy also pays particular attention to ensuring the effective management of Natura 2000 sites. It calls in particular for the establishment and timely implementation of site management plans and the further integration of species and habitat management requirements into key land and water use policies wherever possible. By encouraging more sustainable agriculture and forestry, the Strategy should also play a part in maintaining and enhancing biodiversity. In particular, the EU Rural Development Policy (Council Reg (EC) No.1257/1999), which aims to reconcile agriculture with the objectives of the EU nature conservation policy, has a direct impact on management of habitats used by farmland bird species. By financing agri-environmental measures that go beyond the usual good farming practices, farmers can have a direct impact on the conservation of several European bird species, particularly those that rely on the maintenance of extensive systems (such as grasslands). By paying farmers for a service they provide to society, this type of support helps to diversify agricultural income, particularly in animal-rearing areas and areas of diversified farming. This support to farmers therefore is a major contribution to the management of Natura 2000 sites.

As the next article illustrates, the LIFE programme, and in particular LIFE Nature & Biodiversity, has been an important tool, firstly in the implementation and fulfillment of the objectives of the Birds and Habitats directives and the Natura 2000 network, and, more recently, in pursuit of the objectives of the EU 2020 Biodiversity Strategy.

4 Our life insurance, our natural capital: an EU biodiversity strategy to 2020 (COM(2011) 244)

INTRODUCTION

LIFE and habitat management for birds

LIFE Nature & Biodiversity projects have made an important practical contribution to the management of habitats in support of threatened bird species. Lessons from completed projects can also help to improve the implementation of policy and the conservation status of species going forward.

Photo: LIFE08 NAT/PL/000510 – Mateusz Matysiak

LIFE co-funding is helping manage habitats in Poland in favour of the lesser spotted eagle (Aquila pomarina)

Since 1992, the LIFE programme has co-financed more than 3 700 projects, contributing approximately €2.8 billion to the protection of the environment. This figure includes financial support for more than 1 400 projects that have addressed nature conservation issues concerning protected species and their habitats in Natura 2000 network sites, and supported biodiversity issues in general, such as the control and elimination of invasive species.

Some 380 of these 1 400 projects have directly targeted bird species. The two most targeted species have been the bittern (*Botaurus stellaris*) and corncrake (*Crex crex*) with 61 and 51 projects respectively, followed by the kingfisher (*Alcedo athis*) and red-backed shrike (*Lanius collurio*) (see figure 1). In total, more than half (156) of the 303 bird species listed in the annexes of the Birds Directive have been targeted at least once by a LIFE project. In addition, LIFE has been crucial in reversing the negative trend with regards to the conservation status of bird species and, in particular, supporting the implementation of Species Action Plans for birds[1]. One notable example of the latter led to an improvement in the

1 http://ec.europa.eu/environment/nature/conservation/wildbirds/action_plans/docs/Final%20report%20BirdLife%20review%20SAPs.pdf

Priority species

Unlike the Habitats Directive, the Birds Directive does not distinguish between priority and non-priority species. Nevertheless, for the purposes of LIFE funding, the Ornis Committee has adopted a list[1] of bird species included in Annex I of the directive which are considered as "priority for funding under the LIFE programme". This list includes all globally-threatened species that regularly occur in the European Union.

Under the current LIFE+ programme, projects that focus on practical conservation measures for any of these bird species can benefit from a higher EU co-funding rate, up to 75 %.

1 http://ec.europa.eu/environment/nature/conservation/wildbirds/action_plans/index_en.htm

Figure 1. **Number of LIFE projects by targeted bird species (1992-2011)**

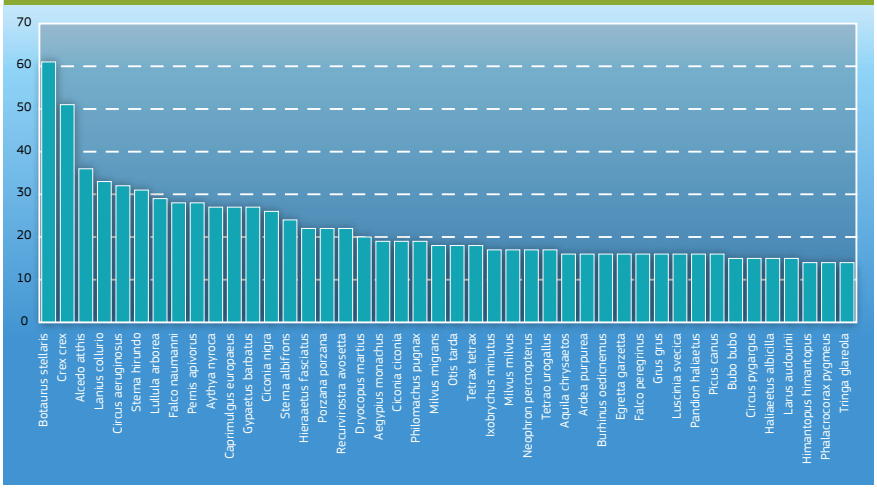
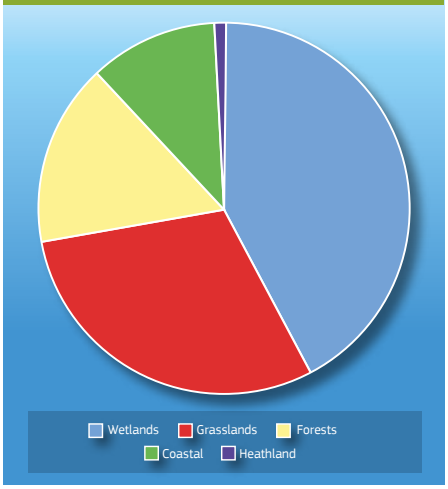


Figure 2. **Habitats for bird species targeted by LIFE**



IUCN red list status of the Azores bullfinch (*Phyrrula murina*) from "critically endangered" to "endangered" (see pages 24-25).

More than 680 LIFE projects have directly or indirectly targeted habitats that support bird species, or more than one habitat per project on average. An analysis of the LIFE project database reveals that 43% of these 680 projects have (directly or indirectly) targeted wetlands, 30% grasslands and 16% forests (see figure 2).

LIFE project actions connected to birds' habitats

- Conservation and restoration of habitats for birds;
- Identification and designation of SPAs;
- Management of SPAs so as to avoid deterioration of habitats and maintenance or restoration of endangered bird populations, including the drafting and implementation of management plans;
- Monitoring and research, including monitoring bird population trends;
- Public consultation on projects and action plans and in the drafting and adoption of management plans;
- Design, proposal and adoption of agri-environmental schemes beneficial for managing birds habitats; and
- Training stakeholders such as hunters and farmers, thereby raising awareness of management best practices.

Photo: LIFE03 NAT/FIN/000039

The large number of wetland projects illustrates the importance such habitats have for Europe's birds, especially during breeding season. Wetlands support more than one-third of Europe's bird species, many of which are endangered and included in Annex I of the Birds Directive. Moreover, wetlands are one of the habitats types that present an "unfavourable" conservation status at EU level. Bird species frequently targeted by LIFE projects, such as the bittern and marsh-harrier (*Circus aeruginosus*), are dependent on wetland habitats (see figure 1). In addition, the LIFE programme has played a vital role in supporting habitat conservation actions for birds that depend on wetlands along their migration routes (e.g. the aquatic warbler - see pages 69-70) and lesser white-fronted goose. Another frequently-targeted habitat, grasslands, also has a high level of "unfavourable" conservation status assessments. Grasslands support several endangered bird species that have been subject to specific LIFE project conservation actions, including the great bustard, little bustard and several species of falcon (see pages 30-38).

When managing habitats for birds, conservation actions carried out by LIFE projects can range from monitoring bird populations to raising awareness of bird-related nature conservation issues (see box for a list of the most common actions).

The objective of this publication is to highlight some examples of best practices and innovative actions in managing habitats for birds implemented by LIFE Nature projects over the last 20 years. Lesson from completed projects can inform future habitat management actions and thus improve or maintain the conservation status of targeted bird species.

Managing habitats for birds

LIFE projects have played a major role in assisting best practices on habitat management for birds throughout the Natura 2000 network. The following pages include examples of such practices from across the EU, providing important lessons for future initiatives in this area.

PINE FOREST HABITATS

Answering the call of **the capercaillie**

The capercaillie is a species that is highly sensitive to changes in its favoured forest habitats. LIFE co-funding has been targeted at developing management structures that involve local landowners and foresters and combine conservation measures with tools to ensure sustainable development of rural economies.

Photo: LIFE08 NAT/F/000474 - Michel Munier

Male capercaillie (Tetrao urogallus urogallus)

Bilberry (Vaccinium myrtillus) is a key food source for the capercaillie

Photo: LIFE09 NAT/ES/000513

The western capercaillie (*Tetrao urogallus*) is the largest member of the grouse family. It has very specific habitat requirements, needing old coniferous forests with a rich interior structure and dense ground vegetation of Vaccinium (berries) species under a light canopy. Capercaillies tend to avoid dense timber production forests and young forests, which provide insufficient cover and food and can impede its rather cumbersome flight.

The particular requirements of the species mean that capercaillie populations in many parts of Europe are seriously threatened by the loss, severe fragmentation and reduced quality of its prime woodland habitats. The main cause of habitat degradation has been the conversion of diverse native forest into monocultural timber plantations. Other threats to the species include predation of chicks - by red foxes, crows, racoon-dogs, pine martens, badgers, American minks, and racoons, depending on the location in Europe; a lack of suitable foraging sites for newly-hatched chicks; collisions with deer fences; and, in some areas, excessive hunting.

A Scottish story

The Scottish capercaillie population is amongst the most threatened in Europe. Indeed, the species is facing extinction in Scotland for a second time - it first disappeared in 1785 but was reintroduced from Sweden in 1837 as a game bird. By the 1970s, there were some 20 000 capercaillies in Scotland, at which point the impact of the threats outlined previously - above all to its favoured habitats – led to a dramatic decline in numbers.

By 2002, when LIFE funding was secured for the 'Capercaillie' project (**LIFE02 NAT/UK/008541**), there were an estimated 1 000 individuals remaining in the wild in Scotland. This project differed from earlier small-scale and localised efforts to conserve the species in that it took a strategic approach, targeting the country's six main capercaillie metapopulations. Project actions were widespread, covering eight SPAs and 37 other important sites (which between them hosted 60% of the total population of the species in Scotland), with the goal of increasing the population to 5 000 birds by 2010.

"What was special about this project was that it needed a good partnership between conservation bodies, forestry (public and private) and gamekeepers," says LIFE project monitor John Houston. "It was one of the first LIFE projects in the UK to engage with all these sectors together." More than 30 local landowners collaborated with the project team, which was led by the conservation NGO, Highland Birchwoods, and which implemented work across more than 25 000 ha of forest.

Project actions included the purchase of 655 ha of SPA for capercaillie habitat management; removal of more than 700 ha of non-native species; burning and swiping of more than 260 ha of heather to improve brood rearing habitat (which involved the use of innovative techniques); marking and removal of deer fencing; predator control; and the introduction of capercaillie-friendly silvicultural regimes on over 900 ha, including 374 ha of variable density thinning in plantations and the creation of forest glades.

These actions were complemented by an awareness-raising programme regarding good capercaillie conservation practice, which was drew on the experiences of Swedish and other transnational partners and led to the publication of a best practice manual.

Lessons from Scotland

- The importance of establishing and maintaining a complete network of stakeholders;
- The value of an up-to-date and trustworthy monitoring programme for the key species, to steer conservation responses;
- Management of the national population as a whole, rather than concentrating on selected metapopulations; and
- The importance of protecting and creating brood habitats over a wide area, allowing breeding in some areas when others are adversely affected.

"One thing I learnt," recalls John Houston, "was that you don't need pristine Caledonian forest to support capercaillie. If plantation forests have the right structure (especially cover and shelter on the ground) they can be as good." .

A continuing priority

Whilst the 'Capercaillie' project had an important demonstration effect (see box), it has not produced the hoped-for impact on bird numbers. The capercaillie population in Scotland continues to fluctuate between 1 200 to 2 000 with an RSPB-coordinated

A partnership approach was crucial to the long-term management of capercaillie habitats in Scotland, such as this one

Photo LIFE02 NAT/UK/008541

national winter survey in 2009/10 giving a population estimate of 1 285 birds, split into a number of isolated groups. Despite these disappointing figures, there is an argument that the aggressive approach to habitat management and predation control of the LIFE project has halted further declines.

The capercaillie is still a priority species for the Scottish government, and it falls within its ambition to restore native woodland and improve heather management. Indeed, two partners, Scottish Natural Heritage and Forestry Commission Scotland are helping to fund a Capercaillie Project Officer and Assistant, employed by the RSPB, who are working on practical measures to improve the breeding success and survival of the species, including providing advice on funding opportunities to key estates within the current capercaillie range under the Scotland Rural Development Programme. The Biodiversity Action Plan for the species was revised in 2011 and targets an increase in the capercaillie population in Scotland to 2 000 birds by 2020 and to 5 000 in the long term.

Habitat management spreads its wings

Lessons from the forests of Scotland and from earlier LIFE capercaillie projects in Germany's Black Forest (**LIFE98 NAT/D/005087**) and the French Jura (**LIFE92 NAT/F/012700**) are being taken forward by ongoing LIFE projects in several parts of Europe. In France, for instance, the 'Life+TétrasVosges' project (**LIFE08 NAT/F/000474**) is focusing on maintaining favourable habitats in the mountains of north-eastern France for the Vosges capercaillie subspecies (*Tetra urogallus ssp. major*). When the project commenced in 2008, the population of the sub-species at this, its western limit of distribution, was estimated at just 100 individuals.

To ensure the capercaillie's survival in the Vosges mountains, the project is putting in place a forest management policy which will include a range of measures for managing the habitat in a manner favourable to the species. These include establishing extensive areas of old growth forest with areas of limited disturbance (900 ha), training forest managers and disseminating a forest guide. Disturbance by people visiting the forests is a particular problem in the region, so the LIFE project partner is limiting access during certain periods and redirecting tourist paths. This will be backed-up by a campaign to raise awareness amongst the local population and visitors of the threats facing the Vosges capercaillie.

Importantly for winning the support of the local community, the project is also seeking to demonstrate that it is possible to combine protection of a species and its environment with continuing economic activity. It will therefore aim to implement practices that are most likely to encourage economic, social and tourism development compatible with increasing the Vosges capercaillie population.

In the Cantabrian Mountains of northern Spain, the 'UROGALLO CANTABRICO' project (**LIFE09 NAT/ES/000513**) is currently working to conserve the

Favourable habitat for capercaillie

Photo: LIFE08 NAT/F/000474 - Michel Munier

Photo: LIFE09 NAT/ES/000513

Volunteers clearing Cantabrian capercaillie habitat in the Picos de Europa National Park, Spain

Cantabrian capercaille subspecies (*Tetrao urogallus cantabricus*), an isolated sub-species that lives in forests above 800 m. It survives in an area of less than 2 000 km^2 and is considered in danger of extinction by the IUCN Red List.

To ensure that short-term project gains lead to long-term benefits for the species, the project team is building partnerships with landowners to secure their participation in works to improve capercaillie habitats and the harmonisation of traditional land use practices with the conservation needs of the birds. A pilot phase has been testing the partnership approach required for implementing conservation actions across different municipality areas. This will be followed by implementation of a full, homogenous, cross-cutting project for the entire area where the species is found, combining such in-situ conservation actions as habitat improvement, control of predators and competitors and the reduction of non-natural causes of mortality with ex-situ actions, namely the establishment of a breeding pool centre that will make available a captive stock of birds for release and restocking purposes.

A further goal of the project is to increase scientific knowledge about the species and publish those best practices it identifies regarding habitat management for the Cantabrian capercaillie.

As with the LIFE Nature project in the Vosges, the Cantabrian team is hoping to design sustainable economic development strategies that meet the needs of nature conservation whilst providing rural employment in the project area.

This is also one of the goals of a recently started Polish project, 'Capercaillie Protection' (**LIFE11 NAT/PL/000428**), which targets lowland populations of the bird in the Bory Dolnośląskie and Augustowska primeval forest. The project will construct a 7.6 km tourist trail that will serve a double purpose, since it will also keep visitors away from capercaillie sanctuaries in Bory Dolnośląskie. Tourists will also be attracted to a new Capercaillie Museum, to be established by the project in the Głęboki Bród Forest District, where they will learn about the conservation needs of the species.

These are just two of a wide range of actions that the project is implementing to improve conditions for the capercaillie, reduce human-induced threats and temper the excessive impact of predator mammals. In the Augustowska primeval forest, for example, the population has currently declined to only 30-40 individuals.

Project actions will be carried out by local foresters who will be encouraged to adopt "simple" conservation methods, such as improvement of habitat and changes in forestry management practices, in combination with the release of individual birds bred in captivity.

The overall goal of this LIFE project, which is due to conclude in 2018, is to improve the habitat for the species on at least 67 000 ha in Bory Dolnośląskie and at least 62 000 ha in Puszcza Augustowska and to reach a stable capercaillie population of 90-110 adult birds in the former and of 80-100 birds in the latter.

DID YOU KNOW?

The western capercaillie is native to 17 of the 27 EU Member States.

Source: BirdLife International

OLD GROWTH FOREST

Restoring **sustainable breeding habitats for priority eagles and storks**

Several important migratory bird species have been suffering from the loss of traditional feeding grounds through changing land use and the destruction of nests through forestry activities in northern Europe. A LIFE Nature project in Estonia showed what can be done to protect both types of habitat, leading to a new generation of similar LIFE initiatives in other European countries.

Photo: LIFE04 NAT/EE/000072

Black stork on Saaremaa Island

Historically, Estonian farmers would use wetland meadows to support the rearing of cattle. The livestock would graze in the meadow during the dry season. Farmers would also mow grasses to obtain hay for feed during the wet season. However, important land-use changes introduced by the Soviets in the 1940-1950s saw private smallholdings turned over to mandatory collective farming arrangements.

The dynamic of the smallholders' use of the land changed, exacerbated by the loss of many of the strongest farmers in politically-motivated deportations. The result was that wetland meadows were increasingly abandoned. Without any form of management, bushes and trees - notably willow and birch - started to take root.

The loss of open grassland habitats meant the loss of important feeding areas for some of Europe's priority bird species, particularly the greater spotted eagle (*Aquila clanga*), lesser spotted eagle (*Aquila pomarina*) and black stork (*Ciconia nigra*). Urmas Sellis of the Estonian Ornithological Society explains: "Eagles need open ground to see and catch rodents. Storks like to feed in streams and ponds, but they do not feel safe if these are not in open ground."

An additional threat to the birds was the loss of nests through forestry activities. Indiscriminate logging and a lack of awareness about where the birds were nesting resulted in nests being felled as trees were cut down. The loss of trees surrounding nests was also significant as it reduced protection, notably from storms.

Photo: LIFE04 NAT/EE/000072

The 'EagleLIFE' project has been monitoring the movements of Tönn, the greater spotted eagle

The origins of 'EagleLIFE'

There has been a long history in Estonia of enthusiasts working, often with little or no support, to study, observe and protect eagles. This enthusiasm led to the creation of the Eagle Club NGO soon after independence from the Soviet Union. The Club was aware of the lack of appropriate habitat for the eagles and storks and actively tracking decreases in numbers of these Annex I species.

Personal links between the Eagle Club, the Estonian Ornithological Society and the Ministry of Environment led to the idea of applying for LIFE funds to turn things around. The result was the project 'EagleLIFE' (**LIFE04 NAT/EE/000072**), which aimed to restore and ensure the long-term sustainable management of important feeding and nesting grounds.

The project beneficiary was the Estonian Ornithological Society, which already had experience managing a LIFE project (**LIFE00 NAT/EE/007082**) to restore a wetland complex. Urmas Sellis, who was the 'EagleLIFE' project manager, remembers that "the first LIFE project was a learning experience for us. It really helped us to make a success of 'EagleLIFE'."

Opening up wetland meadows

The project planned to restore 2 800 ha of wetland meadow in Soomaa National Park through the cutting away of bushes and trees. The idea was to then establish ongoing habitat maintenance through grazing or mowing. There was evidence that local people could be interested in such activities if the land was in a suitable condition.

Gunnar Sein, Semi-Natural Habitat Supervisor in the Estonian Environmental Board, was responsible for organising much of the grassland restoration work. He remembers that one of the first challenges encountered by the project was that "around 800 ha that appeared to be shrubland on the available maps had actually already converted to forest when we got out into the field." It was not practical or desirable to convert forest to open grasslands in the scope of this project.

Developing Estonian expertise in bird monitoring

The project used technology to keep a closer eye on the birds and increase understanding of their activities. Some birds were caught and fitted with tracking devices, whilst webcams were installed to view nests in the forest. The webcam images and migration maps of tracked birds can be seen at www.kotkas.ee/eagle-club. The webcams received more than 8.3 million individual clicks from 2007-2009 and contributed to increased public awareness of the need to protect the birds and their nests.

An important achievement of the project was a positive engagement with private technology companies. Several believed in the project's objectives to the extent of providing goods or services for free, including server capacity and cameras. "We simply made our work so interesting for them," explains Urmas Sellis. Estonia is now a European leader in this field and the beneficiary is currently sharing its expertise with Latvian partners through an EU-funded European Regional Development INTERREG IV project.

Photo: LIFE04 NAT/EE/000072

The project restored the floodplains of Soomaa NP

To achieve its target, the project team went out and identified four additional areas of shrubland outside of the National Park that could be valuable to the birds and practical to clear. Local sub-contractors were brought in to cut away the unwanted bushes with heavy machinery.

A challenge and important lesson from the project, as Mr Sein remembers, was that, "When you cut a tree or bush the roots survive and it starts to grow back. Even cutting in July when the roots are weakest, it can take as many as four or five cutting cycles with heavy machinery before the land is effectively returned to open grassland." Other grassland restoration projects should take account of the need for multi-year heavy cutting. The project also suffered delays when one summer was too wet to allow cutting with heavy machinery.

Another lesson was that it was not necessary to clear every single bush or tree. Some areas were too dense to make clearing an efficient option. Leaving these 'islands' of vegetation is not a problem however. "We realised that leaving a mosaic of habitat was actually better than clearing everything. It is good for biodiversity and the eagles can use the trees to scan the open grasslands for prey," highlights Mr Sellis.

Sustainable meadow management

Gunnar Sein is convinced that "'EagleLIFE' was an important initiator that has enabled the Environmental Board to carry out further work in an affordable way." The project needed extra funds to pay for the additional cutting cycles. The Environmental Board agreed to support this activity after the hardest and most expensive first cut had been made by 'EagleLIFE'.

The Board has also taken active responsibility as a partner of the project for ensuring the ongoing management of the cleared areas. Discussions with local people confirmed that cattle farming would be the only realistic activity for the newly-cleared areas. The Board therefore bought cattle and signed contracts with local people for their use in managing the land. "The cattle still belong to the State," explains Mr Sein, "but the offspring belong to the farmers." The Environmental Board bought the first Scottish Highland cattle in January 2008. It is hoped that each farm will be able to breed until they have eventually reached their optimum capacity and then return back to the State cattle of the same value they received. The Board can then reallocate these to more farmers in a positive cycle that will ensure long-term management of large areas of wetland meadow.

Protecting nesting sites

One of the big achievements of 'EagleLIFE' was that 5 621 ha of forest effectively became micro-reserves for the target bird species during the project. This area was made up of hundreds of individual species protection sites created around individually confirmed nests. Additional nest sites identified during the project were confirmed as species protection areas after the project's end, increasing the total

Table – Lesser spotted eagle projects

Project code	Project name	Target species	Target area
LIFE08 NAT/PL/000510	LIFEAQUILA	Lesser spotted eagle (*Aquila pomarina*)	Białowieża and Knyszyńska forests (Poland)
LIFE08 NAT/RO/000501	CAPR	Lesser spotted eagle (*Aquila pomarina*)	12 SPAs in Romania
LIFE09 NAT/SK/000396	APOMARINA	Lesser spotted eagle (*Aquila pomarina*)	8 SPAs in Slovakia
LIFE09 NAT/LT/000235	Eagles in the Forest	Lesser spotted eagle (*Aquila pomarina*)	13 SPAs in Lithuania
LIFE10 NAT/DE/000012	Schreiadler Schorfheide	Lesser spotted eagle (*Aquila pomarina*); black stork (*Ciconia nigra*); corn crake (*Crex crex*); aquatic warbler (*Acrocephalus paludicola*)	Schorfheide-Chorin SPA (Germany)

area where forestry is prohibited to more than 6 000 ha. Much of this territory has been included in extensions of the Natura 2000 network.

"In Estonia we are lucky, as when the nest of a protected species is found, it only has to be registered on the official database and the law automatically enforces protection around it," says Mr Sellis. The project team - as well as forestry workers and members of the public engaged by the project's activities - helped identify and register over 230 such new nests across the whole country: 185 for the lesser spotted eagle; seven for the greater spotted eagle; and 45 for the black stork.

Nevertheless, in practice, the automatic protection is not enough. As Mr Sellis points out, "The automatic protection area is a specific radius around the nest depending on the species. It is easy to draw such a circle on the map. But it is difficult to implement it on the ground." The Eagle Club worked with forestry associations and the Ministry to replace the protection circles with protection areas that took effective account of the situation on the ground.

The law has been applied to enforce protection of privately owned forest. "A landowner tried to get the protected status of an area of trees removed because the nest had fallen out the tree," recounts Mr Sellis. "However, it was proved that the nest fell from unnatural causes and so the protection area remained in force."

Nevertheless, State ownership is still the surest way to safeguard forest habitat providing nesting sites for endangered birds. The project acquired 76.8 ha of forest around black stork nest sites on the island of Saaremaa to ensure their long-term protection.

Long-term benefits

"We know that the target species are using the lands we have protected, restored and managed," says Mr Sellis, "But it is too soon to see a direct correlation with bird numbers." It can take time for long-living bird species to use newly restored habitat and several factors during the migration and wintering can impact on a species's survival. Providing good breeding habitat is essential, but not sufficient to see numbers of target species rise.

The beneficiary is confident, however, that the project has helped stabilise populations of lesser spotted eagle and black stork in Estonia. Unfortunately, the greater spotted eagle is additionally and significantly threatened by interbreeding with the lesser spotted species. The beneficiary still hopes that improved breeding habitats may reduce population pressures that may be contributing to the occurrence of interbreeding. However, this cannot be certain.

The Estonian Ornithological Society is following up the progress made by 'EagleLIFE' within BirdLife International. Given that the target species typically are only in Estonia between April and September – and there is already tracking evidence of bird losses outside of Europe – such international cooperation could be crucial to the long-term survival chances of these important migratory birds.

An interesting final benefit of the project for Mr Sellis is that "the government now takes the Estonian bird NGOs more seriously. They know we are not just looking at birds and smiling nicely. Now the Ministry and Environmental Board ask to meet the Eagle Club and Ornithological Society to discuss plans and actions." All the stakeholders were involved in creating or updating Action Plans for the target species, including essential long-term nature conservation obligations.

Lesser spotted projects

Several ongoing LIFE projects, the majority of which are in Eastern Europe, are aiming to protect the nesting habitats and improve the feeding areas of the lesser spotted eagle though better habitat management. The main project actions involve: creating forest reserves; opening grasslands, marshland and reed beds; restoring natural hydrology; repairing or building nests or perches; creating action plans covering the' habitat needs of species; raising awareness of the birds' needs; increasing knowledge of the location of nests; improving monitoring of birds; and addressing threats from power lines.

DID YOU KNOW?

There are fewer than 30 pairs of greater spotted eagles in Estonia.

Source: Estonian Ornithological Society

Project number: LIFE04 NAT/EE/000072

Title: EAGLELIFE - Arrangement of spotted eagles and black stork conservation in Estonia

Beneficiary: Estonian Ornithological Society

Contact: Urmas Sellis
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Website: www.kotkas.ee/life-project
Period: 01-Apr-2004 to 31-May-2009
Total budget: €847 000
LIFE contribution: €635 000

IBERIAN MEDITERRANEAN FORESTS

Agreeing **habitat management actions with forest landowners**

Bird species in Mediterranean-type forest habitats often face threats from such unsustainable practices as intensive farming, over-hunting or uncontrolled tourism. LIFE projects have worked to demonstrate that there is no necessary conflict between extensive use and endangered species when appropriate management plans are put in place.

A lower intensity of human intervention has meant that forest habitats in the Mediterranean biogeographical region are more open than forests in central and northern Europe. Their greater openness allows the growth of a rich understory of shrubs and bushes, a diversity that creates excellent and unique habitat conditions for many types of wildlife.

In particular, these Mediterranean-type forests provide important breeding areas for several species listed in Annex I of the Birds Directive, such as the Spanish imperial eagle (*Aquila adalberti*), the black vulture (*Aegypius monachus*) and the black stork (*Ciconia nigra*). Indeed, populations of these three species are concentrated in Iberia's Mediterranean open forest (known locally as 'dehesas' or 'montados').

However, these open forest habitats have been suffering degradation and decline because of a lack of natural regeneration of trees, lack of grazing and the impact of disease on trees. This has meant that less habitat is available to the endangered eagles, vultures and storks. These three species are highly sensitive to changes in their habitat which have reduced the availability of important sources of food, such as rabbits. Human disturbance during the breeding season is another key threat to these birds.

The biggest challenge for improving habitat management of 'dehesas' is that ownership is in many hands, leading to a patchwork of small lots subject to different management systems. For instance, some landowners have prioritised big and/or small game hunting, some tourism and others cattle grazing, the cultivation of crops or cork production.

Photo: LIFE03 NAT/E/000050

Mediterranean forests are more open than those in northern or central Europe

Two LIFE projects managed by the Foundation for the Conservation of Biodiversity and Habitats (CBD-Habitat) in Spain have focused on enabling private landowners to make sustainable use of the natural resources of their land whilst simultaneously supporting conservation of the target bird species.

Creating an outline strategy

The first of the projects (**LIFE99 NAT/E/006336**) implemented a number of preparatory actions to facilitate improved habitat management, including detailed inventories of species and environmental cartography of all estates covering topography, hydrology, vegetation, soils, land-use and so on. This created a Geographic Information System (GIS) for each estate in the autonomous regions of Extremadura and Castile-la Mancha.

Management plans were drawn up for the target estates and agreements signed with private landowners covering habitat management. The most important habitat actions implemented by this project were:

Forest landowners in Spain have worked closely with LIFE

Photo: LIFE03 NAT/E/000050 - Aixa Sopeña

- Improvement of pastureland through reinforcement of sparse areas with new pasture species, followed by extensive grazing to improve the species compostion of the pasture community and fertilisation;
- Pruning and clearance of certain evergreen leaf oak trees and bushes; and planting and/or fencing of other species including narrow-leafed ash (*Fraxinus angustifolia*) and sweet chestnut (*Castanea sativa*) to regenerate 'dehesa' landscapes;
- Restocking of rabbit populations into artificial warrens, supported by sowing of cereals and other plants;
- Creation or improvement of ponds; and
- Surveillance of critical and nesting areas, leading to control of disturbances, repairs to nesting platforms and other emergency interventions.

The main demonstration value of the project was the way in which it achieved agreements with landowners who have not typically been motivated by conservation issues. To ensure the transferability of results, the project produced a 'Handbook for the Management of Estates in the Mediterranean Environment'.

Expanding the model

The follow-up project (**LIFE03 NAT/E/000050**) strengthened and enlarged the experiences of the first project to cover a greater area across three autonomous communities of Spain: Extremadura; Madrid; and Castile-La Mancha. A total of 21 agreements were signed with private estates covering more than 53 000 ha.

The project optimised habitat management actions by conducting thematic cartography of the estates covering land use, vegetation, rabbit abundance, geology and the identification of critical areas for the target species. Management plans were drafted for eight estates and good practice guidelines defined for successful management with regards target species preservation and land-use profitability.

The main habitat restoration actions implemented by the project included:

- Creation or restoration of 26 ponds, including restocking with fish;
- Sowing and planting of cereals on 1 765 ha and on 231.5 ha of pastures;
- Fertilisation of 985 ha of natural pastures;
- Installation of seven electric fences to protect crops from grazing animals;
- Removal of bushes from 190 ha;
- Pruning of 349 ha and cutting of 37 ha of trees;

Photo: LIFE03 NAT/E/000050

Endangered storks, eagles and vultures have benefitted from an inclusive approach to habitat management

- Installation of 622 artificial shelters and 173 warrens, and release of 1 980 rabbits; and
- Installation of 68 water points, 79 drinking points and 13 feeding points.

The project carefully monitored the three target species and key areas - including nests - to assess the benefits from habitat management. It implemented urgent interventions when required, such as occasional feeding and recovery of injured animals.

Benefits for priority species

The first project showed an increase from 15 to 23 breeding pairs of imperial eagles. Breeding success was high, with 21 of the 23 chicks hatched from 11 nesting pairs inside the project area surviving. The results for the black stork were impressive: 4-6 fledglings per year from at least four breeding pairs and the construction of new nests. Slight increases were observed in the breeding trends of black vultures. Increases in habitat use for all three species were recorded in surrounding areas.

The 2003 project saw the number of breeding pairs increase by 28.6% for the imperial eagle, 31.8% for the black vulture and 57.1% for the black stork. The imperial eagle increased its number of active territories from 21 to 27. The breeding success of the black vulture was relatively low, but the beneficiary sought to tackle this problem in the long term by drafting a specific habitat conservation plan for the species in Extremadura.

The 2003 project produced a 'Methodological Guide for the establishment of management plans in private estates in Natura 2000' and, following the project's conclusion, there is ongoing cooperation between the beneficiary and the private estates that participated in the project, albeit at a lower level.

DID YOU KNOW?

75% of Natura 2000 territory in Spain is in private hands.

Source: CBD-Habitat

IBERIAN MEDITERRANEAN FORESTS

Improving **prospects for Bonelli's eagle**

Stakeholder collaboration and awareness-raising actions have proved to be useful management tools in the bid to improve the long-term conservation status of one of the EU's endangered raptor species.

DID YOU KNOW?

Bonelli's eagle has a maximum known lifespan in the wild of 32 years.

Source: Larrey, Roger and Morvan 2007

Around 600 bird species have been recorded in Portugal and LIFE co-financing has provided support for key species such as the lesser kestrel (*Falco naumanni*), purple gallinule (*Porphyrio porphyrio*), Zino's petrel (*Pterodroma madeira*), Azores bullfinch (*Pyrrhula murina*), little bustard (*Tetrax tetrax*), Bugio's petrel (*Pterodroma feae*), and Bonelli's eagle (*Hieraetus fasciatus*).

The latter is a tree-nesting bird found mostly in southern Portugal's Alentejo and Algarve regions. Bonelli's eagles are medium-sized raptors and they can be easily distinguished by their distinctive dark under-wing pattern. They are also generally faster and more agile in flight than other eagles that frequent the skies above Alentejo and Algarve.

Bonelli's eagle is highly territorial and its territories can cover up to 20 000 ha. Thus large expanses of open woodland habitat are necessary to maintain a sustainable diversity and abundance of specimens. The species favours cork oaks forests, and for building nests it depends on isolated pines and eucalyptus trees, but the quality and quantity of open oak woodland habitats has been degraded in southern Portugal. Problems associated with pests, forest fires, and intensive or inadequate forestry practices have all taken their toll on the eagle's habitat and led to calls for dedicated remedial actions to prevent a decline in the raptor's conservation status.

In addition, bird mortality rates have been linked with persecution by hunters, as well as diseases caught from domestic pigeon prey, and collisions with power lines or wind turbines also present threats. Furthermore, nest sites have been disturbed (and felled) by insensitive forestry practices.

LIFE intervention

LIFE has co-financed a Portuguese NGO, Centro de Estudos de Avifauna Ibérica, to establish a specific series of habitat management and conservation measures that are making good progress in tackling some of the aforementioned challenges faced by Bonelli's eagle.

An initial grant through LIFE's earlier 'starter' support scheme (**LIFE02 NAT/ST/P/000012**) was used to

Bonelli's eagle favours large expanses of open Mediterranean woodland

Photo: LIFE05 NAT/P/000194

draft an action plan for the conservation of Bonelli's eagle. A larger follow-up grant (**LIFE06 NAT/P/000194**) was then awarded in 2006 to help implement the action plan. Just over €1.5 million of EU co-financing was provided for this project's four-and-a-half-year term.

With a headstart from its pre-prepared action plan, the project quickly launched a set of coordinated conservation activities, with several key objectives. As well as targeting a reduction in bird mortality to boost species population dynamics, the project sought to improve habitat management by creating more favourable conditions for the Bonelli's eagle as well as other priority species. To achieve these goals it was considered necessary to mobilise key stakeholders that influence the eagle habitat - farmers, hunters, foresters, central/regional/local administration officers and businesses - to take an active part in conserving the target species and other biodiversity. The project also sought to increase public awareness of the need to make economic activities compatible with nature conservancy, by passing on concepts and values such as biodiversity, the Natura 2000 network and sustainable development.

This ambitious set of objectives was realised by a well-delivered programme of field actions, institutional arrangements, studies and plans, seminars and workshops. LIFE co-financing was also provided to cover costs involved with running a communications strategy focused on improving environmental awareness about the eagles and their habitats, and the conservation needs of both.

Positive results

GPS trackers were attached to 10 adult eagles during the project and data from this exercise proved very useful in assessing risks, understanding the eagles' movements, and mapping their habitat use.

Such information fed into a network of localised site management plans covering 436 000 ha of eagle territories. Agreements were made with forestry companies working these sites and land was also acquired or leased to further increase the total area of habitat under protection by another 409 ha - more than 60 different landowners and managers were provided with technical assistance.

Photo: J.P. Ferreira

Bonelli's eagle (Hieraetus fasciatus)

These important operations established successful working relations between the nature interests of conservation bodies and the economic interests of commercial land-use sectors (forestry, hunting, and energy), with many mutual benefits. This was complemented by the production of a handbook on forestry best practices, which represents an effective lasting legacy from the project and is being used to maintain sustainable approaches to timber production in eagle habitats.

The handbook's content was prepared in close collaboration with forest managers from pulp and paper companies, forestry associations and the state forest authorities. Its success has inspired the project beneficiary to begin preparing a similar handbook for hunting best practices.

As with other LIFE projects focused on supporting bird conservation actions, the Portuguese team were acutely aware about the importance of improving appreciation of their target species among not only land managers but also the general public. Hence, a variety of eagle awareness actions were funded, including a children's game explaining the eagle's lifecycle and describing how difficult life as a Bonelli's eagle can be if appropriate conservation measures are not put in place.

Project number: LIFE06 NAT/P/000194

Title: Tree Nesting Bonelli's Eagle – Conservation of Tree Nesting Bonelli's Eagle in Portugal

Beneficiary: Centro de Estudos de Avifauna Ibérica

Contact: Carla Janeiro
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Period: 01-Oct-2006 to 31-Mar-2011
Total budget: €2 069 000
LIFE contribution: €1 552 000

MEDITERRANEAN FORESTS

Safeguarding **food supplies for birds of prey in Greece**

Europe's birds depend on reliable and safe sources of food. Habitat changes can limit the availability of traditional food and LIFE funds offer opportunities to help ensure that birds receive the food they need.

Many of the LIFE projects that have been, and still are, involved in conserving European bird species include actions targeting improvements in the supply of food for different species.

Food scarcity can increase competition amongst birds and may mean some birds go without. Less food makes birds more vulnerable to weather extremes, disease and predators. The same is also true for the availability of drinking water.

Inadequate supplies of food and water can also cause serious distress for birds as habitats and land use patterns continue to alter across Europe. Habitat changes can have particularly negative effects on migrating birds that may find themselves effectively stranded if they cannot find food along their route. Non-migratory birds are equally at risk from habitat loss and can suffer similar plights if the food and water sources that they rely on disappear, or become unsafe.

LIFE co-funding can be used to assist a vast variety of different actions to improve the supply of food sources for bird species. A typical example of the type of actions co-financed by LIFE in this critical aspect of bird conservation can be seen in Greece, where project support (**LIFE02 NAT/GR/008497**) at the Dadia Forest Reserve has made a big difference in enhancing food supplies for raptor species that are protected by the EU Birds Directive.

One of the dams constructed by the LIFE 'Dadia' project

Photo: Katerina Raftopoulou

Dadia's birds of prey

Dadia Forest Reserve is located in the north-eastern corner of Greece close to the borders with Turkey and Bulgaria. Here there are a multitude of mixed habitat types, providing excellent conditions for a large number of European raptors. In fact, 36 out of Europe's 39 diurnal raptor species have been recorded in the reserve's territory, including three of the four European vulture species. Amongst these, the reserve's population of black vultures (*Aegypius monachus*) represents the only reproductive colony in the Balkans and is one of the area's flagship species, although the population is not fully self-sustainable.

Being a relatively isolated area has helped the forest reserve to retain a reasonably good conservation status. Its peripheral location has been one of the factors behind its ability to escape many habitat hazards that threaten land in more developed regions of Greece. Nevertheless, changes in the structure of forest plantations and persistent persecution of raptors by land managers had started to have a negative impact on the conservation status of key species, including the black vulture.

One of the main problems concerning the raptor habitat was the gradual disappearance of canopy openings. These open spaces within woodlands are essential habitat features for raptors because without them the birds have great difficulty finding prey.

Dadia had in the past contained a mosaic of forested land that was interspersed by meadows, farmland and other forest openings.

Land use changes following new, sometimes more intensive, approaches to forestry and agriculture had however started to reduce the number of natural openings. As these habitat features became closed in, the raptors of Dadia found it progressively more challenging to find the food that they needed to survive.

LIFE's potential to remedy this situation was recognised by the World Wildlife Fund (WWF), which secured a project budget of over €1.5 million (containing nearly €940 000 of LIFE co-financing) for four years of proactive raptor conservation action in the Dadia Forest Reserve.

Food lifelines

Improvements in lifeline supplies of food for the raptors were funded through the project in a number of ways. Feeding sites were created to compensate for the reduction in animal carcasses that followed changes in land use. Meat was therefore transferred to several specified locations on a regular basis. The sites were selected to avoid risks of upsetting competition balances that exist between territorial birds.

In addition to the artificial feeding sites, another important goal for the project team was to increase the availability of natural feeding areas and so new forest openings were also created. Some 45 ha of forest reserve were converted into open habitats through a series of actions involving thinning and clearing existing vegetation. Outcomes from this work have been positive with the beneficiary observing the colonisation of open spaces by small rodents and other suitable raptor prey.

After establishing the new feeding areas, LIFE project staff provided advice and guidance to local foresters in techniques for maintaining the openings as raptor-friendly habitat features. Foresters were supportive of the actions and their commitment to this management approach should help sustain the benefits of LIFE's initial investments for a long time into the future.

Photo: Katerina Raftopoulou

This forest clearing was created by the LIFE 'Dadia' project to help raptors find prey

Water supplies were another action on the list of intended works. Originally 15 new ponds were planned but evaluations during the project indicated that suitable supplies could be achieved by constructing five larger ponds instead.

Results were positive, not only providing water for the birds, but also for other wildlife including amphibians (which represent potential prey for raptors) that are now taking advantage of the LIFE-funded water supplies.

Food safety

Parallel to the activities designed to strengthen access to food and water supplies for birds of prey, concerted efforts were made to tackle poisoning incidents. Illegal poisoning posed a significant problem because one incident could kill numerous scavenging birds.

Hence, LIFE co-financing here was used to cover the costs of awareness raising amongst land users about the illegal use of poison bait. Meetings and consultations with these key stakeholders aimed to dissuade poisoning practices.

Consequences of poisoning incidents for both the perpetrators of such unlawful acts and their victims were highlighted during the information campaign, which is also intended to make longer-term contributions to the overall conservation status of protected bird species in the Dadia Forest Reserve.

DID YOU KNOW?

Food scarcity can pose a considerable threat to the conservation status of Europe's birds.

Project number: LIFE02 NAT/GR/008497

Title: Dadia - Conservation of birds of prey in the Dadia Forest Reserve, Greece

Beneficiary: WWF Greece

Contact: Dimitris Karavellas
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Period: 01-Jan-2002 to 31-Dec-2005
Total budget: €1 566 000
LIFE contribution: €940 000

MACARONESIAN FORESTS

Recovering **habitat for the threatened Azores bullfinch**

Habitat destruction led to the near extinction of the Azores bullfinch (*Pyrrhula murina*), a species native to the Azorean island of São Miguel. But a LIFE project has helped recover native laurel forest habitat by eliminating invasive plants unfavourable to this rare finch.

Photo: LIFE03 NAT/P/000013 - João Salgado

Native laurel forest on the island of São Miguel

Known by the locals as priolo, the Azores bullfinch population declined dramatically in the 1990s. Its numbers fell to an estimated 300-400 individuals as a result of the conversion of its natural habitat – laurel forest (*Laurissilva*) – into pastures and Japanese red cedar (*Cryptomeria japonica*) plantations.

Moreover, a multitude of invasive species – such as yellow ginger lily (*Hedychium gardneranum*), the Madeiran sweetpepperbush (*Clethra arborea*), the Australian cheesewood (*Pittosporum undulatum*), the Chilean gunnera (*Gunnera tinctoria*) and the Australian blackwood (*Acacia melanoxylon*) – have significantly displaced native habitats, threatening the endemic plants on which the bird feeds – e.g. in winter the Azorean blueberry (*Vaccinium cylindraceum*) and ferns, such as the tree fern (*Culcita macrocarpa*). As a result, the species was classified as 'critically endangered' by the IUCN, and it became one of the most endangered bird species in Europe.

In response, *Sociedade Portuguesa para o Estudo das Aves* (SPEA), a Portuguese BirdLife partner, carried out a LIFE project (**LIFE03 NAT/P/000013**) to restore the bullfinch's habitats. One of its main actions was to eliminate invasive plants in the area where the Azores bullfinch is found: on the east side of the São Miguel Island from the Serra da Tronqueira and the Pico da Vara. This area covers some 6 000 ha and is included in the Natura 2000 network.

Invasive plant removal

Eliminating alien species was a major challenge, requiring a team to be trained in plant identification, the application of herbicides and elimination proto-

Photo: LIFE03 NAT/P/000013 - João Salgado

The project cultivated native plant species in nurseries prior to replanting

cols prior to going into the field. Some 230 ha of natural habitat were restored through the simultaneous application of different herbicides and physical removal of the invasive plants. This action was highly dependent on weather, the nature of the terrain and the density of the plants.

At the Natura 2000 site, SPA Pico da Vara/Ribeira do Guilherme, which is covered by Japanese red cedar plantations, an experimental action was carried out on 10 ha - trees were removed and more than 30 000 native plants species were planted.

Such replanting took into account the bullfinch's food requirements and the composition of the habitat. The project built a new greenhouse in Nordeste's Forestry Services Nurseries, a partner in the project, to boost the production of native plants. The species grown at the nurseries were Azorean blueberry (*Vaccinium cylindraceum*), Azorean plum (*Prunus azorica*), laurustinus (*Viburnum tinus* subsp. *subcordatum*), Azorean holly (*Ilex azorica*), buckthorn (*Frangula azorica*), Azorean heather (*Erica azorica*), Azorean cedar (*Juniperus brevifolia*), laurel (*Laurus azorica*) and *Picconia azorica*. These native species were also planted in areas where alien species had been eliminated. By the end of the project, the control of exotics covered an area of almost 230 ha of native forest and more than 65 000 specimens of native species grown in the nurseries were planted.

Furthermore, the project created a demonstration fruit tree orchard as an alternative to timber plantation. Azores bullfinches have been spotted at the orchard benefiting from the available fruits and flowers, and local owners have been asking for information on creating new orchards.

Enlarging and monitoring

The SPA Pico da Vara/Ribeira do Guilherme, however, did not cover the complete distribution range of the Azorean bullfinch, as the species was also found in some middle and high altitude laurel forests not included in the protected area. The LIFE project therefore proposed to enlarge the site to include these areas. This was legally approved by the Azorean regional government in April 2005, resulting in the tripling of the SPA area to the current 6 067 ha.

At the same time, an SPA management plan was legally approved. This plan, which was developed in partnership with the project beneficiary and the environment department of the regional government, aims to ensure that the measures implemented by the project will continue after-LIFE, ensuring the long-term management of the bullfinch's habitat. A particular focus of ongoing management actions will be on invasive species control.

The positive impact of these measures could be demonstrated by the monitoring of bird numbers. A yearly survey of the entire potential distribution range of the species shows that the population stabilised during the project (2002-2005) before increasing significantly in 2005 and 2006.

At the launch of the LIFE project, the Azores bullfinch population was estimated to consist of just 300 individuals: current estimates suggest a population of 860-870 individuals. This achievement represents a significant improvement in the long-term conservation of the species and led to the lowering of its status on the IUCN Red List to 'endangered'.

The project beneficiary is currently running a follow-up LIFE project, 'Recovery, conservation and sustainable management of Tronqueira/Planalto dos Graminhais' (**LIFE07 NAT/P/000630**), which is further advancing the conservation of bullfinch and laurissilva habitats, as well as other endangered habitats in the SPA.

DID YOU KNOW?

The priolo has been downgraded from 'critically endangered' to 'endangered' on the IUCN Red List thanks to LIFE.

Azores bullfinch (Pyrrhula murina)

Photo: LIFE03 NAT/P/000013 - João Salgado

MACARONESIAN FORESTS

Bolstering **blue chaffinch populations**

LIFE projects have pioneered captive breeding and reintroduction techniques supported by restoration and management of Macaronesian pine woods to safeguard the blue chaffinch (*Fringilla teydea polatzeki*), a threatened species endemic to the Canary Islands.

The Inagua nature reserve on Gran Canaria is home to 95% of the blue chaffinch population. In 2007, the area was devastated by a large-scale fire, which affected approximately 80% of the land (14% intensely), and as a result, more than half the blue chaffinches were wiped out. Alongside wildfires, habitat loss from commercial harvesting is another threat, whilst the risk of chaffinch predation has increased.

In response, the LIFE 'INAGUA' project (**LIFE07 NAT/E/000759**), was set up to aid the natural recovery of the burnt areas. The package of measures being carried out includes establishing a plan to prevent further forest fires and to control rabbit and goat populations to allow for the natural regeneration of the area.

Blue chaffinch (Fringilla teydea polatzeki)

Photo: LIFE07 NAT/E/000759 - Aixa Sopeña

Whilst the project is focusing on improving the conservation status of several threatened species in the Natura 2000 site, the recovery of the blue chaffinch is chief among them. Its habitat will be fostered through the protection of some of the best pines still standing after the fire and their use in the propagation of new specimens.

A general awareness campaign is also helping fulfil the goals of the project by alerting the public to the risk of fire and to the ecological value of the pine forests. The aim of the project was to restore the population of the blue chaffinch to the level it had before the fire: this aim is on the way to being realised. Some 300 individuals are estimated to be living in Inagua and a further 50 individuals are found in other nearby Natura 2000 sites.

Long-running initiatives

'INAGUA' is the third project to target blue chaffinch conservation on the island of Gran Canaria. The first, 'Actions for the conservation of the blue chaffinch in Gran Canaria' (**LIFE94 NAT/E/001159**), was launched in 1994. It aimed to combat the threats posed to this near extinct species – just 180-260 individuals remained – from overexploitation of the Canarian pine, inadequate rural forest management techniques and predation of its nesting sites, mainly from rats and crows. Monitoring carried out during the project showed that cats and sparrowhawks are also a threat to adult individuals.

A captive breeding programme was also foreseen in order to reinforce the core of the most threatened population. Despite delays, the planned extension to an existing breeding centre was com-

Photo: LIFE07 NAT/E/000759

The blue chaffinch lives in the Macaronesian pine forests of the Canary Islands

pleted during the project and initial experimental results were promising. In fact, the experiences and protocols established proved useful for the continuation of this work and led to the proposal of a follow-up LIFE project, which aimed to set up a programme for the reintroduction of captive-breed specimens at an optimum site.

Nevertheless, the reduced distribution range of the species and continued predation create difficulties for reintroduction. Whilst the second project ('Pinzón azul' – **LIFE98 NAT/E/005354**) was unable to produce a sufficiently large pool of birds to allow for reintroduction, it refined earlier protocols and methodologies, adding to our knowledge of this type of conservation measure. Moreover, an experimental release was carried out and six birds were monitored to provide valuable information for subsequent reintroduction initiatives. And thanks to the project, permanent positions for two staff members were created at the centre. The project was one of the first conservation passerine programmes to attempt captive breeding.

The habitat management activities carried out under the project, however, were successful in boosting the population of the blue chaffinch and improving its conservation status. Monitoring recorded first a stabilisation of the population from a net yearly loss of 15% to even population growth – at the end of the project the figure was around 185 individuals. This population had also spread over an enlarged area of forest to cover 3 000 ha.

The data collected during the project were used to develop population viability models, giving projections of the risk of extinction under different scenarios in which several conditions of the population and the habitat were simulated. These models constitute a very good basis for future management. Moreover, the information concerning the bird's requirements and threats that was acquired by the project, was fed into management decisions for the site where the main chaffinch population is found.

Finally, a species recovery plan was drawn up following consultation with the main stakeholders. It is hoped that including the forest sector, the army and the local administration will remove some of the threats posed to the blue chaffinch. The plan contains all the relevant measures necessary to guarantee its conservation.

DID YOU KNOW?

Inbreeding may be a significant threat in the Gran Canaria blue chaffinch population.

Source: Barov and Derhé, 2011

MANAGEMENT OF VULTURE HABITATS

Habitat management helps vultures return

Vultures are amongst the most magnificent – and most endangered – birds in Europe. By working with landowners to introduce new habitat management practices, LIFE projects are helping to improve the status of this "keystone species" in certain designated conservation areas.

There are four vulture species in Europe: the bearded vulture or lammergeier (*Gypaetus barbatus*), the griffon vulture (*Gyps fulvus*), the cinereous or black vulture (*Aegypius monachus*) and the Egyptian vulture (*Neophron percnopterus*). All four species have a highly vulnerable status and have already disappeared from most European countries. Habitat loss or alteration, resulting mainly from changes in forestry and agricultural practices, is one of the main threats to the vulture.

Securing the agreement of landowners is often an essential first step in protecting or restoring vulture habitats, and this was a key aspect of the LIFE 'Buitre Mallorca' project (**LIFE00 NAT/E/007340**), which sought to promote land use practices that were compatible with the preservation of vulture habitats on the island of Majorca.

One of the main achievements of the project was the negotiation of agreements with four private landowners, whose estates are home to more than 60% of the island's nesting population of black vultures. Management plans derived from these agreements facilitate farming practices that help to protect or improve the quality of the habitat. Participating landowners also benefit from agri-environmental and tax incentive schemes.

As a result of the project, the population of black vultures on Majorca has increased and is now above the critical minimal threshold for a stable population.

In south-east Portugal, the LIFE 'Habitat Lince Abutre' project (**LIFE08 NAT/P/000227**) also succeeded in negotiating agreements with local landowners. This project is seeking to create suitable habitat for the black vulture and the Iberian lynx. An early action of the project was a habitat and prey survey, which facilitated the identification of priority areas for conservation. Agreements were then negotiated with the landowners concerned, which included provision for compensation payments.

Within the target areas, the project has installed 22 artificial nests for black vulture and is also implementing other habitat management measures aimed at increasing the population of wild rabbits, an important food source for both vultures and lynxes.

Returning to Bulgaria

The installation of artificial nests was also an important action in 'Vultures' Return' (**LIFE08 NAT/BG/000278**), a LIFE project in Bulgaria. The beneficiary, Green Balkans, is working to restore the country's populations of griffon, black and bearded vultures, in particular by identifying and preparing suitable habitats for their reintroduction. At least four sites have already been identified and prepared, including around 300 hectares of pine forests, and in May 2012 the project team discovered the first griffon vulture nest seen in the Eastern Balkan Mountains for half a century.

DID YOU KNOW?

The EU black vulture population has been increasing by 10-20% per year since the adoption of a species action plan in the mid-1990s.

Source: Conservation and Recovery of Threatened Birds in the European Union (European Commission, 2011)

Photo: LIFE08 NAT/BG/000278 - www.greenbalkans.org

MEDITERRANEAN SCRUBLAND

Reintroducing **management of Mediterranean scrubland**

Since the 19th Century, use of Mediterranean scrubland for agriculture and pastoralism has greatly declined. Land abandonment is depriving important bird species of the habitat they need. A LIFE project in the south of France has examined how management agreements in such areas can benefit local landowners and restore unique habitats.

A mix of scrubland and farmed areas surrounded by steep mountainous terrain represents ideal conditions for several important bird species. The mix of covered and open ground provides perfect hunting grounds for birds of prey with quiet nesting sites available in the higher grounds and raised areas. On the other hand, many species of ground-nesting birds appreciate the open scrubland habitat.

The Massif des Corbieres is an area characterised by Mediterranean scrubland in the mountainous terrain of south-west France between the Mediterranean Sea and the Pyrenees. With traditional human activities extending to small-scale agriculture and pastoralism, the area was an important location on the migration route of 50 000 raptors, 5 000 black and white storks, and over one million migratory passerine birds.

However, the decline of traditional extensive agriculture and livestock-rearing methods in the region, has led to less variation in the types of vegetation and level of cover. This has been to the disadvantage of bird species such as the near-threatened Dartford warbler (*Sylvia undata*) that nest in low scrub, and inhabit open fields and degraded scrub bush.

From 'monotonous' vegetation to variation

The LIFE project 'CONSAVICOR' (**LIFE05 NAT/F/000139**) focused on delivering habitat management actions based on livestock grazing in the framework of agreements with local land users. It specifically aimed to improve habitat for 13 target species listed in Annex I of the Birds Directive, including six passerine species and six birds of prey.

The project team prepared habitat management actions by conducting studies of passerine species populations and trends, threats to birds of prey and prey populations. Pilot areas covering 150 ha were selected for habitat restoration using rotary cutting of vegetation and managed fires. The latter were found to be more efficient at clearing away encroaching bushes and trees.

A further 200 ha were selected for grazing by a herd of sheep that was purchased for this purpose. This action demonstrated that the open scrubland could be successfully used for livestock grazing in an economic way that also benefitted the heathland habitat. At the close of the project, the beneficiary donated the sheep and associated materials to one of the project team, thereby ensuring ongoing grazing management.

Local biodiversity action plans were agreed with 34 municipalities in the project area and land management agreements were signed for the pilot areas. Habitat management interventions included those aimed at augmenting populations of species providing food for birds of prey, such as creating rabbit warrens, establishing new water points and planting favourable crops.

Monitoring indicates that such actions are already having results: new breeding couples of short-toed snake eagle (*Circaetus gallicus*) and peregrine falcon (*Falco peregrinus*) have been observed, as well as two new pairs of red-billed chough (*Pyrrhocorax pyrrhocorax*) and positive population trends of important scrubland prey species have been recorded.

Photo: LIFE05 NAT/F/000139 - Mathieu Bourgeois

Thekla Lark (Galerida theklae)

DID YOU KNOW?

Over one million passerines use the Eastern Corbières scrublands of France as part of their migration route.

Source: Ligue pour la Protection des Oiseaux

FARMLAND DRY GRASSLAND (SEMI-STEPPE)

Sustaining **grassland habitats in Portugal and Spain**

The great bustard, little bustard and lesser kestrel are particularly vulnerable to the effects of habitat loss and fragmentation, caused by changes in farming practices. LIFE projects targeting these threatened birds in Spain and Portugal focus primarily on the sustainable management of their valuable and vanishing extensive semi-natural grasslands habitats.

It is estimated that In Portugal, there are up to 20 000 little bustards (*Tetrax tetrax*). However, more than 90% of this population is endangered as their habitat - traditional farmed grassland areas – is being lost because of abandonment, afforestatation, increased irrigation, intensification and over-grazing. The LIFE 'Tetrax' project (**LIFE02 NAT/P/008476**) implemented a series of important actions to maintain and extend the main little bustard habitats of the southern area of the Alentejo region, where the birds are closely associated with the extensive Alentejo farming systems, living and foraging for food amongst the pasture and croplands.

The project carried out an inventory of the breeding, summer and wintering little bustards in the region in order to identify key populations and locate where agri-environmental measures could best be carried out. But the main focus, and success, was a pilot farmland management project carried out in the Mourão/ Moura/ Barrancos SPA – a very important site within the Natura 2000 network for the three target bird species, as well as other important grassland birds.

Over the course of the project (2002-2006), 127 contracts were drawn up for 45 local farmers who participated in trials of three different management methods. The methods were tested on 23 species and varieties of cereal and legume crop on over 3 200 ha. This work resulted in proposals for the agri-environmental management of the open farmland of the site to help preserve the habitat for the little bustard. The proposals included the following elements:

- A rotation scheme – to maintain the structure of the habitat, farmland management should include threshold percentages of four crops: dry cereal, dry legume crops, permanent pasture and fallow land;

The semi-steppe grasslands of Spain and Portugal are crucial to a number of threatened bird species

Photo: LIFE07 NAT/P/000654

- Allowing land to lie fallow – included in the rotation scheme during the breeding period, in order to provide safe places for nesting; and
- The use of legume crops – a list of legume species and varieties was recommended, including those that can be used by birds such as alfalfa, silage-pea and chick-pea.

Five-year plan

At the end of the project, a workshop was organised – involving all stakeholders, including the local and central authorities, nature conservationists and representatives of the farmers and landowners – to identify priority management measures for the following five years. Amongst the measures agreed was a regional action plan for conservation of the species – a plan whose findings would also feed into the government action plan for the conservation of steppe birds in Portugal.

In recognition of the importance of conserving the rapidly disappearing dry grassland habitats, a second Portuguese LIFE project, 'Peneireiro', (**LIFE02 NAT/P/008481**) was carried out during the same period, targeting the lesser kestrel (*Falco naumanni*) in Alentejo, where only 31 known breeding colonies of this once widespread bird remain. Like the little and great bustard, this species too has undergone severe population declines, in particular during the second half of the 20th century. As well as foraging for food in farmland areas, the lesser kestrel also makes its home in old buildings, and is threatened both by loss of feeding areas as farming practices have changed and loss of nesting sites as old buildings have been renovated. The 'Peneireiro' project sought to improve the prospects for the lesser kestrel in three SPAs in Alentejo: Castro Verde, Vale do Guadiana and Campo Maior.

The project beneficiary was the *Liga para a Protecção da Natureza* (LPN). The main focus of its habitat conservation efforts was to increase the number of sites that could be used for nesting by the lesser kestrel and to improve foraging habitats. A number of practical measures were put in place to meet these aims. For six colonies, walls were repaired in buildings that offered potential nesting sites, new holes were opened and nest boxes and clay pots were made available. A total of seven new breeding structures, known as 'breeding walls', were built in specified areas where suitable foraging habitat was available in the Castro Verde and Vale do Guadiana sites. These walls had 424 new nests. Over the four years of the project, a total of 817 new breeding sites were made available, involving 615 nesting cavities in walls, 120 nest-boxes and 82 clay pots. For this, the contribution of owners of buildings throughout the target areas was essential.

Photo: LIFE07 NAT/P/000654 - Ivan Vasquez

A pair of lesser kestrels (Falco naumanni)

Agreements with farmers were signed so as to increase the number of suitable foraging areas near lesser kestrel colonies. And to reverse land abandonment in Vale do Guadiana, 199 ha of cereal crops were sown in areas around the colonies between 2003 and 2006. The beneficiary also worked to improve the management of its own lands (covering 1 700 ha in Castro Verde) to be more kestrel-friendly. Importantly, in Castro Verde, agri-environmental planning was built into zonal plans, and these in turn were incorporated in the Portuguese Rural Development Programme (2007-2013). Thanks to this, it will be possible to assure the long-term conservation and protection of the lesser kestrel foraging habitats in the region.

Monitoring of progress showed some very encouraging results: By the end of the project there were

Photo: LIFE07 NAT/P/000654 - Rita Alcazar

The sowing of cereal crops provided suitable habitats for the lesser kestrel

some 445 pairs breeding in 55 colonies – a 54% increase on the population in 2001. Care was also taken to rescue young birds that fell from the nest and to release these back into the wild. The increases can largely be explained by success in the Castro Verde site, where the most comprehensive measures were put in place. Results in the other two SPAs were less clear-cut. Nevertheless, the Castro Verde success showed that such a thorough approach to breeding site and foraging habitat management can have important conservation benefits.

Broader cooperation

Building on these earlier projects, a follow-on Portuguese LIFE project is currently working to conserve the habitats of the target bird species in four farmland (cereal) SPA sites in the region. The focus of the 'Esteparias' project, (**LIFE07 NAT/P/000654**) however, is broader than the earlier initiatives, to ensure the long-term conservation of these vulnerable species. As well as promoting the sustainable development of these areas, making farming practices compatible with habitat management for the conservation of the birds, the project is also seeking to minimise other threats including from hunting, electrical power lines, fencing and climate change.

One innovative aspect sees the project beneficiary, LPN, a nature conservation NGO, working together with Spanish electricity and gas operator, EDP, in applying anti-collision and anti-electrocution measures on 40 km of electricity power lines in the Castro Verde Natura 2000 network. Every other week, the electrical lines are checked by the project technicians, as part of a monitoring plan, in order to analyse the effectiveness of the implemented measures.

The selection of the lines considered as essential for correction was based upon previous studies carried out by LPN in the areas where the birds' mortality was recorded, and also considering occurrence data of the species and the location of sensitive areas.

Aside from working with farmers and landowners, the project team is also hoping to establish bird-friendly methodologies in hunting areas (accounting for nearly 85% of the project area), which can be used both for hunting management and at the same time benefit steppe birds. For example, food sources or watering places made available for the fauna (such as partridge, rabbit and hare), can at the same time be shared by steppe birds. This type of cooperation is viewed as particularly relevant in the event of extreme temperatures, such as occurred during the drought of 2005. It is feared that climate change could make such extreme conditions more commonplace, increasing the risk of desertification of the cereal steppes, with negative impacts on the occurrence of the birds.

Meanwhile, another LIFE project is currently running in Spain – targeting the conservation and management of special protection areas for steppe birds in Andalusia. Among a package of habitat-improvement measures, the project (**LIFE08 NAT/E/000068**) is looking to: increase food availability for affected steppe bird species; increase nesting sites for the lesser kestrel; reduce death rates from collision with power lines, and, for the great bustard, from harvesting; and develop management models that will serve as a reference for farming activities on the grasslands where cereals are cultivated. The project is hoping to involve more than 120 farm owners in conservation of steppe birds through cooperation agreements.

Little bustard (Tetrax tetrax)

Photo: LIFE07 NAT/P/000654 - Luis Venancio

DID YOU KNOW?

In Portugal, more than 90% of the little bustard (Tetrax tetrax) population is endangered by the loss of traditional farmed grasslands.

Source: LPN

FARMLAND DRY GRASSLAND (SEMI-STEPPE)

Clearing **habitats for central European great bustards**

Habitat loss and fragmentation has led to the rapid decline of great bustard populations, but LIFE projects have demonstrated measures for reversing this trend.

Photo: LIFE09 NAT/AT/000225 – Franz Kovacs

The great bustard (Otis tarda) is threatened by habitat loss and fragmentation across central Europe

The great bustard (*Otis tarda*) is the heaviest flying bird species in Europe; some old adults can weigh up to 16 kg. The effects of the loss, degradation and fragmentation of its habitat, as well as of hunting, mean that great bustard numbers have rapidly declined across most of its range.

The main European populations are found on open farmland and semi-natural grasslands in the Iberian Peninsula and central Europe. The great bustard relies on areas with an abundant supply of insects: it nests in fallow or cereal fields (primarily alfalfa in central Europe) away from human disturbance and infrastructure, such as fences.

In recent years, populations in the Iberian stronghold have stabilised and possibly increased (with the aid of LIFE projects - see pp.30-32). In central Europe, however, habitat loss and fragmentation continues to be a threat. Ploughing of grasslands, intensive grazing, afforestation, the increasing development of irrigation schemes, as well as construction activities (roads, power-lines, fencing and ditches) all have an adverse impact on the bird's habitat. Moreover, bustards and their nests are directly destroyed by agricultural machinery during harvest, whilst chemical fertilisers and pesticides, fire and predation all contribute to the high mortality rate of eggs, chicks, juveniles and incubating females.

Conservation in central Europe

Since 1992, six LIFE projects have targeted great bustards in central Europe (two in Germany, two in Austria, one in Hungary and one in Slovakia). The first two of these – 'Protecting great bustard habitats in Brandenburg' (**LIFE92 NAT/D/004838**) and 'Fiener Bruch' (**LIFE94 NAT/D/000500**) – took place in Germany, with the aim of reversing the decline of the last three viable eastern German bustard popu-

lations and restoring and managing the habitats in a suitable way.

The Brandenburg project secured bustard habitat by buying 2 087 ha of land by the end of 1994, of which 477 ha was co-funded by LIFE. This area was managed in a bustard friendly way – i.e. restricting the use of fertilisers and pesticides in order to boost plants and invertebrates; and leaving field margins strips and hay meadows, which serve as refuge and forage for the bustard. Moreover, during the bustard breeding season (which coincides with crop harvest time), it is important to avoid the accidental destruction of nests – great bustards nest on the ground – by farm machinery.

These two German projects brought some 7 500 ha under bustard-oriented land management through Rural Development Programme (RDP) agri-environmental schemes. LIFE co-financed compensation payments for the first two years, the period up until the agri-environmental schemes were fully in place. The farmers applying to the schemes could not modify farming methods and land use, or carry out farming activities that destroy bustard habitat, such as eliminating fallow land and uncultivated margins around fields or removing grassland. Farmers agreeing to manage their land according to requirements of the great bustard signed five-year contracts and were compensated for the loss of income and additional workload.

DID YOU KNOW?

The great bustard was targeted by a total of 18 LIFE projects between 1992 and 2011.

Source: LIFE project database

Habitat management in West Pannonia

Most of the great bustards in West Pannonia (some 1 800 individuals) breed and winter in Austria and Hungary. The populations in Czech Republic, Slovakia and Romania are reduced (to not more than 15 individuals in total), and as a result, four LIFE projects aimed to improve the conservation status of the species in this area. One of the objectives of the projects was to eliminate threats to the bustards, in particular from electricity lines and fences, which caused mortality resulting from collisions. More than 90 km of power lines were buried and a further 150 km marked to improve their visibility to the birds.

The 'OTISHU' project in Hungary (**LIFE04 NAT/HU/000109**), which involved partners from five National Parks, four NGOs, a university and the Hungarian Ministry of the Environment, covered the full expanse of the Hungarian plains and encompassed measures at nine different Natura 2000 sites. One important outcome was the drawing up of management plans for each of the nine sites. These long-term conservation measures were validated in 2008. Coordination amongst government departments ensured that each of the sites was included as an eligible area for agri-environmental assistance under the Hungarian RDP. This is crucial for the long-term conservation and management of the bustard habitats.

Today more than 14 000 ha are covered by bustard-specific agri-environmental schemes in Hungary. "The number of farmers that join the scheme is high because of the demonstrative management and training and awareness-raising carried out by the project," says András Bankovics, the project manager. The project helped to manage 336 ha of alfalfa in a 'bustard-friendly' manner. Some 311 ha of oilseed rape was also sown to provide primary winter food. Other core conservation work led to 2 584 ha of grasslands being managed by low-intensity grazing or mowing after breeding seasons.

Grazing is crucial for improving and maintaining a more favourable open grassland habitat and enhancing biodiversity that supports bustards, as well as other bird species, such as falcons (see pp. 36-38). In addition, 1 848 ha of fallow land were established and maintained for one or two years as a beneficial breeding habitat for great bustards. The project established a close cooperation with local farmers through regular field meetings and discussions. Such meetings included a demonstration of the impact of different crops and harvesting machinery on great bustards and highlighted the need to protect great bustard clutches in case they are hosting a nest. Farmers that voluntarily join the Hungarian RDP agri-environmental scheme specifically for bustards receive €310/ha per year for five years.

The project also purchased 1 999 ha of land to allow greater control of the habitat restoration actions. These actions included converting 573 ha of arable

This attractive-looking sign informed the local community about the actions of the Hungarian LIFE Nature project, 'OTISHU'.

Photo: LIFE04 NAT/HU/000109 - Jan Silva

Photo: LIFE04 NAT/HU/000109

Over 14 000 ha are covered by bustard-specific agri-environmental schemes in Hungary

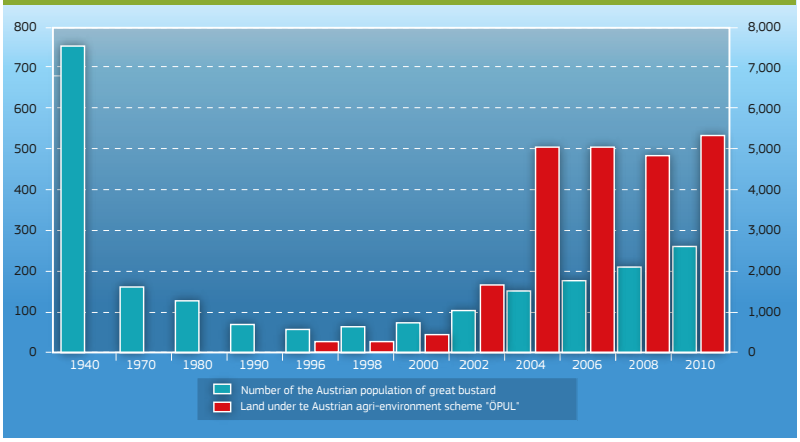
land into grassland and creating a further 224 ha of alfalfa to help provide seasonal feed for the birds. Grasslands have been restored on five project sites (a total of 573 ha) using the seeds of native grass species primarily of local origin. Characteristic species were used, including *Festuca pseudovina*, which was planted mostly on display sites of male bustards and the taller *Dactylus glomerata*, an ideal dominant grass for the breeding sites.

In neighbouring Slovakia, the 'OTISSK' project (**LIFE05 NAT/SK/000115**) also reduced the threats posed by un-insulated pylons. Another outcome was the establishment of an agri-environmental scheme for the protection of endangered bird species, including the great bustard, as a part of the RDP for Slovakia. By the end of 2009, 1 680 ha of land in the Natura 2000 site "Lehnice SPA" and 379 ha of land in the "Sylovske polia SPA" site were being managed under the scheme. These land parcels, together with 47 ha of land purchased by the project, represent 50% of the area of both sites. In addition, the project entered into formal cooperation with three hunting associations and two farms in order to minimise threats to the birds from predators and from agricultural activity in the project area.

The main objective of the Austrian-led cross-border project, 'Grosstrappe' (**LIFE05 NAT/A/000077**), was to reduce the risk of great bustards colliding with overhead power lines. Some 47.4 km of aerial (medium-voltage) power lines (and pylons) were removed and laid underground. LIFE also helped explore ways to forge further commitments from land managers to support the conservation status of the species. The project led to a greater uptake by farmers of 'ÖPUL' funds from Austria's RDP to implement agri-environmental schemes. By 2010, some 5 500 ha of great bustard fields (special cultivated fallows, rape fields as winter feeding areas etc.), are now covered by such schemes in Austria (see figure 1).

The habitat improvement carried out by this project has helped stabilise the Austrian great bustard population and could play a key role in establishing a breeding population in the Czech Republic, where the bird is found but is not breeding. However, it became clear to the beneficiary that there was a need to expand support for the species and maximise the effectiveness of cross-border protection in Austria, Hungary, Slovakia and the Czech Republic. Therefore a follow-up project, 'LIFE+ Grosstrappe-continuation' (**LIFE09 NAT/AT/000225**) was proposed. Other main objectives of this ongoing project are to establish close cooperation with stakeholders and to introduce a public information campaign to reduce the risk of human disturbance.

The impact of agri-environment schemes on great bustard numbers in Austria



Source: LIFE09 NAT/AT/000225

PANNONIAN GRASSLANDS

Managing **grasslands for falcons**

Two LIFE projects have helped improve the conservation status of the red-footed falcon and Saker falcon in Hungary by reducing threats and carrying out habitat restoration and management.

Though the Pannonian plains hold some of the largest EU populations of red-footed falcon (*Falco vespertinus*) and Saker falcon (*Falco cherrug*), the numbers of these raptors in this area have fallen significantly in recent decades. According to BirdLife International, the red-footed falcon population has declined from 2 000-2 500 pairs in the late 1980s to 600-700 pairs in 2003-2006 in Hungary alone. Saker falcon numbers have also significantly decreased – the overall European population declined by more than 20% in the 1990s. .

Both falcon species would greatly benefit from a reduction of agricultural activity and an increase in extensive grassland management, especially grazing. Loss of habitat leads to decreased availability of food, such as insects for the red-footed falcon and small rodents, especially suslik (*Spermophilus citellus*), for the Saker falcon.

Photo: LIFE05 NAT/H/000122 - Péter Palatitz

Adult male red-footed falcon (Falco vespertinus)

Mosaic areas for Saker falcons

Saker falcons breed in typical open Pannonian habitats, such as steppe grasslands, forest-steppe and pastureland, which are often found in a mosaic of low intensity agricultural areas. The LIFE project, 'Falco cherrug - HU/SK' (**LIFE06 NAT/H/000096**), was set up to better understand the habitat requirements of the species.

Using GIS, the project carried out detailed land use mapping and field surveys in three pilot farmland areas (two in Hungary and one in Slovakia). Land use and structure, habitat characteristics and analyses of Saker falcon prey (mainly suslik) were correlated with the occurrence of tagged adult males in order to establish the species's preferences. The results were compared with the current requirements for subsidies for farmers under Hungarian and Slovak Rural Development Programme (RDP) agri-environmental schemes, and amendments were proposed for upcoming schemes for 2014-2020.

The collected data were also used to draw up guidelines on habitat rehabilitation and management methods. "The Saker relies on a farmland mosaic with open areas favourable to its main prey, suslik, in order to have successful breeding. The farmers should be paid for that," says Jozsef Fidloczky, the project manager. During the LIFE project, more than 300 farmers each year received training on potential financial support for 'Saker-friendly' farming methods.

In order to secure a food source for the Saker falcon, the project has also repatriated from airfields – where they pose risks to aviation – 4 866 susliks (3 600 in Hungary and 1 266 in Slovakia) to open pastures, where suitable long-term habitat management (grazing) is guaranteed. In one Natura 2000 site in Hungary, the project carried out management actions on 2 989 ha of land in 16 sub-sites. Different

grazing and mulching techniques were used to keep the grass short for suslik. In Slovakia, 12 meetings were held with land users on two Natura 2000 sites concerning suitable management of the suslik repatriation sites; an area of some 110 ha on these sites was regularly managed.

Saker falcons are also threatened by the lack of nesting sites: they don't build their own nests but rely on built structures and abandoned nests of other bird species (such as ravens). For this reason, the project built 239 wooden nest platforms in Hungary and placed 20 artificial wicker nests in trees in Slovakia. In addition, 386 aluminum nest boxes (301 in Hungary and 85 in Slovakia) were placed on pylons of high-voltage power lines and around 600 trees were planted in treeless lowlands in Hungary to ensure future nest sites.

At the start of the project (2006), there were an estimated 140 breeding pairs of Saker falcon in Hungary and 23 pairs in Slovakia. By the end of the project (September 2010) some 200-220 pairs were counted in Hungary and 35-38 pairs in Slovakia.

Continued efforts

A follow-up project, 'Falco cherrug B - H - R - S' (**LIFE09 NAT/HU/000384**), was launched in 2009 to stabilise and further strengthen 80% of the European core populations of the Saker falcon. It is implementing best practices for conserving the species not only in Hungary and Slovakia but also in Bulgaria and Romania. Nesting sites are being improved and nest boxes installed, whilst the population of its prey will be increased by improving habitat conditions and reintroducing suslik in some areas. Risks from electric pylons are also being addressed.

A comprehensive monitoring programme will result in improved knowledge of the changes in population of both the suslik and the Saker falcon. Information about migratory losses of Saker falcons will be increased using satellite telemetry and by gathering data from wintering grounds.

An intensive communication programme, targeting farmers, game managers and political decision-makers at local and national level, will increase awareness and create support for Saker falcon conservation. By 2014 the project aims to stabilise the number of pairs in Romania to at least 10, in Dobrudzha in Bulgaria to five pairs, in Hungary to 200 pairs and in Slovakia to at least 35 pairs.

Management for red-footed falcon

The project 'F. VESPERTINUS - HU/RO' (**LIFE05 NAT/H/000122**) aimed to restore the red-footed falcon to a favourable conservation status in Hungary and the west of Romania. The species, which typically breeds on steppes at low altitudes and in surrounding agricultural land, is threatened by habitat loss and subsequent loss of prey.

The project tagged 10 adult red-footed falcons with radio transmitters in 2006, a further 14 the following year and 17 more the year after. These marked birds could then be regularly monitored during the nesting period. The project also surveyed potential prey (mammals and insects). The results of these actions were compiled in a GIS and correlated with land use and habitat management practices. Based on these findings, best habitat management measures for the falcon were included in Natura 2000 site management plans and RDP agri-enviromental schemes. Peter Fehérvári, the LIFE project expert on the species, says that the project demonstrated "evidence-based" conservation. "We needed to establish before any management proposals [were made] that the falcon would benefit from them," he explains.

Thanks to the project, the Hungarian RDP has now incorporated specific red-footed falcon farming subsidies. Moreover, more than 2 000 ha are receiving agri-environmental funding in significant breeding zones in the ongoing five-year funding period (2009-2014).

The red-footed falcon breeds in colonies and uses old rook's nests. However, the rook population has

Photo: LIFE05 NAT/H/000122 - Péter Palatitz

Gergo Szovenyi (ELTE) assessing potential prey availability with a sweep net

Photo: LIFE06 NAT/H/000096 - Levente Viszló

The 2006 project introduced grassland management using Hungarian grey cattle

decreased by 90% over the past two decades. As a result of the LIFE project, the rook is now protected during the breeding season in Romania. Furthermore, the project's 'Corvus conflict management plan' has been approved by the Hungarian and Romanian governments. The breeding population of the rook in the project area has stabilised (17 000-19 000 pairs), though Hungarian rookeries have fragmented over the past four years.

At the end of the project, the conservation status of the red-footed falcon had substantially improved. The breeding population for the Carpathian-basin increased from 800-920 pairs in 2006, to 1 400-1 500 breeding pairs in 2009. A total of 3 200 nest-boxes were installed in Hungary and Romania and their occupancy rate was around 17% in 2007-2009. Two-thirds (597 pairs) of the Hungarian population, however, bred in the installed nest boxes in 2009. Around 4 500-5 000 individuals were estimated to have fledged as a result of the project. The total number of birds counted during the autumn roost-site surveys in 2007 was around 3 600; while 5 800 and 9 100 individuals were observed in 2008 and 2009, respectively.

World champion boxer Zsolt Erdei releases Turul, a recovered Saker falcon

Photo: LIFE06 NAT/H/000096 - István Balázs

A recently launched LIFE project, 'REDFOOT' (**LIFE11 NAT/HU/000926**) is continuing such conservation measures in order to secure long-term conservation management of red-footed falcon nesting sites and feeding habitats. Furthermore, to prevent the extinction of the species in Slovakia (just two pairs remain) it is improving nesting and feeding areas for the species to return from Hungary. An area of up to 2 000 ha has been targeted. In addition, the project plans to carry out demonstrative management on 360 ha of land and 170 ha of feeding sites in Hungary. This action aims to show farmers techniques that are supplementary to those of the existing RDP agri-environmental subsidy scheme and to gain an insight into the farmer's point of view on how red-footed falcon-friendly farming can be viable within the framework of the current economic situation and subsidy environment. Some 900 stakeholders will participate in 13 demonstration events in Hungary; at least 20 meetings with stakeholders (hunters and farmers) will be held in Slovakia, and 50 farmers and other stakeholders from Slovakia will take part in a 'transfer of knowledge' trip to Hungary. It is expected that at least 50% of the participants (landowners or land users of red-footed falcon habitats in Hungary) will agree to the use of management tools for the species.

The Saker and the red-footed falcon both rely on a mosaic of open farmland with different crops, extensively grazed grasslands and some trees. Management of this landscape therefore must take into account the requirements of falcons. The LIFE projects represent a good starting point, demonstrating appropriate management actions, but continued long-term management after the projects will require funding from such sources as the RDP agri-environmental schemes that LIFE has helped improve.

CANARY ISLAND SEMI-DESERT GRASSLAND

Measures **to protect a rare island species**

The houbara bustard is endemic to two of the Canary Islands. As tourism grows and land use changes, the dry grassland steppes on which the bird depends are increasingly threatened. A LIFE project has worked to increase the area of conserved habitat and ensure its long-term management.

The only European population of the endangered houbara bustard (*Chlamydotis undulata fuertaventurae*) is found on the Canary Islands of Lanzarote and Fuerteventura. Although Natura 2000 network designations have provided some protected areas for the birds, increasing pressures on dry grassland steppe habitats outside of these zones are starting to threaten the breeding population. Increasing numbers of goats grazing in the grasslands and the construction of new buildings have been deteriorating the conservation status of the houbara habitat..

The LIFE 'Hubara Canarias' project (**LIFE03 NAT/E/000046**) brought together a partnership of local conservation bodies to design a package of management actions for the grassland steppe habitats. This aimed to benefit the target species and other steppe birds, such as the cream-colored courser (*Cursorius cursor*).

Informing habitat management interventions

The project used tracking and census techniques to obtain accurate information on the species and its critical areas of habitat, including availability and abundance of food of competition. This revealed important seasonal movements and improved knowledge on reproduction trends.

A warden was hired for each island to conduct ongoing habitat and species surveillance, with particular intensity during the breeding and hunting seasons. This contributed to the collation of detailed information as well as recording and directly tackling threats. The principal threats were confirmed as infrastructure and human disturbance.

The project was able to identify 21 particularly sensitive areas for the species across the two islands, which it protected from human impact with signs and soft barriers. Cooperation with motor-sports organisers also resulted in events being moved to less sensitive areas.

Purchasing land and drafting guidelines

The project used the wealth of information and knowledge it was able to gather to help ensure improved long-term management of key areas of habitats. One of the basic pillars of the project was the purchase of the Cercado del Jarde estate as a conservation reserve. This land had been identified as a conservation priority for the target species in Fuerteventura, comprising over 200 ha of enclosed stony and earthy ground in a good state of conservation.

The beneficiary also drafted a number of important documents to favour improved long-term management of key houbara bustard habitat:

- A management plan for the Cercado del Jarde estate – including limiting livestock grazing and controlling hunting;
- An 'Important Areas Network for the houbara in Lanzarote and Fuerteventura' – which fed into the official update of the SPA network for the Canary Islands in 2006;
- A list of currently unprotected priority areas suggested for 'Ecologically Sensitive Area' designation;
- A species recovery plan for the houbara bustard; and
- An agri-environment programme – envisaging recovery of traditional crops in the areas where the houbara bustard is present.

Photo: LIFE03 NAT/E/000046 - Gustavo Peña Tejera

Houbara bustard (Chlamydotis undulata fuertaventurae)

DID YOU KNOW?

Houbara bustards are only found in the EU on the islands of Lanzarote and Fuerteventura.

FRESHWATER HABITATS

Securing **the future of a special habitat for birds**

Management actions, including some key recurring tasks, are essential at the Weidmoos bird reserve in Austria to safeguard the site's special mix of habitats that has made it so attractive to a range of rare bird species.

Since the end of peat extraction in 2000, the Weidmoos Natura 2000 network site near Salzburg has become an important habitat for over 150 bird species, including some that are threatened with extinction in Europe. A mosaic of water, reed beds and clumps of willow – which quickly formed following the ending of peat cutting – provides the perfect environment for a range of bird species.

Most prominent are the numbers of breeding pairs of bluethroat (*Luscinia svecica*) – recorded at their height in 2002, as numbering 44 pairs, i.e., one of the largest breeding populations in Austria. Other Annex I bird species of the Birds Directive that are breeding or hibernating at the site include: the marsh and hen harrier (*Circus aeruginosus* and *C. cyaneus*), spotted crake (*Porzana porzana*), ruff (*Philomachus pugnax*) and wood sandpiper (*Tringa glareola*).

Without management, however, this semi-open landscape would turn into a monotonous forest, losing the special habitat mosaic so attractive to the wide range of bird species. Therefore, LIFE co-funding was secured for the 'WEIDMOOS' project (**LIFE03 NAT/A/000010**); the goal of its habitat management-focused approach was to conserve these landscape elements for the future, or in some cases to recreate them.

Common snipe (Gallinago gallinago)

Photo: Credit: P. Buchner

The project was run by the nature protection department of the Salzburg regional government in partnership with an NGO set up by hunters, landowners and mayors to promote Weidmoos as an area of local heritage. Its main objectives were to preserve the wetland habitat with targeted measures to retain its natural state, whilst at the same time making it accessible to people.

Before the start of the project, the regional government had acquired 80 ha of the former peat extraction site. With the help of LIFE, it acquired a further 22 ha and usage rights for another 16 ha. The sustainability of the site depends on maintaining water levels.

Computer modelling was used to calculate the effects that hydrological works would have on the amount of water in the site. The project also called upon the expertise of former workers in the peat industry. Many of the bird species in the Weidmoos need an open landscape with areas of wetland and standing water. Monitoring efforts were concentrated on the water quality and the nutritional balance of the wetland.

Altogether 53 small dams – total length c. 2.5 km – were constructed for retention purposes. Water levels were regulated through the integration of 28 overflow structures into the dams, leading to the creation of an additional 30 ha of new water bodies and wetland areas. Importantly, the construction work was undertaken outside of breeding times and divided over two years to minimise the impact on bird populations. Experimental management of wet meadows, reed beds, bare land and bushy areas was also

undertaken to optimise procedures for maintaining habitats over the entire Natura 2000 site.

Visible results

The project actions have resulted in a more open landscape, interspersed with standing water and wetlands, which provides a better habitat for birdlife. This was evidenced by monitoring in 2007, which showed satisfactory increases in most of the Annex I species recorded – although the number of bluethroats had fallen off from their 2002 height, they remained stable during the project years, at around 20-25 pairs. Moreover, new breeding bird species were recorded at the site including the bittern (*Botaurus stellaris*) and the little bittern (*Ixobrychus minutus*).

An important aspect of the works carried out at the site is that certain tasks would need to be continued after-LIFE, in order to maintain these results in the long term. One example is the continuing ornithological monitoring. Project manager, Bernard Riehl, confirms that monitoring has been carried out every two years since the project ended, most recently in 2011. This work is carried out by ornithologists, funded by the EU European Agricultural Fund for Rural Development (EAFRD) and by the regional government. Other ongoing maintenance work, which is considered particularly important includes:

Photo: Bernhard Riehl

A farmer mowing straw litter meadows in late summer. This preserves the type of open landscape favoured by the project's target bird species

- Mowing of the 30 ha of wetland meadows and reed beds that were created during the LIFE project, following a special scheme adapted to the needs of the breeding birds i.e., no fertilisers are used and the areas are mown in late summer or autumn. This ongoing management, necessary to avoid overgrowth of the semi-open landscape and thus the loss of birds´ habitats, is carried out by local farmers; funded by the Austrian agri-environmental scheme (ÖPUL), co-financed by EAFRD and the regional government;
- Using a special tracked rotary cultivator to ensure the availability of vegetation free areas, crucial for the bluethroats and several waders. This is carried out by the Torferneuerungsverein, the local heritage NGO and former LIFE project partner; and
- Pruning or felling of individual trees and bushes by volunteers from this NGO, in order to safeguard the optimal mix of tree cover and shrubs.

Finally, the continuing monitoring shows that since the end of the project the population of bluethroats has remained "more or less stable", says Mr Riehl, explaining that while the overall numbers are significantly lower than those recorded in 2002 – with the help of ongoing habitat management in Weidmoos, experts believe the situation will remain stable (with low natural annual fluctuations): "The experts are generally quite happy with the ongoing balanced management and the resulting bird diversity in Weidmoos, with new rare bird species settling in the area."

Aerial view of the Weidmoos

Photo: LAND SALZBURG/Klaus Leidorf

DID YOU KNOW?

The special habitat-mix of the Weidmoos Natura 2000 network site near Salzburg attracts more than 150 bird species.

Source: 'Amt der Salzburger Landesregierung

Project number: LIFE03 NAT/A/000010

Title: WEIDMOOS - Habitat management in the SPA Weidmoos

Beneficiary: Amt der Salzburger Landesregierung

Contact: Bernhard Riehl
Email: Bernhard.riehl@salzburg.gv.at
Website: www.weidmoos.at
Period: 01-Apr-2003 to 30-Sept-2007
Total budget: €1 210 000
LIFE contribution: €605 000

MEDITERRANEAN WETLANDS

Reversing **human-induced silting-up of lagoon habitats**

A Spanish LIFE project has demonstrated how relatively simple measures agreed with local land-users can make a difference to the quality of Mediterranean lagoon habitats available to migratory bird species in the long term.

DID YOU KNOW?

The Mediterranean wetlands at Albuera provide a habitat for 160 bird species.

Source: Dirección General de Medio Ambiente. Consejería de Industria, Energía y Medio Ambiente, Extremadura

Mediterranean lagoons provide vital stopover points – as well as breeding and wintering locations - for migratory birds. An important example are those found in the Albuera wetlands of Extremadura (Spain), which provides habitat to over 160 bird species, of which 44 are listed in the annexes of the EU's Birds Directive as priority for conservation.

This strikingly high ornithological diversity is thanks to the presence of different habitats, which allow the development of different biological communities alongside each other. The Albuera wetland complex includes five habitats listed in the Habitats Directive, including three that are considered a priority for conservation: temporary Mediterranean lagoons; Thero-Brachypodietea steppes; and Limonietalia saline Mediterranean steppes.

However, the habitats of the lagoon complex, made up of a series of temporary Mediterranean ponds of endorheic - closed basin - nature surrounded by a holm oak forest, are extremely fragile. Their conservation has been increasingly threatened by human activities that have exacerbated natural silting-up processes and led to the erosion of areas around the lagoons.

The most important human threats to the Albuera lagoon complex include: overgrazing on the lagoon shores; overexploitation of aquifers; use of lagoon beds for crop-planting or grazing during the dry season; poor forest planning; and pollution of the water, leading to nutrient overload and eutrophication.

The LIFE project 'Albuera Extremadura' (**LIFE03 NAT/E/000052**) worked to restore the natural watercourses between lagoons and tackle the specific activities that were increasing the severity of silting processes. In so doing, it demonstrated how it is possible to maintain agricultural activity at the same time as reversing the human-induced silting-up of Mediterranean lagoons.

The Albuera lagoon complex is an important stopover point for migrating birds

Photo: LIFE03 NAT/E/000052

The importance of preparation

The project carried out studies and other preparatory steps to develop the most appropriate habitat management actions. Meetings and technical workshops were held with project stakeholders including biologists, forestry engineers, environmental technicians, geologists, landowners and farmers. The goal of the meetings was to explain the project and create a framework for collaboration and mutual benefits.

One important preparatory measure was the first detailed hydro-geological study of the target wetlands. This included a complete cartography, inventory of water points and examination of the structure and behaviour of the subsoil. The study discovered that there were more lagoons than initially thought – 18

rather than seven – and that there was no connection between the lagoons and the aquifer.

A socio-economic study provided an assessment of the current economic situation of farms and existing EU grants available to farmers. It specifically considered the likely social adaptations necessary to implement habitat management actions and the economic costs involved. Using interviews with local stakeholders, the study assessed the likely sustainability of different management proposals.

A project partner drafted a detailed management plan for the complete Natura 2000 network site, Llanos y Complejo Lagunar de la Albuera. This includes the area where the lagoons are located and other sites of cereal crop cultivation important for steppe birds. The plan defined a zoning of the area, establishing the type of activities to be restricted in each zone, including clear delimitation of the most sensitive areas.

Stakeholder agreements get results

After these preparatory steps, the project implemented a set of actions that successfully achieved a number of habitat restoration objectives, including restoring natural hydrology, preventing erosion processes and improving habitat diversity (see box).

Agreements with important stakeholders sought to reduce human pressure on the lagoons permanently. The construction of water troughs enabled agreements to be made with landowners to stop livestock from entering the lagoon to drink. The construction of irrigation hydrants similarly avoided the need for farmers to use water from the lagoons. Several hunting associations signed up to the habitat improvement measures.

Landowners agreed not to cultivate a ring of 50 m around six lagoons. Cereals were sown into fallow and leguminous land and all phytosanitary products avoided. This reinforced the shoreline of the lagoons and provided a more natural wild pasture. This vegetation acts as important cover, providing both aquatic and steppe birdsv with safe breeding and feeding areas.

Compensation payments were offered to farmers to delay the harvest of cereal crops in important areas for ground-nesting birds, including the great bustard (*Otis tarda*), little bustard (*Tetrax tetrax*) and collared pratincola (*Glareola pratincola*). Good communication was essential to obtain the cooperation of landowners who were initially reluctant to change their existing land-use practices. The area under management covered 145 ha by the third year of the project.

Principal restoration actions

- Restoration of natural channels using light machinery;
- Removal of silt to level out basins where appropriate;
- Restoration and remodelling of lagoon margins using dredged material;
- Creation of small islets using dredged material;
- Re-vegetation through planting of species of bushweed (*Flueggea tinctoria*) and salt cedar (*Tamarix africana*);
- Construction of a stone walkway for livestock and vehicles; and
- Fencing of sensitive areas.

Habitat management actions bore almost immediate fruit, with monitoring showing that the managed areas have been regularly used by both steppe and aquatic birds for breeding and as refuge areas. For example, a pair of stone curlews (*Burhinus oedicnemus*) was observed breeding close to one of the managed lagoon shores.

An important outcome of this LIFE project has been its demonstration that relatively simple measures – that can still be in harmony with agricultural and hunting activities - can make a big difference to ground-nesting birds and their chances of breeding successfully. A new regional decree was introduced that meant farmers could apply for grant aid for conservation of habitats beyond the project area.

An unexpected and valuable additional result of the project was its discovery that the lagoon complex is directly connected to the River Valdegrana. This opens up the interesting possibility of including the wetland complex in water regulations as part of public property.

Collared pratincola (Glareola pratincola)

Photo: LIFE03 NAT/E/000052

ALKALINE FENS

Irish project revives **waterbird habitat**

A wetland restoration project in County Wicklow, Ireland, has shown the potential for returning degraded alkaline fen habitats to their former glory.

Wetlands across Europe are much threatened and diminished by drainage and agricultural reclamation. BirdWatch Ireland, the country's largest independent nature conservation organisation, estimated in 2007 that around 79% of all fen/wetland habitat in Ireland had been lost to land reclamation over the previous decade. However, a project to create a wetland nature reserve on the coast of County Wicklow has shown how such habitats can be restored and managed.

The project (**LIFE03 NAT/IRL/000107**) involved the purchase by BirdWatch Ireland of an 89-ha plot of land at Blackditch, located within the Murrough Wetlands, which is the largest wetland complex on the east coast of Ireland and a Natura 2000 site. The beneficiary restored and managed the site's wet grasslands, woodlands and alkaline fen with the aim of providing suitable habitats for four threatened waterbird species: the Greenland white-fronted goose (*Anser albifrons flavirostris*); whooper swan (*Cygnus cygnus*); kingfisher (*Alcedo atthis*); and little egret (*Egretta garzetta*).

The Blackditch site had been degraded by drainage, tree planting and intensive sheep and cattle grazing. To restore it to a favourable condition, the project removed a pine plantation, invasive willow and gorse, improved the reserve's hydrology – raising the water table and installing sluices to allow seasonal flooding – and established habitats to attract overwintering bird species and create safe roosting and breeding areas for water birds.

Crucial to the latter was the involvement of local farmers, who began to supply the reserve with cattle in summer (May-October). In return for the grazing, the farmers also agreed to help with planting of forage crops – linseed, quinoa, oats and sugar beet - and mowing when necessary. Low-intensity cattle grazing on grassland areas was complemented by a fenland grazing regime – instigated in July 2006 – involving the use of three Kerry Bog ponies provided by Genetic Heritage Ireland.

Bird populations increasing

A general increase in bird species and numbers were seen at the site as the project progressed, as well as longer periods of use during the winter months. In total, 123 species were recorded, including 17 Bird Directive Annex I-listed species, as well as nine birds included on Ireland's "red list" and 37 from the "amber list".

With regards to the project's four target species, a small number of Greenland white-fronted geese and whooper swans were recorded at Blackditch (the geese for the first time in over a decade), whilst little egrets from a nearby colony were increasingly attracted to the site and remaining for longer periods. Following the construction of nesting banks for kingfishers, a breeding population is thought to have been attracted to Blackditch. To build on the work of this LIFE project, the beneficiary drafted a management plan for the site based around three key elements: maintenance of the water table, low-intensity grazing and the reintroduction of tillage (a means of attracting seed-eating birds).

DID YOU KNOW?

BirdWatch Ireland and the Irish Ramsar Wetlands Committee are currently undertaking a National Inventory of Wetland Resources in Ireland.

Source: BirdWatch Ireland

The project restored an important wetland site at Blackditch on Ireland's east coast

Photo: LIFE03 NAT/IRL/000107

MEADOW HABITATS

Denmark's meadows to **welcome back ruff and dunlin**

Restoration and management actions targeted at four specific breeding sites of meadow birds should help make them more attractive to ruffs and dunlins in particular.

Meadow birds are becoming an increasingly rare sight in Denmark as the country's meadows habitats are abandoned or converted to intensive agricultural use. The loss of suitable habitats has halved the number of ruff (*Philomachus pugnax*) and dunlin (*Calidris alpine schinzii*) on Danish soil since the mid-1980s. By 2008, only an estimated 150 breeding pairs of dunlins and 65 pairs of ruffs remained.

A LIFE Nature project (**LIFE06 NAT/DK/000158**) aimed to remedy this situation by restoring breeding grounds for the two threatened bird species at four sites and instigating measures to ensure the sustainable and favourable long-term management of these habitats, through extensive grazing and a suitable regime of mowing. Led by Denmark's Forest and Nature Agency in partnership with the Danish Ornithological Association, the goal of the 'REMAB' project was to bring about more wetland, fewer natural predators and better breeding and foraging opportunities for the ruff and dunlin.

Targeting two sites in the north-west of Denmark, one in the south-east and one close to central Copenhagen, the work of the project centred on recreating 238 ha of wet grassland and salt meadows. Actions were taken to remove trees, bushes and reeds and to improve the wetlands' hydrology, through removal of dams and building of new barrages and sluice gates. To prevent predation of birds by foxes, gates were installed and other fox control measures applied.

Actions were taken to reduce eutrophication in order to improve water quality on 975 ha of the Habitats Directive-listed water bodies supporting vegetation of Chara spp at the Vestlige Vejler project site in the north of Denmark. This has led to improved conditions for the bittern (*Botaurus stellaris*), spotted crake (*Porzana porzana*) and black tern (*Chlidonias niger*).

Photo: LIFE06 NAT/DK/000158 - Peter Bundgaard

Dunlin (Calidris alpine schinzii)

To ensure the ongoing management of the four sites in a manner favourable to ruff and dunlin, the project established appropriate grazing regimes on approximately 900 ha of preferred habitat with the support of local landowners and farmers. A grazing cooperative was founded at the Nyord project site, whilst at Vestlige Vejler a management plan was drafted to improve opportunities for meadow grazing after LIFE.

Wider issues remain

Despite its "textbook" actions, the 'REMAB' project has not managed to stop the decline in numbers of breeding pairs. This is seen as being linked to a general fall in numbers of ruff and dunlin all over Western Europe, caused by a lack of upkeep of favourable winter habitats in Africa and the Middle East. If these wider issues are addressed, the improvements made at the four Danish project sites could yet have positive outcomes for the ruff and dunlin.

DID YOU KNOW?

The ruff is susceptible to avian influenza, avian botulism and avian malaria and may be threatened by future outbreaks of these diseases.

Source: BirdLife International

MEADOW HABITATS

Conserving **wet meadows for corncrakes**

The abandonment of traditional mowing practices and the expansion of intensive farming have led to the destruction of habitats suitable for the corncrake (*Crex crex*) across Europe. A LIFE project in Slovenia is promoting the protection of wet meadows that are favourable for the conservation of this endangered bird species.

Photo: LIFE10 NAT/FR/000197 - Louis Marie Préau

Corncrake (Crex crex)

In Slovene, the same word is used for a corncrake and a person who mows – kosec – a sign perhaps of the symbiotic relationship this bird species has with human activities. An understanding of this relationship, however, needs to be better reflected in the attitude of the public and the priorities of policy-makers in the country. As a result, the LIFE project, 'Crex Slovenia' (**LIFE03 NAT/SLO/000077**), not only focused on improving conditions at key sites for corncrakes, but also on the implementation of measures on a national level to ensure habitat protection.

According to the beneficiary, DOPPS BirdLIFE Slovenia, the primary aim was to promote the corncrake as a symbol of future harmony between rapid development and the preservation of a high level of biodiversity in the Natura 2000 network. A major outcome was therefore the drawing up of the first national protection plan for the corncrake (2005-15) and the introduction of a national monitoring scheme.

This action plan was first tested at three sites in Slovenia, which were home to significant populations

of the species: the area surrounding Lake Cerknisko, the flat fields of Ljubljansko barje and along the Nanoščica river. The three areas contained large tracts of grassland that have for centuries provided fodder for livestock and hay for local farmers. But as such agriculture practices have declined, dense vegetation unsuitable for corncrakes has grown on abandoned meadows, and increasingly the land is being converted to intensive crop cultivation, which is also bad for the bird species.

Reversing this trend is difficult. Farmers require sufficient incentives to manage their land in a way that is favourable to the corncrake and not to grow corn crops, which in Slovenia are subsidised by the state. The problem is prevalent even in protected areas, says Damijan Denac, director of DOPPS: "Despite the fact that the area is in Natura 2000 the farmers are still turning meadows into cornfields."

He argues that "special measures" for conservation are required for these protected areas because often it is more financially beneficial to grow crops (and leave them to rot on the land) than it is to carry out traditional mowing. As a result of the LIFE project, however, DOPPS is represented on the external board of the Rural Development Programme (RDP) of the agricultural ministry of Slovenia. It was able thus to introduce a new agri-environmental scheme for the protection of the corncrake and other endangered wet grassland birds in Natura 2000 sites as part of the country's RDP for the years 2007-2013.

However, more needs to be done, and Mr Denac says that his organisation is pressing for greater incentives to be included in the upcoming plan for 2014-2020.

Working with farmers

As part of the 'Crex Slovenia' project, land was leased and purchased to increase the potential habitat for the corncrake. At Lake Cerknisko, the amount exceeded that which was initially planned, whilst at Ljubljansko barje, even though only a small amount of land was purchased, the total project area, including leased land, was also greater than foreseen. Good practice recommendations for purchasing farm land from private landowners were drafted by the municipality of Cerknica, a partner in the project.

As a result, the number of birds increased "dramatically" after the project, according to the beneficiary, and the area is now home to the highest concentration of corncrakes in the country. At the nature reserve, Iški morost, which was created during the project, the number of corncrakes increased from six in 2004 to 14 in 2012. The reserve is also home to a significant breeding population of whinchat, as well as one of the last breeding populations of curlews in Slovenia. The area is also a constant strong roosting site for hen harriers during the winter.

Photo: Jonathan Eldridge

One of the wet meadow areas where the 'Crex Slovenia' project has introduced habitat management favourable to corncrakes

The beneficiary works with farmers to encourage bird-friendly mowing of the land. In fact, the project pioneered a new method of 'inside out' mowing, which after some initial reluctance became a standard practice amongst the local farming community.

The beneficiary also benefits from the farmers' help in that the cost of mowing its own land would otherwise be prohibitive for the NGO. "They can mow

Photo: LIFE03 NAT/SLO/000077

The practical support of farmers is essential to ensure a stable and healthy corncrake population in the long term

on our land and use it to feed their animals. We are not using it ourselves," says Mr Denac. The additional help is also much needed, given that the time for mowing is very short (work starts after August, so as not to disturb the birds).

Good relations with farmers are also important to the continuing impact of the project, and one of the 10 permanent staff members recruited during the project works specifically on farmer liaison. "Small things are very important, such as repairing a road," explains Mr Denac. "It shows that you are normal and helps you become accepted as farmers."

Another example of the reciprocal relationship between the farming community and the conservation agency concerns the use of machinery. Some of the equipment – mowers and tractors – bought as part of the project is looked after by local farmers, who are skilled in its maintenance.

Drawing: Marjan Vaupotic

The project produced a comic book that increased farmers' awareness of corncrake meadow management

Spreading the word

Such encouraging project results are tempered by an acknowledgment that the surrounding areas have become even less favourable for the target species in recent years. At its sites, DOPPS relies on its team of volunteers to carry out additional monitoring and mapping. Activities are carried out five times a year. The organisation wants the government to extend general monitoring to evaluate the effect of agriculture on the birds.

The reserve at Ljubljansko barje is a pleasant place to visit. Along a certain stretch a raised walkway was constructed that leads to a bird-watching observatory. This oval-shaped hide was made from natural and local materials in order to facilitate its integration into the landscape. Inside is a panel that informs the public about the project and the various species that can be found in the reserve. Other smaller plaques line the route round the protected area that is currently being extended to allow visitors to take a complete circular tour. The combined effect of these measures is that "people look at the meadows as something special", says Eva Vukelič, a staff member of DOPPS.

Ms Vukelič is responsible for managing the high level of interest for school visits to the site. Pupils' enthusiasm for the conservation of the corncrake, a mottled-brown bird that is related to moorhens, coots and rails, was greatly aroused during the project through the production of a highly popular colouring book for children. Such was the demand for the booklet that it was reprinted twice. It formed part of an impressive portfolio of effective communication materials.

The continuation of the aims of the LIFE project will be aided by the beneficiary's attempts to establish excellent cooperation with responsible public institutions in the field of agriculture and rural development, in particular with advisory organisations for farmers, as well as with the local farmers themselves.

DID YOU KNOW?

The male corncrake's call is a loud, repetitive, grating 'krek krek'. *This distinctive sound allows the birds to be counted even when it cannot be observed.*

Project number: LIFE03 NAT/SLO/000077

Title: Crex Slovenia - Establishing long-term protection of *Crex crex* in Slovenia

Beneficiary: DOPPS BirdLife Slovenia

Contact: Damijan Denac
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Website: www.life-kosec.org
Period: 01-Jan-2004 to 31-March-2007
Total budget: €809 000
LIFE contribution: €607 000

BOGS AND MIRES

WETLIFE restoration **benefits Lithuania's bird life**

Actions to restore the hydrology of protected wetlands in Lithuania should help provide important long-term benefits for several species listed in Annex I of the EU Birds Directive.

The Žuvintas and Amalvas wetland areas are neighbouring mire complexes that cover more than 10 000 ha in total in south-west Lithuania. The two sites are designated part of the Natura 2000 network and between them house 16 habitat types of Community importance.

The shallow Žuvintas and Amalvas lakes, which are closely related to each mire complex, traditionally have been subject to natural seasonal water fluctuations - including spring floods that would double their size and increase their depth. This dynamic hydrological situation, together with cutting and grazing practices, led to the creation of open mosaic of mire and meadow habitats noted for their biodiversity and, in particular, bird diversity.

Indeed, Žuvintas Biosphere Reserve is well-known in Lithuania as a "bird paradise" - 257 of the 300 registered native bird species have been observed there and the reserve provides a feeding ground for numerous flocks of migratory birds, including significant numbers of bean and white-fronted geese, grebes and ducks. It is also a breeding and staging site for 58 rare and endangered bird species listed in Lithuania's "Red Book". These include the golden plover (*Pluvialis apricaria*), aquatic warbler (*Acrocephalus paludicola*), black-throated

Migratory geese find perfect feeding grounds in flooded meadows

Photo: Vytautas Knyva

diver (*Gavia arctica*), black grouse (*Tetrao tetrix*), curlew (*Numenius arquata*), crane (*Grus grus*), spotted crake (*Porzana porzana*), wood sandpiper (*Tringa glareola*) and bluethroat (*Luscinia svecica*).

A landscape under threat

However, changes in land use and management in recent decades have led to a shrinking of the wetland area in both Žuvintas and Amalvas with negative consequences for habitats, birds and other protected species.

Some 2 160 ha – more than half – of the Amalvas wetland complex has been drained, with the northern part – formerly fen and transitional bog – turned into a winter polder, with meadows and pastures. To facilitate intensive farming, the groundwater level in this 638 ha area was reduced by more than 2 m, in turn affecting the water level in the neighbouring bog.

Aerial view of Amalvas Lake and wetlands

Photo: Zydrunas Sinkevicius

In Žuvintas, land reclamation and the abandonment by the local community of traditional wet meadow management methods (primarily the result of the establishment of a 'strict' - i.e. unmanaged - nature reserve in earlier decades – see box) led to the encroachment by trees on fen areas neighbouring the lake. In addition, the loss through land reclamation of 150 ha of open raised bog area had negative effects on numbers of black grouse, golden plover, wood sandpiper and curlew. In bog areas, some species had disappeared entirely.

Restoring water levels

In 2007, the Lithuanian NGO Gamtos paveldo fondas (GPF - "Nature Heritage Fund"), which had been working with the biosphere reserve since 2001, secured co-funding from the LIFE programme for a project designed to address the decline of these important wetlands. The 'WETLIFE' project (**LIFE07 NAT/LT/000530**) set out to achieve a favourable conservation status for the bog and swamp wood habitats of the Amalvas and Žuvintas wetlands through hydrological restoration and the introduction of management practices that would achieve the necessary balance between the needs of farmers and the requirements of wetland conservation.

The project "mainly dealt with restoration of hydrological conditions for wetlands, and for the ecosystem services that wetlands provide," explains project manager Argaudas Stoškus of GPF. A secondary outcome of this would be to improve the habitats of active raised bog bird species, such as the golden plover, curlew, wood sandpiper and great grey shrike (*Lanius excubitor*); open raised bog and bog woodland species such as the black grouse; transitional mire species, such as the bluethroat; as well as numerous waterfowl species related to habitats dominated by submerged plants and alluvial meadows, such as the aquatic warbler and wading birds.

Actions mirrored those of a number of previously successful wetland restoration projects in other Member States and were targeted at improving the general hydrological conditions of the project area. Specific steps included blocking 5.5 km of drainage channels in the Žuvintas wetland that were negatively affecting active raised bog and bog woodland; improving 2.2 km of dykes and installing a permanent overflow spill weir on the Amalve River to improve hydrological conditions for submerged vegetation in Amalvas Lake; removing trees from 210 ha of degraded raised bog; establishing conditions for

the regeneration of active raised bog; and reconstructing a pumping station for the Amalvas polder to restore spring flooding and raise groundwater levels. This will reduce peat degradation, improve conditions for meadow birds and provide an economic benefit by lowering the maintenance costs of the pumping station.

For Mr Stoškus, raising groundwater levels in the periphery of the Amalvas drained wetland was "the most important part of the project: The core bog had started drying out; bog species had left Amalvas completely," he explains.

Learning to manage

Restoration is only the beginning however; for the long-term health of the wetland habitats and species it is necessary to (re)introduce sustainable management of grassland and lake vegetation through mowing and extensive grazing. "It's very important to have a mixture of management, because for birds it's very important to have different conditions," says Mr Stoškus. "This is especially so for waders, redshanks or godwits. They need to have ungrazed areas, mowed areas or intensively grazed areas...And of course it's very important to do it on as large a scale as possible," he adds.

To this end, the project team worked hard to interest the local community in introducing ecologically sustainable land-use practices. "There were a lot of conversations with farmers," recalls Arūnas Pranaitis, Director of Žuvintas Biosphere Reserve: "I hope they learned something; I hope we learned something from them - especially after this long period of strict nature reserve when this conversation was not necessary."

Photo Argaudas Stoskus

Management measures introduced by the LIFE project have included sluice gates for controlling the water level of the wetlands and grazing of meadows by a herd of beef cattle

As a result, in July 2011, one local farmer received a starting herd of 16 Hereford beef cattle for management of 30 ha of Amalvas polder meadows. By 2016, it is hoped that the area under management will have increased to 40-70 ha and that the herd will be generating a useful additional source of income for the farmer. And, says Mr Pranaitis, "If you have successful examples other farmers will follow."

Importantly, the LIFE project's restoration works mean that substantial areas of the polder should correspond to the criteria of land qualifying for higher agri-environmental payments. In turn, this is expected to facilitate new uses of grassland, such as the production of biomass. This is one of the avenues being explored by the 'Baltic Aquatic Warbler' project (**LIFE09 NAT/LT/000233**), a LIFE+ Nature project led by the Baltic Environmental Forum Lithuania. Running from 2010-2015, the goal of the project is to ensure appropriate management of habitats favourable to Europe's rarest migratory songbird, namely wet meadows and open fens dominated by sedge grasses. Žuvintas Biosphere Reserve is one of six sites involved in the project which, says Mr Pranaitis, "is very much correlated with earlier activities in the 'WETLIFE' project."

Polder reconstruction has significantly increased the number of breeding lapwings

Photo: Selemonas Paltanavicius

A chequered past; a brighter future

Declared Lithuania's first nature reserve as far back as 1937, the Žuvintas wetland has had something of a chequered history as a protected area. "It was first established as a hunting reserve, which was a popular thing in Soviet times: the kind of place where they protected birds and mammals so special people could come and shoot their guns," observes Argaudas Stoškus wryly.

"We always call it the oldest protected area in Lithuania, but actually several times it lost its protection completely... In the 1970s and '80s, changes in agricultural practices and enforcement of Žuvintas's strict nature reserve status led to the stopping of traditional wetland management practices," explains Mr Stoškus. "Previously local people used those areas - even the lake wetland areas. In the summer time they mowed and a lot of biomass was removed and that helped keep good conditions for a lot of bird species," points out Arūnas Pranaitis. The strict nature reserve "was a very good solution for raised bog for example, but not for those semi-natural habitats...In the lake area, the number of birds become many times fewer," he concludes.

In 2002, Žuvintas was declared a biosphere reserve, leading to a change in approach to conservation, exemplified by the two LIFE projects and their focus on recurring habitat management actions. "We are going to restore marshes and fen areas step-by-step - we think it is very important," says Mr Pranaitis.

Encouraging signs

It is far too early to judge whether the 'WETLIFE' project will help reverse the decline in bird life in the Amalvas and Žuvintas wetlands, but early signs are encouraging. For instance, large numbers of migratory birds chose the flooded polder meadows as a stopping off point in the spring of 2011. "Records for the Žuvintas area going back years show we had never had more than several hundred ruffs and last year we had 1 500, as well as lots of geese," says Mr Pranaitis.

The polder area is also very important for corncrakes and, notes Mr Stoškus, anecdotal evidence suggests there has been a "big increase" in numbers of this protected species. In the future, he believes the work the 'WETLIFE' project has done to reach out to farmers will have an important conservation benefit as they start recognising rare and endangered birds such as the corncrake on their land and "feel a sense of pride that it is there and it is valuable. Of course they need some economic motivation. But this 'ideological' background is also very important."

Bog-related species such as the wood sandpiper and black grouse are also expected to recover in the long term. A promising result of the LIFE project is the fact that monitoring indicates that there has been a 30% increase in sphagnum (peat moss) cover in the centre of the degraded raised bog area just one year after the removal of overgrowth. Management of the forest area of the biosphere reserve will continue, with cutting organised by a local forest enterprise.

"When our NGO started working with Žuvintas and Amalvas wetlands in 2001 we didn't expect to see such pronounced results in 10 years and the 'WETLIFE' project helped a lot here" concludes Mr Stoškus.

However threats to these important and fragile mire ecosystems and their abundant bird life remain, notably from the continuing and growing demand for agricultural land and from the pollution of the lakes from nearby aquaculture, agriculture and peat extraction industries.

To ensure the sustainability of the results of the 'WETLIFE' project, a management plan for Žuvintas Lake has been drafted and submitted for ministerial approval. This will include measures to improve water quality as well as manage islands of floating vegetation. "It is very important to cut the reed beds: if you prepare the areas in the right ways, the number of water birds will grow once again," says Mr Pranaitis.

Project number: LIFE07 NAT/LT/000530

Title: WETLIFE - Restoring Hydrology in Amalvas and Žuvintas Wetlands

Beneficiary: Vsl Gamtos paveldo fondas

Contact: Argaudas Stoškus
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Website: http://www.wetlife.gpf.lt

Period: 01-Jan-2009 to 31-Mar-2012
Total budget: €1 604 000
LIFE contribution: €802 000

COASTAL WETLANDS

Finding solutions for **Audouin's gull in Catalonia**

LIFE was the catalyst for a number of important habitat actions aimed at safeguarding the future of Audouin's gull (Larus audouinii) in Catalonia.

Photo: LIFE02 NAT/E/008612 - Aixa Sopeña

Audouin's gull colony at Punta de la Banya

Audouin's gull is a species native to the Mediterranean that feeds mostly on fish. Ninety percent of the population can be found in the EU, although the gulls migrate south in the winter, particularly to the Atlantic coast of Africa. The overall population has slightly increased in recent years, but the species remains under threat, mainly as a result of the fact that the population is highly concentrated at Punta de la Banya in the Ebro delta.

This site was the primary focus of a 2002-06 Spanish LIFE project (**LIFE02 NAT/E/008612**). When the project application was approved, 60-70% of the overall population (some 10 000-12 000 breeding pairs of Audouin's gull) was found in this wetland area, making it an SPA of great importance internationally. A secondary focus of project actions was further down the Catalan coast, at the Llobregat delta – an SPA where up to 800 individual birds had been recorded feeding and resting at any one time.

The concentrated nature of its population makes this gull very vulnerable to natural disasters that could rapidly deplete overall figures. For instance, studies predict that the 40-ha Punta de la Banya habitat could be flooded as a consequence of climate change. Audouin's gull is also threatened by its dependency for food on waste from fishing trawlers, competition with the yellow-legged gull (*Larus michahellis*) and from other predators such as foxes, badgers and weasels.

The LIFE project was run by the Department of the Environment and Housing of the Government of Catalonia, working with other regional administrations in Spain – mainly those of Valencia and Murcia – that were also participating in LIFE projects targeting the species. The focus was on preserving adequate habitats for the species; and the close surveillance of its nesting areas to control competitor species. The role of other suitable areas along the Catalan coast, such as the Llogregat delta, was also explored. In addition studies and monitoring were carried out to provide more accurate information for the management and consolidation of the current Audouin's gull population; and to analyse competition from its main species-rival, the yellow-legged gull.

DID YOU KNOW?

Ebro delta SPA in Catalonia holds 60-70% of the total worldwide nesting population of Audouin's gull.

Suitable sites

Catalonia's well-developed tourist trade means there are few suitable nesting areas along the region's coast. The LIFE project identified the island of San Antonio in the Ebro delta as an appropriate spot for a protected release programme. Here a small (6x11 m^2) enclosure was constructed each year from 2003 to 2005 during the breeding season and protected with fencing to keep out predators. Several individual birds from a recovery centre were then placed inside the enclosure, to encourage colonisation by the target species. As a further attraction, Audouin's gull decoys (made from moulds provided by the Valencian authorities) were placed outside the enclosure to attract the birds. Later, when there were chicks in the main colony, 30 of these were collected and transported to the enclosure. They spent approximately a month inside the enclosure, during which time they were fed daily and then ring-marked on release for monitoring.

Another possible site for future expansion was explored in the Llobregat delta, where to create favourable habitats, fields were regularly flooded and decoys placed to encourage colonisation by Audouin's gulls. Another action to secure habitats for the species was trapping of terrestrial predators, particularly foxes, during the breeding season. Signposting was also improved around the Banya peninsula to avoid human disturbance to the colony.

Just good mates

As a result of the actions at the San Antonio site, a concentration of adults was observed within and close to the enclosure, with some mating activities.

The project used artificial decoys to attract flying birds

Photo: LIFE02 NAT/E/008612 - Aixa Sopeña

Disappointingly, however, there were no visible signs of nesting during the project period. Concerning the measures in the second site, at Ca l'Arana SPA (Llobregart delta), surveys undertaken by the LIFE team recorded up to 500 individual birds visiting the wetlands – but again, no actual nesting. The conclusion, therefore, at the end of the project was that while both sites seemed promising for the future expansion of the main population, after-LIFE monitoring would be needed in order to assess the long-term success or failure of these actions.

Meanwhile, the overall nesting population at Punta de la Banya continued to grow over the project period, to 15 000 pairs. This (50%) rise, together with the approval of a recovery plan for the species in Catalonia – were other main project achievements.

Happy after-LIFE

Since the project closed in August 2006, regular bird monitoring and surveillance has been continued under the supervision of the Ebro delta national park. According to Antoni Curcó, spokesman for the park authority, monitoring of Audouin's gull has been particularly "intensive". In partnership with the park, a research team – led by Daniel Oro from IMEDEA-CSIC Institute – has been studying the species during its breeding season in Punta de la Banya. Moreover, another team has been monitoring the most important threats (as identified through LIFE); and is implementing a programme, started in 2010, of management tasks to address these factors (e.g., trapping land predators and the capture and control of some yellow-legged gulls).

Unfortunately, longer-term results from the San Antonio nesting site have been "poor", says Mr Curcó: "Since the end of the LIFE project only one pair successfully reproduced (in 2008)", he says. Just outside the Ebro delta SPA, however, there is much better news as a new colony, with more than 2 000 pairs, has become established.

Finally, there are even "more positive" results for a nesting site close to the Llobregat delta Natura 2000 site: In 2009, reports Mr Curcó, there were four pairs of Audouin's gull settled on an island on the river Llobregat. Happily, this small colony has gone from strength-to-strength with 380 pairs in 2011, and 546 by 2012[1].

1 For more information, see: http://birdspain.blogspot.com/2012/06/colonia-de-gaviota-de-audouin-2012-en.html.

BALTIC COASTAL MEADOWS

Coastal meadow management aids **Baltic birdlife**

Shrub clearance, reed removal, and extensive livestock grazing are all common success factors for the work of LIFE projects focused on improving habitats for priority wetland and meadow birds species in north-eastern Europe.

Meadows habitats are a semi-natural feature found along the coastlines of most Baltic Sea countries and these low-lying, flat, herbaceous zones support a great variety of bird life, including rare and endangered species protected by EU and national laws.

Coastal meadows are a semi-natural habitat that originated thousands of years ago, when people started grazing animals in areas rising from the sea. The centuries-long combined impact of human activities and the sea created the diverse mosaic of coastal meadows - habitats that support numerous plant and animal species.

Despite their ecological value and support for such a species-rich mix of birds, plants, insects and other wildlife, many Baltic coastal meadows have experienced declines in their quality over recent decades. This has had an adverse impact on their capacity to host the bird species that rely on them for feeding, nesting and migration.

Some of the most significant threats to Baltic coastal meadows include problems associated with the habitats becoming overgrown with reeds, bushes or trees after changes in traditional grazing patterns of land use. Eutrophication of the Baltic Sea has also had a negative effect on the conservation status of coastal meadow birds, by boosting overgrowth of reed beds. Further threats occur following meadow drainage or development for tourism, housing and other human services.

A number of Member States have used LIFE funds to help redress such challenges as part of their own commitments to restore and manage the habitats for EU bird species. Estonia and Finland are among these countries.

Photo: LIFE03 NAT/FIN/000039

Bird's eye view of a 'Gulf of Finland' project site. The project introduced management actions to help migratory wetland bird species

Estonian action

Estonia is home to some of the region's most extensive swathes of coastal meadows, which stretch along large parts of the mainland coast and also surround its island networks. Here, birds such as the Eurasian avocet (*Recurvirostra avosetta*), black-tailed godwit (*Limosa limosa*), ruff (*Philomachus pugnax*), Dunlin (*Calidris alpina schinzii*), corncrake (*Crex crex*), and lesser white-fronted goose (*Anser erythropus*) are a just a few of the very many wetland and wading species that depend heavily on the meadows.

In 2003. The 'Silma' project (**LIFE03 NAT/EE/000181**) set out to restore habitats of endangered species around the Silma Nature Reserve, located towards Estonia's north-west coast.

Actions co-financed by LIFE during the successful project started with the collection of data about the abundance of meadow species and the condition of their habitats. Results helped to ensure that the restoration works went ahead based on informed scientific knowledge. A series of indicator species were defined during this management planning process and bird numbers for these species were monitored to provide a baseline against which the project's progress and performance could be measured.

Practical habitat improvement works then targeted the removal of reed growth and shrubs which had over-run the meadows and altered previous habitat features favoured by birds, such as open pastures, lagoons and ponds. Staff from the project knew that the habitat-clearing works would only have a limited effect and longer-term measures were required to ensure an appropriate legacy from the LIFE funds. Reintroducing extensive livestock grazing was considered to be the most beneficial and cost-effective method for maintaining the meadow habitats' quality and conservation status. Thus, local farmers were consulted and involved in the project to act as ongoing guardians for the coastal birds' future.

Subsequently, LIFE support was used to help cover the costs of introducing some 157 beef cattle, 100 sheep, and seven horses to work as natural mowers grazing the meadows and preventing them from becoming overgrown. Some 50 km of fencing was also purchased and installed to control the grazing.

Overall results from the combination of short-term habitat rehabilitation and long-term recurring management actions have been positive and the project team reports increases in numbers of indicator species, such as birds, over the 1 100 ha of coastal meadows that were assisted by the project.

DID YOU KNOW?

As much as 80% of Estonia's former coastal grassland areas have been lost in the last five decades.

Estonian Environment Board

Grazing of coastal meadows helps combat the threat of habitat decline

Photo: LIFE03 NAT/FIN/000039

Finnish findings

Similar successes in supporting coastal meadow bird species have also been achieved in Finland, where the 'Gulf of Finland' project (**LIFE03 NAT/FIN/000039**) provided benefits for 35 species protected under Annex I of the Birds Directive.

The project's bird support operations were focused on a migration flyway route and took in 12 different sites along the country's southern coastline. Important species such as the smew (*Mergus albellus*), whooper swan (*Cygnus cygnus)*, Berwick's swan (*Cygnus columbianus*) and great bittern (*Botaurus stellaris*) all experienced improvements to their meadow habitats during the municipality-led four year project.

Some 3 350 ha of land came under active management in the course of the LIFE support period. Many of the works carried out to restore these meadow habitats for birds mirrored the same sort of interventions that happened across the Gulf of Finland on the Estonian project. Common management methodologies, using reed and shrub extraction followed by re-establishing bird-friendly grazing regimes, were applied to tackle and reduce recurring threats of habitat decline.

In addition, the Finns also organised a programme to minimise problems posed to young chicks and eggs from alien predatory animals. American mink (*Neovison vison*) and common racoons (*Procyon lotor*) had been discovered hunting in the coastal meadows and so traps were set to deal with this threat.

Other beneficial undertakings on the project resulted in the resurgence of a mosaic structure to wetland habitat features, more natural water levels and hydrological flows in the meadows, as well as reduced bird mortality risks that had previously been associated with power-line cabling.

Independent monitors have judged the restoration and management actions as producing "outstanding" benefits, especially for Baltic wetland birds. Numbers of both nesting and staging birds have increased considerably in the project areas. There has been a notable increase in individual birds, in particular of waders resting during migration, as a result of the restoration of flood meadows. These achievements contributed to the project being awarded "Best of the Best" LIFE project status in 2007-2008.

COASTAL LAGOONS

Managing **the natural hydrology of coastal lagoons**

The reclamation of many of Europe's coastal wetlands for agricultural use has led to a tremendous loss of biodiversity and available habitat for ground-nesting and migratory birds. An Italian LIFE project is hoping to show that targeted interventions will create sustainable habitats for the long-term benefit of priority bird species.

Photo: LIFE07 NAT/IT/000507 – Matteo Caldarella

Lago Salso, Italy

Coastal lagoons provide important resting sites during migration, as well as wintering, feeding and nesting areas for birds. However, such habitats can be threatened by water extraction, siltation, changes to water levels, wetland reclamation and a lack of buffer zones.

The ongoing LIFE+ project 'Avifauna del Lago Salso' (**LIFE07 NAT/IT/000507**) is working to achieve environmental restoration of such natural coastal lagoon habitats in the Province of Foggia on the east coast of Italy. The project area of the Lago Salso nature reserve covers a little more than 1 000 ha, split relatively evenly between wetlands and pasture and forms part of two Natura 2000 network sites.

High ecological value

The area is one of the most important natural areas in the whole of the Mediterranean basin for waterbirds. These marshes are important for their size and variety of habitats, but also for their geographic location, bridging the east and west of the Mediterranean basin. The habitats of the Lago Salso currently support four priority bird species specifically targeted by the LIFE project:

- The ferruginous duck (*Aythya nyroca*) – three known pairs in Lago Salso;
- The Eurasian bittern (*Botaurus stellaris*), a wading bird of the heron family – one breeding pair known in Lago Salso;
- The slender-billed curlew (*Numenius tenuirostris*) – 18-19 overwintering individuals sighted in Lago Salso, the highest number anywhere in Europe; and
- The pygmy cormorant (*Microcarbo pygmaeus*) – one breeding pair known in Lago Salso, which is also an important overwintering area.

In addition to the project's target species, the area is used by another seven priority bird species: the little bustard (*Tetrax tetrax*); lanner falcon (*Falco biarmicus*); lesser kestrel (*Falco naumanni*); lesser spotted eagle

(*Aquila pomarina*); Saker falcon (*Falco cherrug*); red-footed falcon (*Falco vespertinus*); and white-headed duck (*Oxyura leucocephala*). The latter has been the subject of a recent reintroduction programme.

To prepare its habitat management actions, the project team has conducted studies of the target habitats, priority threatened species and of the elevation of the fen and the marsh bed. These studies formed the basis of new maps of both the actual and potential vegetation of the habitat and of the feeding and nesting sites of the target species.

Loss of biodiversity

The project area, which is managed by the project beneficiary, the Oasi Lago Salso SpA, is owned by the City of Manfredonia and is a remnant of extensive marshes that covered more than 80 000 ha in Capitanata 100 years ago. The remaining wetlands are made up of three shallow embanked basins, with seasonal fluctuations in water levels.

In the 1950s a significant amount of land was reclaimed from marsh for agricultural use. This caused the loss of a network of wetland areas with a particular decline in suitable environments for migrating slender-billed curlews and in feeding and reproductive sites for the pygmy cormorant, bittern and ferruginous duck.

Marshes have also been reduced as part of natural processes of sediment deposit where water enters the wetlands and vegetation consequently proliferates. The resulting closure of stretches of open water and channels, and the rise in pond floors are threatening the entire wetland ecosystem.

DID YOU KNOW?

The slender-billed curlew has been critically endangered since 1994 with "very few recent confirmed records of this species" anywhere in the world.

Source: IUCN Red List 3.1

Ferruginous duck (Aythya nyroca)

Photo: LIFE07 NAT/IT/000507 - Matteo Caldarella

Managing habitats for the next half century

The LIFE project, which runs until the end of 2014, is restoring 90 ha of reclaimed agricultural land to Mediterranean salt meadow. It will remove soil to lower the level of land and create wetlands with water 40-50 cm deep. The earth removed will be used to construct banks 50 cm high and 4 m wide around the wetlands and to plant autochthonous species across 10 ha.

Interventions will open up 10 ponds of various depths – up to a maximum of 2 m – in the continuous vegetation of the marsh area. The dimension of each pond will vary from 0.25 to 1 ha, with a total excavated area of some 10 ha. The ponds will have sinuous edges, thereby forming shelters and narrow peninsulas for the refuge and nesting of avifauna. Some of the ponds will be connected by digging shallow narrow channels.

The material removed to create the ponds and channels will be used to construct five islands of approximately 50 m^2 each, two of which will be planted with native plant species and the others covered with gravel. These will provide important nesting areas for the target bird species and offer particular protection from high water levels and predators.

Ground-nesting birds including the bittern and ferruginous duck have also suffered from unmanaged fluctuation of water levels in the wetlands, with high levels flooding nests and low levels increasing risks of predation. The LIFE project has already delivered a detailed scientific study of the minimum vital water levels throughout the year. This will allow management of the sluice gates controlling entry of water to the wetlands via the Roncone del Cervaro canal.

Just as land reclamation works for agriculture 50 years ago have led to the changes that are still being seen today, the project expects that its works will benefit the coastal lagoons over the next 50 years. The targeted removal of vegetation substrate and sediment will allow the return of natural hydrological processes across the whole marsh ecosystem.

The 'Avifauna del Lago Salso' project targets significant increases in breeding pairs of the ferruginous duck (from 3-4 to 20-25 pairs); bittern (from 0-1 to 1-2 stable pairs); and pygmy cormorant (from 1 to 2-3 established breeding pairs). It also aims to provide important new overwintering and stopover sites during migration, particularly for the slender-billed curlew.

ISLAND HABITATS FOR SEABIRDS

Protecting **Portuguese petrels**

The Portuguese archipelago of Madeira is home to two rare species of petrel – Bugio's petrel and Zino's petrel. Whilst habitat degradation and predation have greatly threatened these birds, two LIFE projects have helped in the struggle to stabilise their populations.

The Desertas islands, which hold 90% of the breeding population of Bugio's petrel (Pterodroma feae) – 173-258 individuals in 2006 - have been classified as a Natura 2000 network site; the islands are home to a large number of birds listed in Annex I of the Birds Directive, several of them breeding in the islands. One of these, Bugio – the southernmost island of the Desertas – is the only breeding place for the Bugio's petrel in Europe, the target species of the LIFE project, 'SOS Freira do Bugio' (**LIFE06 NAT/P/000184**).

This project aimed to protect this breeding habitat, whilst promoting public support for the conservation activities. To protect their economic interests, Madeiran fishermen have been killing the Bugio's petrel for many years. The negative impact of this informal culling programme on species numbers has been somewhat mitigated since the entire land surface of the Desertas was made a strict reserve. Nevertheless, the birds' habitats were still threatened by the introduction of vertebrates, including rabbits that destroy its nests. Moreover, at least 90% of the breeding population is limited to a reduced area of less than 2 ha.

A key ouctome of the LIFE project was the drawing up of a management plan for the Desertas Islands and an action plan for the target species. Such management of the species is based on the data collected on its reproduction and ecology during the project. Hopes for the bird's future recovery were also raised by its positive response to the improvement of the breeding conditions. Natural vegetation has been replanted, anti-erosion blankets installed, wardening and monitoring conducted and artificial burrows installed.

Measures to control erosion and mice (and other fauna) were also extremely positive for the species. Rabbits have now been completely eradicated from the island, and goats are reported to only rarely visit the plateau where the breeding sites are located.

The 'SOS Freira do Bugio' project has taken important steps towards stabilising the breeding population of the Bugio's petrel on the Desertas Islands in the Madeira archipelago

Photo: LIFE06 NAT/P/000184

The awareness campaigns attracted a high rate of participation, increasing the local population's knowledge about a species that was not visible to most of them before the project. The Bugio's petrel population is currently around 160-180 pairs and breeding in 2012 has been assessed by the beneficiary as "very good".

Zino's petrel habitat management

Zino's petrel (*Pterodroma madeira*) is a species endemic to Madeira. Thought to be extinct at the beginning of the 1970s, it has since been rediscovered but remains in peril. Project beneficiary Parque Natural da Madeira secured LIFE co-funding for a project that focused on the creation of new nesting sites as well as the management of existing ones.

At the start of the LIFE 'Freira da Madeira' project (**LIFE00 NAT/P/007097**), numbers of the species were still very low – around 30 pairs – and, as a result, it was classified as 'critically endangered'. The Maciço Montanhoso Oriental (eastern mountain massif) on the island of Madeira hosts all the known nesting sites of Zino's petrel; it is designated as an SPA and is a proposed SCI, as a result of the wide variety of mountain flora found in the area. The petrel is also found in another Natura 2000 network site - in the SPA and pSCI of Laurissilva da Madeira, a very large area of humid forest dominated by *Laurus azorica* and *Clethra arborea* that hosts many varieties of flora and is the habitat of the long-toed woodpigeon (*Columba trocaz*).

Habitat management was viewed as an essential component of any attempt to increase Zino's petrel numbers: The bird's nesting habitats are threatened by soil erosion resulting from excessive grazing, predation by cats and rats, the pillaging of eggs and skins by collectors and uncontrolled tourism.

The LIFE project team drew up a management plan for the two areas where the species is found. This has proved effective in aiding the natural recovery of indigenous vegetation and the control of predation. The project also succeeded in eliminating grazing stock from the bird's breeding area and helped expand the suitable habitat area for the species through the acquisition of land, namely the 'Montado do Areeiro' area. A monitoring network for the study of fauna and flora was also established as part of the project. As a result of such actions, the Zino's petrel population is now estimated to be 65-80 breeding pairs and its status has improved (from 'critically endangered' to 'endangered'. This is even after a major forest fire in 2010 killed three adult birds and 25 chicks).

The LIFE project also undertook an effective awareness-raising campaign, which greatly improved the public's perception of the value of this conservation work. In fact, the campaign emphasised the continued presence of the bird species as a tourist asset for the area.

Photo: LIFE00 NAT/P/007097

Zino's petrel (Pterodroma madeira)

DID YOU KNOW?

Little is known about the range of Zino's petrel outside the breeding season.

Source: BirdLife International

Photo: LIFE00 NAT/P/007097

Maciço Montanhoso Oriental, Madeira

SALT MARSHES AND ESTUARIES

Making **the Comacchio marshes habitable for waterbirds**

Rare water birds are already returning to some restored areas of the Po delta wetlands – thanks to the sterling efforts of a first LIFE Nature project (2001-2006), now being continued under a second broader-reaching project.

Photo: LIFE00 NAT/IT/007215 - Adriano De Faveri

This photograph of the Comacchio marshes won an award at the LIFE20 celebrations in 2012

The Comacchio lagoons, situated on the Adriatic Coast of the Emilia-Romagna region of Italy, are part of the Po delta wetlands, the country's largest and most important wetland area. In the north-east section, the coastal lagoons were artificially transformed to take in seawater, which was then evaporated to produce salt. Although manmade, these salt marshes provide ideal conditions for the growth of many rare salt-tolerant plants and are attractive resting grounds for numerous species of waterbirds. Located in the Po delta regional park, the site is recognised as an SPA for migrating, wintering and nesting birdlife and is an SCI under the Habitats Directive. But it has slowly been losing its distinctive ecological make-up.

The salt works at Comacchio were closed down in 1984. Since then the seawater, which originally replenished the evaporation basins, has no longer been regulated. Rainfall and insufficient inflow of salt-water from the sea have contributed to a gradual fresh-watering of the lagoons, altering the composition of vegetation on the banks. Changes in the water-flow have also led to the virtual total disappearance of the small islands that used to provide vital nesting sites for many protected bird species that wintered-over there, such as the Mediterranean gull (*Ichthyaetus melanocephalus*), the slender-billed gull (*Chroicocephalus genei*) and the sandwich tern (*Sterna sandvicensis*). Conversely, the development of thick herbaceous vegetation has led to more herring gulls, which may steal food from other birds, including their eggs.

Recovering flamingo

The LIFE 'Comacchio' project (**LIFE00 NAT/IT/007215**) was coordinated by the Emilia-Romagna regional authority. Its main aims were to restore a 550-ha section of the salt marshes and to promote

Photo: LIFE09 NAT/IT/000110 – Annalisa Losacco

The project created artificial islets for nesting birds in the Po delta.

the recovery of habitats and associated water bird species, including a colony of flamingo (*Phoenicopterus roseus*).

Environmental characteristics were studied and monitored in order to assess the effects of the project actions and to define a management plan for the area. In addition, facilities to reduce the disturbance to wildlife caused by visitors were set up. Direct site management activities included the overhaul of the hydraulic network and the reactivation of salt works (on a small-scale) according to traditional salt production practices – to help the ecological balance of the area and for educational and information purposes.

Water circulation was improved by a number of measures including excavation of the Duomo Canal, a main artery in the system, and the re-building of a 180 m section of dyke that had collapsed. Six sluice gates were installed to allow selective distribution of water flows. New drains were constructed and pumps put in to provide control of water levels. A particularly innovative aspect of the hydraulic works was the installation of a system to monitor and survey the chemical and physical parameters of the water in the lagoon.

A total of 19 artificial earth 'rises' were built up to provide additional nesting grounds for gulls and terns, using techniques that favour the gulls and other priority birds. Power lines, which are a hazard to the many nesting bird species, were also buried or removed.

Establishing a monitoring system that could continue after the end of the project was also a priority objective – in order to assess the impact of the interventions in the longer term.

The project's main objectives, including the adoption of a site management plan, were met: water circulation was re-established in order to protect the typical habitats and species of coastal lagoons and salt production was recovered in a small section of the western part of the salt marsh. New bird nesting sites were established and the quality of the landscape was improved considerably.

Importantly, an increase in numbers of the targeted birds was very soon recorded: Preliminary results from monitoring of bird species across the Po delta park (2004-06) showed for instance, a small (12%) increase in numbers of flamingo nesting at the Comacchio marshlands, compared with data for 2003, and numbers of nesting slender-billed gulls more than doubled (up 235%) over the same period.

Po delta *valli*

These encouraging first results [http://www.parcodeltapo.it/er/info/Edati-avifauna.html] are being followed up by a larger-scale LIFE conservation project in the Po delta wetlands (**LIFE09 NAT/IT/000110**). The (2010-2014) project, run by the park authority, is looking to restore salt water and freshwater habitats favouring nesting birds within the 50 000-ha park, including continuing the hydrology work started under the earlier Comacchio project.

Vast areas of the wetlands have been drained and reclaimed. The remaining wetlands - known locally as '*valli*' - are used for extensive fish-farming activities. Therefore the main threat to the habitats in the delta is water eutrophication as a result of poor water circulation and salinity. To combat this, the ongoing 'Natura 2000 in the Po delta' project aims to improve water-flow and reduce eutrophication problems in the two main basins of the Comacchio valli: Direct site management actions targeting bird species include establishing some 8.7 ha of land and 20 artificial floating sites suitable for nesting terns (*Sternidae*). Two new embankments will be installed for the common kingfisher (*Alcedo atthis*).

Tern chicks on one of the floating islets

Photo: LIFE09 NAT/IT/000110 – Stefano Volponi

DID YOU KNOW?

Early results of monitoring in Po Delta national park revealed a huge (235%) increase in numbers of nesting slender-billed gulls.

Source: Regione Emilia-Romagna

MARINE NATURA 2000 NETWORK SITES

Helping **build a marine Natura 2000 network for birds**

Seabirds are an important part of the EU's overall bird population and they also act as useful indicators for the state of our marine environment. Natura 2000 designations in marine locations provide tools to help properly protect EU seabird populations and LIFE co-funding offers opportunities that Member States can use for such purposes.

The Natura 2000 network is well established as a core component of EU nature conservation policy for birds. A great many of Europe's birds species that rely on terrestrial and freshwater habitats in Natura 2000 areas now enjoy generally more positive prospects. This can often be attributed to the improved know-how that has been built up about the behaviour patterns and conservation needs of species being protected under the Birds Directive. .

Less however is still known about Europe's marine birds, and Natura 2000's reach into our seas has not been as conclusive as it has been onshore. LIFE is involved in developing new techniques to address this conservation challenge for marine birds. Particularly good results are being charted in this domain by BirdLife International partners from Spain and Portugal.

BirdLife was aware that safeguarding the conservation status of seabirds is often complex, because the crucial data required for planning appropriate support actions have in the past been difficult to define. Thus establishing protected areas for Europe's marine birds has previously been difficult for the Natura 2000 network. However, thanks to the work of three pioneering LIFE projects – 'IBAMarinha' (**LIFE04 NAT/P/000213**), 'IBA MARINAS' (**LIFE04 NAT/ES/000049**) and 'INDEMARES' (**LIFE07 NAT/E/000732**) – effective techniques have now been developed that can help to define Important Bird Areas (IBAs) at sea, and so identify potential SPAs for marine birds.

LIFE-funded work on the Marine IBAs has focused on a number of different seabird habitat components and associated species distribution scenarios. These cover:

Cory's shearwater (Calonectris diomedea)

Photo: LIFE04 NAT/P/000213 - Pedro Geraldes

- **Seaward extensions to breeding colonies** - comprising coastal foraging and maintenance areas for short-ranging species such as terns, gulls and cormorants. Longer-ranging species such as gannets and albatrosses are also included in this target group;
- **Coastal congregations of non-breeding seabirds** - favoured for example by foraging and/or moulting sea ducks;
- **Migration bottlenecks** - which refer to places where large numbers of seabirds regularly pass through or around, including straits or headlands etc.; and
- **High seas sites** - valued as foraging areas for pelagic species, often on highly productive hotspots of marine life (e.g. 'shelf-break' areas, 'eddies' and 'upwellings'), which can be located hundreds of kilometres away from the birds' breeding colonies.

Parallel projects

The Spanish 'IBA MARINAS' and Portuguse 'IBAMarinha' were parallel projects launched in 2004 with complementary aims concerning the establishment of Marine IBAs capable of incorporating the aforementioned habitat components. Staff from both projects kept in regular contact throughout their four-year projects to compare findings and seek synergies in their actions. This joint work was very productive and resulted in a reliable set of criteria for establishing Marine IBAs, as well as inventories of important seabirds in the project areas.

The two projects first brought together a critical mass of international expertise in seabirds and IBA definition processes. This required considerable research and coordination with a host of stakeholders, both at sea and on land, to source the scientific data needed to define the IBA criteria. The knowledge gathered was used to create an initial pilot methodology, which was then tested to ensure its effectiveness.

High-tech monitoring tools including radio-tracking and GPS devices were used to collate information about species such as *Pterodroma feae, Bulweria bulwerii, Puffinus assimilis, Oceanodroma castro* and *Sterna dougallii*. Other forms of boat-based field surveillance censuses were carried out and satellite images provided essential data concerning relevant parameters of sea cartography in the target areas.

Library material was scrutinised to clarify existing knowledge about seabird population trends. This included analysing records of stranded seabirds and recovered rings in order to help provide a better picture of seabird behaviour patterns. Fisheries data was also observed in detail as another influencing factor on the marine sites.

Cooperation between the LIFE project teams helped to convert their combined workloads into established methodologies for defining key IBA criteria, and affiliated conservation factors. This produced vital facts about seaward extensions to breeding colonies, congregations of non-breeding seabirds, migration channels and foraging areas for different species. Such outcomes from the LIFE projects have been widely welcomed by conservation groups around the world and the LIFE techniques for defining Iberian Marine IBAs have already been transferred to Greece, Malta, the Baltic States, Argentina, Peru, USA, South Africa and New Zealand.

Furthermore, findings from the Spanish 'IBA MARINAS' project were used during national decision-making processes for locating off-shore wind farms and final outputs in Spain led to the identification of 42 Marine IBAs, which encompass 42 883 km^2 (some 5% of Spain's marine waters).

These IBAs provide habitats for 27 different seabird species (including 16 species listed in Annex I of the Birds Directive) and are now providing useful information for the designation of SPAs in Spanish waters. Portuguese results have been equally impressive and the LIFE project methodology there has helped propose 17 Marine IBAs for SPA status. The Portuguese project also concluded with the publication of an IBA inventory, which has significant demonstration value for replication elsewhere.

Berlengas Nature Reserve

Photo: LIFE04 NAT/P/000213 - Pedro Geraldes

The next step: 'INDEMARES'

Building on the successes of the first two Iberian Marine IBA projects, a new initiative became operational in 2009. This project, 'INDEMARES', is using the lessons learnt from its predecessors in developing marine Natura 2000 sites covering birds as well as other sea life.

Ignacio Torres is part of the 'INDEMARES' project team and he highlights some of the challenges that LIFE has helped overcome in the task of protecting seabirds. "Member States have to designate Marine Natura 2000 sites but the network of these sites has been rather underdeveloped due in part to the fact that oceanographic studies are very costly. Before a site can be designated we need to clarify many different things about it. These studies require a lot of time, specialist skills and expensive equipment, as well as complex logistical arrangements. LIFE's funds helped us cover these costs."

The project has now identified 10 locations from the Atlantic, Mediterranean and Macaronesian regions for its work in protecting seabirds. Project sites were carefully chosen so that they were representative of other areas, into order to provide replicable results with good multiplier opportunities from the LIFE funds.

"The oceanographic campaigns covering detailed studies are helping us to glean much better knowledge on deep water habitats and seabirds, plus other wildlife around the 10 sites," explains David Peña, another key member of the 'INDEMARES' project team.

He points to a number of valuable outcomes of the project, in particular its confirmation of the threats posed by pollution to seabird colonies. "We are collating very useful data about anthropogenic pressures on the proposed Natura 2000 areas. We find that those issues are mostly due to shipping, tourism, defence, or fishing. We are now building up a sound knowledge base for us to begin designing tools that are appropriate for both designating more Natura 2000 sites at sea, and assuring their effective management thereafter.

"Overall our progress continues to be on course and the project's primary objective is to secure conservation area status for marine sites within the Natura 2000 network from an 'ecosystemic' point of view. This would make a significant difference to the scope and future potential of the overall Natura 2000 network," he says.

Photo: LIFE07 NAT/E/000732 - CEMMA

Some of the 'INDEMARES' project team working on board during the Banco de Galicia campaign

The 'INDEMARES' team has also learned some useful lessons about managing a project of this nature, which it can pass on to organisations in other Member States. "For instance," says Mr Peña, "This type of project requires a mix of different partners and we know that a lot of time and thinking has to be allocated to the coordination and management of the partnership's needs. The pace and method of working is different for each partner. Finding a working method that fits everyone requires careful communication and dedicated planning, particularly in coordinating the availability of vessels, equipment and skills."

Policy considerations

The project's experiences in seabird conservation are hence generating a lot of useful groundwork for other Member States to follow. "A comprehensive and balanced marine policy must be based on scientific knowledge," says Mr Peña. "We are gaining this knowledge which can be used to strengthen international conventions and help introduce marine areas that are managed for biodiversity protection in a balanced way."

LIFE's role in the process of strengthening policies for conserving Europe's marine birds has therefore been, and continues to be, clearly very important and influential.

DID YOU KNOW?

Nearly 15% of Europe's 82 seabird species are either vulnerable, threatened, endangered, or already extinct .

Source: BirdLife International

MIGRATORY FLYWAYS

Flyway cooperation key to endangered goose conservation

Starting with a Greek project in 1997, three interrelated LIFE Nature projects have instigated improvements on the ground, to aid the conservation status of the lesser white-fronted goose (*Anser erythropus*) along its European migration route.

The lesser white-fronted goose is a sub-arctic goose species that was historically distributed in the forest tundra zone all the way from the Scandinavian mountains to easternmost Russia. Nowadays the Annex I-listed species of the EU Birds Directive is globally threatened with a total population in sharp decline (down 30-40%) during the period 1998-2008 to only around 25 000 individuals. The Fennoscandian (Nordic) population is the most threatened – estimated in 2004, at only 20-30 breeding pairs. Because the bird is a migratory species, international cooperation in conservation actions is required. The most significant threat to the species remains from hunting along its European migration route. Another major obstacle to conservation has been a lack of knowledge of its migration routes

An early LIFE Nature project, carried out in 1997-2000 was particularly influential, as some of its findings provided the basis for two subsequent important projects targeting the conservation of the species along its European flyway. This first project (**LIFE96 NAT/GR/003217**) targeted the goose species at staging/wintering sites in Greece, alongside another endangered bird species, the pygmy cormorant (*Phalacrocorax pygmaeus*). The main threats to the species in Greece were identified as being habitat degradation and loss on the one hand and, on the other,

Lesser white-fronted goose (Anser erythropus)

Photo: LIFE05 NAT/FIN/000105 - Morten Ekker

Photo: LIFE05 NAT/FIN/000105 - Petteri Tolvanen

Burning reedbeds to optimise conditions for the lesser white-fronted goose

disturbance from human activities, such as agriculture and hunting (including poaching and unintentional shooting). A major conservation challenge is that during migration it is difficult to distinguish *A. erythropusis* from the greater white-fronted goose (*Anser albifrons*), an important quarry species in most of the countries within the range of the lesser white-fronted goose.

Artificial nests

Run by WWF Greece, the project targeted 10 wetland sites in northern Greece. Conservation works in the field included: providing nesting sites by artificial islands; creating artificial nests; reed bed management; fencing; recreation of wet meadows; planting of vegetation; and the and sowing of seeds to provide food at one of the sites (in the Nestos delta). In addition, for the first time in Greece, monitoring and protection of habitats was also carried out regularly for the species at all the sites. The monitoring provided previously undocumented information on the numbers of birds present at each site, their breeding, feeding and roosting areas, and their behaviour.

A main achievement was improved scientific knowledge of the species and its habitats. In particular, the findings led to a re-evaluation of the conservation status of *A. erythropus* from 'endangered' in Europe, to 'critically endangered' (IUCN Red List for Greece, 2009). Human activities, susceptible to potentially influence the ecological value and water quality of sites were also monitored. This enabled improved identification of threats and the compilation of a national action plan for the species.

More recently, the project's longer-term impacts were assessed by a follow-up study, carried out in January 2012, by the Astrale LIFE external monitoring team. This showed that the success of the field interventions was variable when viewed in the longer-term: Some plantations were destroyed by hunters/users of the wetlands, and others were not successful because there was no maintenance of water levels and regular reed bed clearing in order to maintain the habitat. The artificial nests were not used by the species at one of the sites. The fields that were sown to provide food for *A.erythropus* were not maintained and subsequently became overgrown by native veg-

'Anser-Eur' project partners visit Lake Kerkini in Greece, a staging ground on the migratory route of the lesser white-fronted goose

Photo: LIFE05 NAT/FIN/000105 - Ingar Olen

The location of LIFE project actions along the European flyway route of the lesser white-fronted goose

Source: LIFE10 NAT/GR/000638 - Petteri Tolvanen

etation. The successes and failures of these field interventions, however, provided useful information for further actions which could then be implemented under later projects.

Flyway approach

The Finnish project, 'Anser-Eur' (**LIFE05 NAT/FIN/000105**) took a broader, pan-European approach towards improving and monitoring the conservation of the species along its European flyway. From the vast potential breeding grounds in the mountainous Fennoscandian tundra, the project aimed to localise the most important breeding areas and to secure their favourable conservation status. At the staging and wintering sites, the aim was to eliminate the most important threats (high mortality caused by hunting and poaching, loss of original feeding habitats and human disturbance).

The project was very successful: It achieved its objectives and managed to safeguard the most important breeding areas and several important staging areas in Finland, Norway, Estonia and Hungary. Problems however, remained in Greece, where one of the project's tagged migratory birds was found shot in a protected area, despite a hunting ban.

Restoration and site management actions were carried out over 70 ha of coastal meadows in the Matsalu national park (western Estonia) including two small islets used as staging areas every spring. Specific management actions were also carried out annually in Hungary in the Hortobágy national park to attract staging birds to the safe areas inside the park. Other restoration works included the cultivation of some 150 fields for the benefit of the geese i.e. not harvesting part or all of the crops and managing over 200 ha of grasslands by grazing and/or management of water levels to boost fresh growth of grass for the species in autumn, as well as filling fish ponds to optimal water levels for the birds. As a measure of the success of these actions, by the end of the project (in 2008) the birds remained 98% of their time in the Hortobágy in the managed areas. Importantly, these actions in Estonia and Hungary are being continued after-LIFE by the park administrations.

The LIFE project team also carried out monitoring of the spring staging sites (in Greece, Hungary, Estonia, Finland and Norway). For all sites, except in Norway, the numbers remained stable, or were slightly increased during the project years. At the Valdak Marshes (Norway) the spring numbers of the geese continued to decline.

Building on the foundations laid by these two earlier projects, is another Greek project, 'Safeguard LWfG' (**LIFE10 NAT/GR/000638**), which, like the Finnish 'Anser-Eur' project, is adopting a transnational approach in its bid to safeguard the whole European flyway of the birds. Involving eight partners from four European countries, this ambitious project (2011-16) aims to implement urgent concrete conservation actions to combat the alarming decline of the species in seven Natura 2000 sites – three each in Greece and Bulgaria and one in Hungary.

It will establish a network of experts and trained observers for the provision of up-to-date, reliable and comprehensive information about the birds' movements and other relevant data. A new Smart Patrol System (SPS) will also be introduced for monitoring; and based on its hoped-for more precise findings, the project team plans to carry out carefully targeted restoration actions at key sites – aimed at providing suitable foraging and roosting habitats for the species.

Finally, alongside these improvements to key wintering and staging grounds, the project will seek to maximise international cooperation and networking of relevant bodies for the conservation of the species along the European flyway. This will include the creation of complementary species action plans in Bulgaria, Hungary and Greece.

DID YOU KNOW?

The Fennoscandian population of the lesser white-fronted goose is 'critically endangered' – estimated in 2004, at only 20-30 breeding pairs.

Source: IUCN

AQUATIC WARBLER HABITATS

Steps to **safeguard the rare aquatic warbler**

Found in mainland Europe, the aquatic warbler (*Acrocephalus paludicola*) is a globally-threatened passerine bird. According to the IUCN, its status is 'vulnerable', but several LIFE projects carried out across Europe show that through targeted management actions, remaining populations can be stabilised.

The aquatic warbler was once common to fen mires and wet meadow. However, it is extremely susceptible to changes in traditional land use and its survival is dependent upon habitat conservation and management measures. By far the largest remaining populations of the aquatic warbler are located in Germany and Poland: an acutely threatened and genetically distinct population along the German-Polish border (Pomerania) and a larger one in north-east Poland (Biebrza region).

Two LIFE projects, 'Aquatic Warbler project' (**LIFE05 NAT/PL/000101**) and its follow-up, 'Biomass use for Aquatic W' (**LIFE09 NAT/PL/000260**), targeted the breeding sites of 81% of the remaining Polish and German populations in these two named regions (around 2 800 pairs), equalling 76% of the EU population. The projects aimed to stabilise and prevent the extinction of these populations through habitat expansion and improvement.

As part of the first project, more than 900 ha of land was purchased. Trees and bushes were removed from 971 ha of the bird's habitat, with LIFE supplying the funding for clearance work on 314 ha of this area. Moreover, 6 166 ha are now managed by regular mowing, partly using LIFE funds and partly other funding sources, mostly agri-environmental schemes. Such schemes have in recent years been widely promoted among farmers and now guarantee the continuation of the project's objectives. Grazing as a habitat management tool was also successfully introduced.

The 2005 project also helped establish infrastructure for managing the water level of the Karsiborska Kępa wetland area (including a water pump, seven water passages without water retention facilities, two water supply points, five water passages with a water retention structure, and 7 400 m of cleared and 3 002 m of newly-created ditches). This infrastructure allows the water level to be regulated in such a way as to guarantee optimal habitat conditions for aquatic warblers in this project site. In the Peene Valley project site (Germany) blocking three ditches boosted a potential 120 ha breeding site.

The effectiveness of these habitat restoration and management measures was evaluated and results

Aquatic warbler (Acrocephalus paludicola)

Photo: LIFE05 NAT/PL/000101

compiled in a comprehensive final monitoring report that serves as a good reference tool. Current monitoring suggests that the total aquatic warbler population in Poland is stable, although sub-populations are fluctuating. (For instance, the population in Biebrza increased between 2011 and 2012, whereas the Pomeranian population fell from 54 to 34 singing males over the same period – despite good habitat conditions; the other four sites - Ciesacin, Bagno Bubnów, Chełmskie Torf. Węglanowe and Bug Valley - are stable).

Migratory paths

The Nava-Campos SPA in the province of Palencia, north-east Spain, is a stopping point on the winter migration to Africa of the aquatic warblers that summer in Siberia. A total of 187 individuals were ringed during the year 2000 ahead of LIFE 'Carricerín Nava-Campos' (**LIFE02 NAT/E/008616**), a project launched to extend the suitable wetland habitat for the bird species. Recovery of the site, which was formerly filled with a large interior lagoon that stretched over several thousand hectares, started in the early 1990s; its charophyte grasslands and shallow water are ideal for the aquatic warbler.

As part of the project, 26.38 ha of croplands in the surroundings of 'El Hoyo' were purchased and 68.4 ha of land in the areas of'El Hoyo' and 'La Güera' were leased for the conservation of the species. These grasslands were then flooded and plant species, Tamarix sp. and Salix sp., were planted to establish boundaries. In addition an effluent pipeline was buried to prevent any overflow into the lagoon area. At other sites, pipelines and flooding systems were improved.

Ringing and radio-tracking played a major role in improving knowledge of the species. Researchers, as a result of the project, know more about the migration path of the aquatic warbler and its preferred sites in the region. Such information is valuable to the management of vegetation planted in the area. Monitoring helps refine guidelines for this management.

Photo: LIFE02 NAT/E/008616 - Ainhoa Darquistade Fadrique

The Spanish project repaired this sluice gate to control water levels

Another important fattening-up stopover spot for the aquatic warbler is provided by the coastal marshes of Britanny, France. These wetland zones, however, have degraded as a result of man-made changes and pollution, leading to a loss of biodiversity. The main objective of the 'Acrocephalus Bretagne' project (**LIFE04 NAT/FR/000086**) was to increase the surface area of habitats favourable for the aquatic warbler in the region.

The project acquired 39.5 ha of marshes, exceeding the foreseen 10 ha, while an additional 13.4 ha were purchased through other funding. Habitat management at this location requires repeated cutting of reed beds (on some 47 ha of wet meadows), whilst 2.8 km of fences were installed to prevent human disturbance and allow grazing to take place. Moreover, invasive plants, such as pampas grass, Japanese knotweed and willow trees, were cleared on 30 ha at each of the three project sites. The hydraulic measures carried out, which enabled a total of 270 ha to be flooded, led to the implementation of a management plan for the sites that regulates the water levels in a manner favourable to the aquatic warbler. As with the earlier Spanish project, radio tracking of birds was used to monitor the effectiveness of the project actions and help prioritise sites. The aquatic warblers were tracked to wintering areas in Senegal.

Cutting reed beds in the coastal marshes of Brittany

Photo: LIFE04 NAT/FR/000086

DID YOU KNOW?

The aquatic warbler winters in sub-Saharan West Africa, mainly along the lower Senegal River, as well as at wetlands in south-west Mauritania and the inner Niger Delta in Mali.

Source: BirdLife International

EU-WIDE HABITAT MANAGEMENT TOOLS AND NETWORKS

LIFE **develops bird conservation tools and networks**

One of the lesser-known aspects of the LIFE programme is its role in helping to develop effective tools and networks for conservation management. Several LIFE projects have focused on improving the exchange of methodologies and best practices behind bird conservation measures across the EU.

Photo: LIFE02 NAT/CP/D/000004 - Erich Marek

Female capercaillie in winter

LIFE has a distinguished track record of supporting concrete actions to protect Europe's endangered species and habitats and, where possible, restoring them to a favourable conservation status. However, the long-term success of conservation actions (life after-LIFE) can be difficult to sustain. Indeed, it is often dependent on the creation and sustenance of effective tools and networks that will ensure the continuation of habitat management measures when the LIFE co-funding ends. Recognising this, the LIFE programme has taken some (admittedly small) steps towards putting in place networking on the exchange of methodologies related to the long-term management of habitats that are crucial to certain target bird species..

Grouse, bittern and bustards

Three types of protected birds in particular have been the focus of these endeavours: the grouse family - including the species *Bonasa bonasia, Lagopus mutus helveticus, Lagopus mutus pyrenaicus, Tetrao tetrix tetrix* and *Tetrao urogallus*; bustards - including the great bustard (*Otis tarda*), little bustard (*Tetrax tetrax*) and houbara bustard (*Chlamydotis undulata*); and the bittern (*Botaurus stellaris*). Each of the three has been the subject of a LIFE Co-op project, aimed at improving conservation practices across Europe.

The first of these was the 'Grouse + Natura 2000' project (**LIFE02 NAT/CP/D/000004**), which was

led by the Forest Research Institute (FVA) in Baden-Wũrttemberg, Germany.

Suitable habitats for grouse are becoming increasingly rare in Western and Central Europe. Where they are found, there are often competing pressures, such as the growth of ski tourism and other outdoor leisure pursuits. The LIFE Co-op project aimed to develop guidelines for tourism and recreation in Natura 2000 areas, based on the ecological conservation requirements of grouse species. The target audience for the guide would include associations, research bodies and site management authorities concerned with grouse, nature conservation, landscape management and tourism.

By working with partners in other parts of Germany, as well as Finland and the UK (Scotland), it was hoped that the guidelines would be wideliy applicable throughout the natural range of grouse species within the EU and would enable site-specific management plans based on the recommendations to be developed.

The resulting 32-page document provided guidelines relating to tourism, nature protection, species protection, hunting, forestry and agriculture. The guide (which was published in English, French and German) was notable for providing the first EU-wide perspective on grouse conservation, including recognising that different issues and constraints applied in terms of managing grouse habitats in different bio-geographical regions.

In 2004, an agency within the State Ministry for Agriculture and Environment (MLUR) of another German *Länd*, Brandenburg, instigated a LIFE Co-op project devoted to the bittern. The aim of the 'Handbook Bittern' project (**LIFE03 NAT/CP/D/000009**) was to collect, interpret, prepare and disseminate the experiences, results and know-how of LIFE projects dedicated to this secretive and endangered wetland bird species. At the time the LIFE Co-op project was launched, the bittern had been targeted by the LIFE programme with conservation actions more often than any other bird species. Those projects, which had taken place across many European countries, had filled in gaps in the scientific understanding of bittern ecology and helped stabilise – and in some cases increase – populations that had rapidly diminished across Europe in the 1970s and '80s.

Bittern (Botaurus stellaris)

Photo: LIFE03 NAT/CP/D/000009

Working in partnership with bird conservation specialists from the RSPB in the UK and LPO in France, the Brandenburg administration published "The bittern in Europe", a handbook that gathered in one place a wealth of experience drawn from the many LIFE bittern projects to provide land managers, advisers and others interested in wetland conservation with detailed guidelines for actions to promote bittern protection based on practical examples from all over Europe. The handbook, which was available to download from the project website, also offered useful guidance to government departments and agencies, local authorities and water utilities.

The three members of the bustard family depend on open farmland and grasslands, habitats that have been heavily modified by intensive farming. As a result, there has been a significant decline in EU bustard populations since the mid-20th century and the great bustard, little bustard and houbara bustard are considered priority species under Annex I of the Birds Directive. LIFE (and CAP Pillar II) funding has allowed the establishment of local projects and actions to promote bustard recovery. To assess the impact and value of these efforts, a Portuguese-led LIFE Co-op project conducted an 'Evaluation of bustard conservation best practice in Western Europe' (**LIFE03 NAT/CP/P/000008**).

The project gathered information about knowledge and practices in bustard conservation from a number of organisations working in this field. Amongst other things, this was used to specify and summarise the rural development strategies that should be followed in regions that are important for bustards; to identify the changes needed in farming and rural development policies in order to maximise bustard conservation; and to produce a handbook on good faming practices in bustard regions.

In particular, the project worked with farmers and farmers' unions from bustard areas in Portugal, Spain and France, spreading knowledge related to farming activities and species conservation gleaned from projects in other countries. This was an important outcome because, as the farmers are the direct managers of bustards' land habitats, their support for and involvement in conservation actions is very important to the survival of the species.

The project held an international workshop, which shared know-how about best practices that fed into projects in Hungary, Turkey and Austria, amongst other countries.

The outputs of the LIFE project, especially the results of the international workshop, were also used to lobby for better agri-environmental measures in Rural Development Plans. The publication of the handbook of best practices and the establishment of a bustard conservation contact group helped to ensure that lessons from LIFE will continue to have an impact.

Land management in the UK

Direct engagement with farmers to achieve bird habitat management goals is also the aim of an ongoing UK LIFE Information & Communication project, 'Birds Directive' (**LIFE08 INF/UK/000214**). Led by the RSPB, the project seeks to engage directly with at least 3 500 farmers through on-farm bird surveys, a network of demonstration farms and a Biodiversity Award scheme, in order to raise awareness of the decline of farmland birds and promote positive land management. This is necessary because, as the beneficiary points out, long-term data sets on bird populations have identified that a number of species that are dependent on farmland have declined significantly with the spread of intensive agricultural practices and the simplification of the farmed countryside.

A novel aspect of the project has been its mobilisation of a large number of volunteer birdwatchers, who have been used to provide interested farmers with information about the birds on their farm. The RSPB's Farmland Bird Advisers follow this up with practical advice on how to help these species. Notably, this means encouraging farmers to commit at least 10% of their farmland to wildlife conservation measures to boost populations of farmland bird species of conservation concern. This scale of habitat delivery is reckoned sufficient to reverse farmland bird declines, as demonstrated at the beneficiary's model farm in Cambridgeshire.

Photo: LIFE03 NAT/CP/D/000009

The 'Handbook Bittern' project gathered the experiences of many LIFE beneficiaries and partner organisations and produced a management guide to aid conservation of this elusive bird species

According to the RSPB, as of September 2012, the project had reached more than 3 000 farmers across the UK, and had led to 88% of these farmers acting on the advice they have received to improve their land for birds and other wildlife. The project has enabled Farmland Bird Advisers to give direct advice to 520 farmers over 112 063 ha and has recruited at least one farmer per year in each project region as a 'demonstration farmer'. At least 300 farmers have entered into agri-environment scheme (AES) agreements as a direct result of this advice and, significantly, these are people who manage some of the most important farms in the country for priority farmland birds.

However, despite its achievements to date, the beneficiary recognises that the model adopted for this LIFE project is not sustainable in the long term - even working at full capacity RSPB advisers can provide advice to only 0.3% of the country's farmers each year. It has therefore received a prolongation in order to be able to trial a new model that focuses on 'hotspots' of farmland bird biodiversity and relies more on the farmers being advocates for the scheme, supported by a toolkit for arable farmers to be developed by the project.

Since advocacy for wildlife-friendly farming is much more powerful if it comes from farmers, the goal would be to inspire and empower farmers throughout the UK to carry out environmental management on their own initiative, thereby having a greater impact on population trends of farmland birds at the national level. If proven viable, this model could be replicated and provide vital support to the goals of the Birds Directive across the EU.

DID YOU KNOW?

There are an estimated 75 breeding pairs of bittern in the UK.

Source: RSPB

Selected projects focusing on birds habitats since 2002

The table below provides examples of some of the LIFE projects focusing on birds habitats since 2002. For more information on individual projects, visit the online database at: http://ec.europa.eu/environment/life/project/Projects/index.cfm

PROJECT NUMBER	TITLE
Managing habitats for birds	
LIFE02 NAT/E/008612	Conservation of Larus audouinii in Spain: Catalonia
LIFE02 NAT/E/008616	Conservation of the aquatic warbler in the ZEPA 'La Nava-Campos'
LIFE02 NAT/E/008624	Recovery of the bearded vulture in Picos de Europa, Spain
LIFE02 NAT/GR/008492	Conservation actions for Gypaetus barbatus and biodiversity in Crete
LIFE02 NAT/GR/008494	Mikri Prespa
LIFE02 NAT/GR/008497	Conservation of birds of prey in the Dadia Forest Reserve, Greece
LIFE02 NAT/H/008627	Conservation of Aquila heliaca in the Carpathian basin
LIFE02 NAT/NL/008486	Restoration of biotope for Botaurus stellaris, Anas penelope and Limosa limosa in the SPA Ilperveld
LIFE02 NAT/P/008476	Project Tetrax - the conservation of Little Bustard in Alentejo
LIFE02 NAT/P/008481	Re-establishment of the Lesser Kestrel (Falco naumanni) in Portugal
LIFE02 NAT/RO/008573	Conservation of the natural wet habitat of Satchinez (continuation of the project LIFE99 NAT/RO/006394)
LIFE02 NAT/UK/008527	Developing a strategic network of SPA reedbeds for Botaurus stellaris
LIFE03 NAT/CP/D/000009	Handbook for Actions to Promote Bittern in Europe
LIFE03 NAT/CP/P/000008	Evaluation of bustard conservation best practice in Western Europe
LIFE03 NAT/E/000046	Conservation of houbara bustard Chlamydotis undulata fuertaventurae in the SPAs of the Canary Islands
LIFE03 NAT/E/000050	Conservation of the Spanish Imperial Eagle, Black Vulture, Black Stork
LIFE03 NAT/E/000052	Conservation and management of the SPA for Birds site of Community interest wetland "La Albuera" in Extremadura
LIFE03 NAT/EE/000181	Silma - Restoration of habitats of endangered species in Silma Nature Reserve
LIFE03 NAT/E/000055	Conservation and restoration of wetlands in Andalucia
LIFE03 NAT/E/000061	Conservación de Larus audouinii en España. (Isla Grosa) Murcia.
LIFE03 NAT/F/000100	International programme for the Bearded vulture in the Alps
LIFE03 NAT/F/000102	Conservation of marine birds of Marseille islands
LIFE03 NAT/FIN/000039	Management of wetlands along the Gulf of Finland migratory flyway
LIFE03 NAT/GR/000091	Conservation measures of Falco eleonorae in Greece
LIFE03 NAT/IRL/000107	Restoration and management of the Murrough wetlands for Annex I Habitats and Waterbirds
LIFE03 NAT/P/000013	Azores bullfinch habitat recovery in Pico da Vara/Ribeira do Guilherme SPA
LIFE03 NAT/SK/000098	Conservation of Aquila heliaca in the Carpathian basin
LIFE03 NAT/SLO/000077	Establishing long-term protection of Crex crex in Slovenia
LIFE04 NAT/EE/000072	Arrangement of spotted eagles and black stork conservation in Estonia
LIFE04 NAT/ES/000056	Preliminary actions and reintroduction of the bearded vulture
LIFE04 NAT/FR/000086	Conservation of the Aquatic Warbler in Brittany
LIFE04 NAT/FR/000086	Conservation of the Aquatic Warbler in Brittany
LIFE04 NAT/FR/000091	Reinforcement of the migratory breeding populations of the Little Bustard, Tetrax tetrax in France
LIFE04 NAT/GR/000101	Conservation management of an Island SPA
LIFE04 NAT/HU/000109	Conservation of Otis tarda in Hungary
LIFE04 NAT/IT/000172	Tuscan Islands: new actions towards seabirds and habitat
LIFE04 NAT/LV/000198	Restoration of Latvian floodplains for EU priority species and habitats
LIFE04 NAT/P/000213	Important bird areas for seabirds in Portugal

PROJECT NUMBER	TITLE
LIFE04 NAT/RO/000220	Improving wintering conditions for Branta ruficollis at Techirghiol
LIFE05 NAT/A/000077	Cross-border Protection of the Great Bustard in Austria
LIFE05 NAT/B/000091	Transboundery habitat restoration in the valley of the Dommel
LIFE05 NAT/F/000137	Conservation of the Roseate Tern in Brittany
LIFE05 NAT/F/000139	Conservation of rare birds in Eastern Corbieres
LIFE05 NAT/FIN/000105	Conservation of Anser erythropus on European migration route
LIFE05 NAT/H/000122	Conservation of Falco vespertinus in the Pannonian Region
LIFE05 NAT/IT/000009	Safeguard of the threatened raptors of the Matera Province
LIFE05 NAT/LV/000100	Marine protected areas in the Eastern Baltic Sea
LIFE05 NAT/PL/000101	Conserving Acrocephalus paludicola in Poland and Germany
LIFE05 NAT/RO/000169	Saving Pelecanus crispus in the Danube Delta
LIFE05 NAT/SK/000115	Conservation of Otis tarda in Slovakia
LIFE06 NAT/B/000084	Large-scale Habitat Restoration in “Turnhouts Vennengebied”
LIFE06 NAT/D/000006	Swabian Danube valley
LIFE06 NAT/DK/000158	Restoration of Meadow Bird Habitats
LIFE06 NAT/E/000213	Wetland restoration and management: Canal de Castilla Special Protection Area
LIFE06 NAT/E/000214	Correction of Dangerous Overhead Cables in Special Protection Areas for Birds in the Region of Murcia
LIFE06 NAT/F/000147	Preservation and restoration of the Rochefort marshes biological functions
LIFE06 NAT/H/000096	Conservation of Falco cherrug in the Carpathian basin
LIFE06 NAT/IT/000026	Safeguard of SPA “Promontorio del Gargano” raptors
LIFE06 NAT/LV/000110	Restoration of Biological Diversity in Military Training Area and Natura 2000 site “Adazi”
LIFE06 NAT/NL/000072	Marsh area “De Zouweboezem”: conservation, restoration and development
LIFE06 NAT/P/000184	Urgent measures for the recovery of Bugio’s petrel, Pterodroma feae, and its habitat
LIFE06 NAT/P/000194	Conservation of Tree Nesting Bonelli’s Eagle in Portugal
LIFE06 NAT/RO/000172	Conservation, restoration and durable management in Small Island of Braila, Romania
LIFE06 NAT/RO/000177	Conservation and integrated management of Danube islands Romania
LIFE06 NAT/SI/000069	Intermittent Cerknica Lake
LIFE06 NAT/SK/000114	Conservation of Senne and Medzibodrozie SPAs in Slovakia
LIFE07 NAT/BG/000068	Conservation of imperial eagle and saker falcon in key Natura 2000 sites in Bulgaria
LIFE07 NAT/E/000742	Conservation of Mediterranean priority species in Castille-La Mancha
LIFE07 NAT/E/000759	Restoration of burnt endemic pine woods and recovery of its threatened flora and fauna
LIFE07 NAT/E/000762	Biodiversity conservation in western Iberia
LIFE07 NAT/GR/000285	Concrete Conservation Actions for the Mediterranean Shag and Audouin’s gull in Greece including the inventory of relevant marine IBAs
LIFE07 NAT/H/000321	Restoration and conservation of priority habitats and species in the Eastern Bakony area
LIFE07 NAT/IT/000426	Management Actions for Conservation of Tetrax Tetrax in Steppic Sardinia
LIFE07 NAT/IT/000436	A new strategy against the poisoning of large carnivores and scavengers raptors
LIFE07 NAT/IT/000499	Actions for the bird species of EU interest in the Natura 2000 sites in the lowlands of Parma (Italy)
LIFE07 NAT/IT/000507	Conservation actions for priority bird life in Lake Salso Oasis
LIFE07 NAT/P/000654	Conservation of Great Bustard, Little Bustard and Lesser Kestrel in the Baixo Alentejo cereal steppes
LIFE07 NAT/RO/000681	Cross-border conservation of Phalacrocorax pygmeus and Aythya nyroca at key sites in Romania and Bulgaria
LIFE07 NAT/S/000902	Lake Mälaren Inner Archipelago - Restoration and Management
LIFE07 NAT/SK/000707	Conservation of Endangered Bird Species Populations in Natural Habitats of the Danube Inland Delta
LIFE07 NAT/UK/000938	Tackling Climate Change-Related Threats to an Important Coastal SPA in Eastern England
LIFE08 NAT/B/000036	Ecological restoration of the Pond area M-L through a close participation of the private and public landowners and a tripple E-approach
LIFE08 NAT/BG/000277	Ensuring Conservation of Priority Bird Species and Coastal Habitats at the Bourgas Natura 2000 Wetland Sites
LIFE08 NAT/BG/000278	Recovery of the Populations of Large European Vultures In Bulgaria
LIFE08 NAT/D/000001	Upper Main valley

PROJECT NUMBER	TITLE
LIFE08 NAT/E/000055	Restoration of habitats of Community interest in the Basque Country's estuaries.
LIFE08 NAT/E/000062	Action to fight illegal poison use in the natural environment in Spain
LIFE08 NAT/E/000068	Conservation and management of special protection areas for steppe birds in Andalusia
LIFE08 NAT/E/000077	Decantation circuit of residual salts and ecological recovery of the Natural Park of Las Lagunas de la Mata and Torrevieja
LIFE08 NAT/IT/000316	Urgent long term nature conservation actions for the SPA and the pSCIs of the Monti della Tolfa area
LIFE08 NAT/LV/000449	Restoration of Raised Bog Habitats in the Especially Protected Nature Areas of Latvia
LIFE08 NAT/P/000227	Enhancing Habitat for the Iberian Lynx and Black Vulture in the Southeast of Portugal
LIFE08 NAT/PL/000510	Restoring populations of Lesser Spotted Eagle at chosen areas of Natura 2000
LIFE08 NAT/PL/000511	Securing the population of Aquila clanga in Poland: preparation of the National Action Plan and primary site conservation
LIFE08 NAT/RO/000501	Conservation of Aquila pomarina in Romania
LIFE08 NAT/S/000262	Traditionella fodermarker i mellansverige (Pastures and meadows in the middlemost part of Sweden)
LIFE08 NAT/UK/000204	Conserving machair habitats and species in a suite of Scottish Natura sites
LIFE09 NAT/AT/000225	Cross-border Protection of the Great Bustard in Austria - continuation
LIFE09 NAT/ES/000516	Conservación de oxyura leucocephala en la región de Murcia. España
LIFE09 NAT/ES/000520	Restauración y gestión del hábitat en dos lagunas costeras del Delta del Ebro: Alfacada y Tancada
LIFE09 NAT/ES/000533	Innovative actions against illegal poisoning in EU Mediterranean pilot areas.
LIFE09 NAT/GR/000343	Actions for the conservation of coastal habitats and significant avifauna species in NATURA 2000 network sites of Epanomi and Aggelochori Laggons, Greece
LIFE09 NAT/HU/000384	Conservation of Falco cherrug in Northeast Bulgaria, Hungary, Romania and Slovakia
LIFE09 NAT/IT/000099	Urgent actions for the conservation of the *Alectoris graeca whitakeri
LIFE09 NAT/LT/000233	Securing Sustainable Farming to Ensure Conservation of Globally Threated Bird Species in Agrarian Landscape
LIFE09 NAT/LT/000235	Conservation of the Lesser Spotted Eagle* (Aquila pomarina) in Lithuanian Forests
LIFE09 NAT/LV/000237	Restoration of Corncrake habitats in Dviete floodplain Natura 2000 site
LIFE09 NAT/PL/000254	Restitute and maintain the habitats of breeding waterfowl birds
LIFE09 NAT/PL/000258	Restoration of hydrological system in the Middle basin of Biebrza Valley Phase I.
LIFE09 NAT/PL/000260	Facilitating Aquatic Warbler (Acrocephalus paludicola) habitat management through sustainable systems of biomass use
LIFE09 NAT/PT/000038	Conservation of Marine Protected Species in Mainland Portugal
LIFE09 NAT/SK/000395	Conservation of Botarus stellaris and Aythya nyroca in SPA Medzibodrozie in Slovakia
LIFE09 NAT/SK/000396	Conservation of Aquila pomarina in Slovakia
LIFE09 NAT/UK/000020	Reintroducing the great bustard Otis tarda to southern England
LIFE10 NAT/AT/000015	Restoration of the Lower Morava floodplains
LIFE10 NAT/DE/000011	Waterlogging and grassland extensification in Lower Saxony to improve habitats of the Corncrake (Crex crex) and the Black-tailed Godwit (Limosa limosa)
LIFE10 NAT/DE/000012	Improvement of the breeding and feeding habitats for the Lesser Spotted Eagle (Aquila pomarina), as well as for the Corn Crake (Crex crex) and the Aquatic Warbler (Acrocephalus paludicola) in the SPA "Schorfheide-Chorin".
LIFE10 NAT/DK/000102	Restoration of active raised bog - Lille Vildmose
LIFE10 NAT/ES/000563	Restoration of salt flats around 27 endorheic wetland areas in La Mancha
LIFE10 NAT/FR/000197	Conservation of major breeding sites and implementation of innovative and demonstrative actions for the French Corncrake
LIFE10 NAT/GR/000637	Management of the SPA site of Andros Island to achieve a favourable conservation status for its priority species
LIFE10 NAT/GR/000638	Safeguarding the lesser white-fronted goose fennoscandian population in key wintering and staging sites within the European flyway
LIFE10 NAT/HU/000019	Conservation of imperial eagles by managing human-eagle conflicts in Hungary
LIFE10 NAT/IT/000256	Environmental Management and Restoration of Mediterranean Salt Works and Coastal Lagoons
LIFE10 NAT/PL/000655	Protection of natural resources of Kampinos Forest – Natura 2000 Site, through the renaturalisation of bought-up land.
LIFE10 NAT/RO/000740	Improving the conservation status for the priority species and habitats in the Iron Gates wetlands
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LIFE+ "L'Instrument Financier pour l'Environnement" / The financial instrument for the environment

Period covered (LIFE+) 2007-2013.

EU funding available approximately EUR 2 143 million

Type of intervention at least 78% of the budget is for co-financing actions in favour of the environment (LIFE+ projects) in the Member States of the European Union and in certain non-EU countries.

LIFE+ projects

> LIFE Nature projects improve the conservation status of endangered species and natural habitats. They support the implementation of the Birds and Habitats Directives and the Natura 2000 network.

> LIFE+ Biodiversity projects improve biodiversity in the EU. They contribute to the implementation of the objectives of the Commission Communication, "Halting the loss of Biodiversity by 2010 – and beyond" (COM (2006) 216 final).

> LIFE+ Environment Policy and Governance projects contribute to the development and demonstration of innovative policy approaches, technologies, methods and instruments in support of European environmental policy and legislation.

> LIFE+ Information and Communication projects are communication and awareness raising campaigns related to the implementation, updating and development of European environmental policy and legislation, including the prevention of forest fires and training for forest fire agents.

Further information further information on LIFE and 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/lifeplus.htm

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