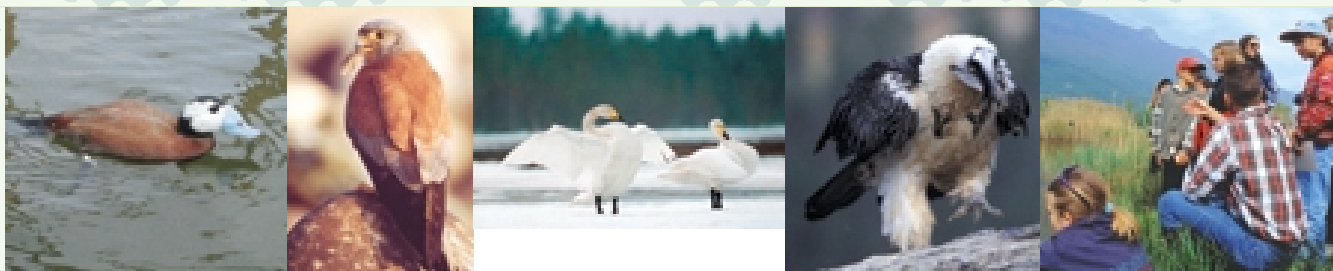




LIFE III

focus



LIFE for birds

*25 years of the Birds Directive:
the contribution of LIFE-Nature projects*



European Commission



**European Commission
Environment Directorate-General**

LIFE *Focus* is the journal of LIFE III programme (2000-2004).

LIFE ("*L'Instrument Financier pour l'Environnement*" / *The financing instrument for the Environment*) is a programme launched by the European Commission and coordinated by the Environment Directorate-General (LIFE Unit – BU-9 02/1).

The content of *LIFE Focus* does not necessarily reflect the opinions of the institutions of the European Union.

Authors: Alberto Zocchi. **Editorial Department:** Mecomat/Comunità Ambiente. **Managing Editor:** Bruno Julien, European Commission, Environment DG, LIFE Unit – BU-9 02/1, 200 rue de la Loi, B-1049 Brussels.

The following people contributed to this issue: Michele della Rocca, Micheal O'Briain, Manuela Osmi, Olivier Patrimonio, Angelo Salsi, Riccardo Scalera, Oliviero Spinelli, Ignacio Torres. **Acknowledgements:** Yolaine Bouteiller, Margarita De Paz, Kristina Eriksson, Mats Eriksson, Marco Fritz, Anton Gazenbeek, John Houston, Marita Karling, Federico Nogara, Concha Olmeda, Martina Perris, Stefano Picchi, Geert Raeymaekers, Kerstin Sundseth, Marc Thauront, Alberto Venchi, Lea Wongsoredjo, Daniela Zaghi. **Graphic design:** Paola Trucco. **This issue of LIFE Focus** is published in English.

Europe Direct is a service to help you find answers
to your questions about the European Union

New freephone number: **00 800 6 7 8 9 10 11**

A great deal of additional information on the European Union is available on the Internet.
It can be accessed through the Europa server (<http://europa.eu.int>).

Luxembourg: Office for Official Publications of the European Communities, 2004

ISBN 92-894-7452-1
ISSN 1725-5619




© European Communities, 2004
Reproduction is authorised provided the source is acknowledged

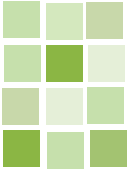
Printed in Brussels
Printed on recycled paper

European Commission
LIFE Focus / LIFE for Birds. 25 years from the Birds Directive: the contribution of LIFE Nature projects

Luxembourg: Office for Official Publications of the European Communities

2004 – 48 pp. – 21 x 28 cm
ISBN 92-894-7452-1
ISSN 1725-5619

<p>summary</p>	 	 
<p>Executive summary</p> <p>The Birds Directive and LIFE-Nature / 4</p> <ul style="list-style-type: none"> • Introduction • General objective of the Birds Directive • What is LIFE-Nature? • Key objectives of the Birds Directive relevant to LIFE-Nature <p>What is happening to birds in the EU? / 7</p> <ul style="list-style-type: none"> • Threatened bird species • LIFE-Nature as part of the EU bird conservation strategy <p>A short history of EU financing for bird conservation / 12</p> <ul style="list-style-type: none"> • The ACE programme • ACNAT and LIFE I • LIFE II • LIFE III • How LIFE money has been spent for birds 	<p>LIFE working for threatened bird species / 17</p> <ul style="list-style-type: none"> • Some statistics on species-oriented projects • Saving birds of prey • Rare geese to be saved • Restricted endemic species in Macaronesia • Conclusions <p>LIFE working on habitats for birds / 25</p> <ul style="list-style-type: none"> • Some statistics on habitat-oriented projects • Wetlands • Forests • Agricultural habitats <p>LIFE initiatives to manage the SPAs / 32</p> <ul style="list-style-type: none"> • Important Bird Areas and Special Protection Areas • How was money spent in SPAs management? • Planning management of SPAs • Sustainable use and involvement of locals: the case of the Comana wetland, Romania • Farming and bird conservation: the case of the Termoncarragh Lake, Ireland • Managing multiple uses of bird sites: the case of Finland's estuaries and lakes • Conclusions 	<p>Communicating and networking / 37</p> <ul style="list-style-type: none"> • Communicating with the public and stakeholders • Networking experience • Conclusions <p>Birds after LIFE / 41</p> <ul style="list-style-type: none"> • Funding the conservation of birds and their habitats after LIFE • The use of agri-environmental schemes for long-term conservation • Long-term management of steppe habitat through EU funding • Conclusions <p>General conclusions / 43</p> <ul style="list-style-type: none"> • LIFE Nature indicators of success in bird conservation <p>Appendix / 46</p> <ul style="list-style-type: none"> • List of cited bird species scientific names



Executive summary



Since its inception in 1992 LIFE-Nature has played a key role in the EU's strategy for bird conservation by supporting many conservation actions for Europe's most threatened bird species. The aim of this report is to give an overview of the results achieved by LIFE-Nature for endangered bird species in the European Union and how it has contributed to achieving the objectives of the Birds Directive. Selected success stories will be used to introduce the scientific, ecological, socio-economic issues addressed and give some insights into the diversity of solutions that have been identified by LIFE project managers.

The Birds Directive, which was the first major EU law to address the issue of nature conservation at the continental scale, is still, 25 years after its adoption, the main legal reference for the protection of Europe's avifauna. While providing protection for all wild birds, the Directive requires Member States to take special conservation measures for the most threatened species and for migratory birds, also through the establishment of an EU wide network of Special Protection Areas (SPAs) where birds and their habitats have to be maintained in a good conservation status.

To help achieve the objectives of the Birds Directive, EU Funds dedicated to projects for the conservation of birds and their habitats have been made available since 1984. Initially this was through the ACE and ACNAT programmes, which were succeeded in 1992 by the LIFE programme, almost half of which is dedicated to nature projects. This is at present the only dedicated financial source for bird conservation at the EU level. Up to 2003 LIFE-Nature has invested 367 million Euros in projects targeting threatened bird species. These are pilot and demonstration projects, aimed primarily at establishing the necessary conditions for the protection of Europe's most endangered bird species.

Photo © Jorma Luhta



From the outset of LIFE-Nature the European Commission developed a specific strategy to ensure that the limited financial resources were dedicated to actions aimed at conserving the most threatened species. This involved establishing a restricted list of the most endangered bird species considered as priority for LIFE-Nature funding. This list includes all globally threatened bird species in the EU. Action plans, that identify ecological needs, threats, conservation status and actions to be implemented for the different priority bird species at EU and Member State levels, have been prepared.

LIFE-Nature projects have made a significant contribution to the establishment of the SPA network, a cornerstone of bird protection in the EU. In order to be eligible for LIFE funding for site conservation actions all areas already qualifying as SPAs have to be given such legal status. According to the latest available assessment, for projects financed between 1985 and 2001, LIFE-Nature has supported conservation actions in more than 13 percent of SPAs, whose network now includes more than 3.600 sites.

About 300 LIFE-Nature projects have targeted bird conservation actions, representing an impressive richness of practical experience in a wide range of fields: scientific research, habitat restoration, land acquisition, management and reintroduction of bird spe-

cies, testing of new techniques, monitoring and awareness-raising. This is the result of the dedicated commitment of thousands of people from public administrations at all levels, NGOs and private organizations. LIFE-Nature places strong emphasis on the sharing of this experience, including making use of information technologies such as the Internet. It has therefore significantly contributed to knowledge and capacity building for dealing with major challenges facing bird conservation in the EU.

One of the main benefits of LIFE-Nature has been its capacity to engage interested social groups, stakeholders and local communities, especially in the forging of partnerships between them. Many traditional farming, hunting, fishing and forestry activities are sympathetic to bird conservation.

LIFE-Nature conservation projects have built on these traditional experiences with a view to providing the foundations for the future conservation of endangered bird species and their habitats.

Where this EU strategy has been applied it has already proven to be highly efficient for many of Europe's most vulnerable bird species. Actions under LIFE-Nature, for species such as the Spanish Imperial Eagle, the Great Bustard, waterbird communities, endemic species from the Canaries and Azores, to name only a few, have signifi-

cantly improved their status. Many of these success stories are described in this report.

Last but not least, LIFE-Nature has proven to be a strategically useful instrument to support capacity building in many EU countries. It has contributed significantly to the development of experience and expertise in the evolving nature conservation sector. However, much remains to be done. The conservation status of many bird species is still far from secure and the commitment to their conservation must continue. LIFE-Nature has shown that, even with relatively limited funds, valuable results for bird conservation can be achieved. It is necessary to now build upon this experience.



The Birds Directive and LIFE-Nature

LIFE-Nature has been the main Community financial instrument to conserve sites, habitats and species and contributed much to achieve the objectives of the Birds Directive

Introduction

Shakespeare's Romeo, in a famous scene, says to Juliet that the song they hear is that of a lark, "the herald of the morn", not a nightingale as Juliet pretends, and so it is time for him to go: "I must be gone and live, or stay and die" (Romeo and Juliet, Act III, Scene V).

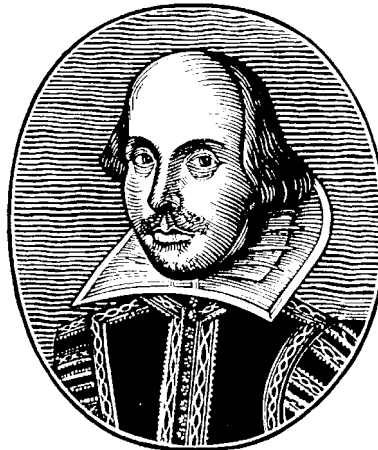
Both the skylark and the nightingale are now much rarer than in Shakespeare's times. Agricultural intensification in the 20th century has led to a widespread decline of the skylark all over Europe and has reduced the distribution range of the nightingale. They are both now included in the list of bird species of European conservation concern and are examples of a general trend affecting nearly 50 per cent of the wild birds regularly occurring in Europe.

Recognizing that "a large number of species of wild birds naturally occurring in the European territory are declining in number, very rapidly in some cases", Member States of the then European Economic Community,

The skylark is much less common than in the Shakespeare times and is now considered as a vulnerable species



Photo © Comunità Ambiente



on April 2, 1979, adopted unanimously the Birds Directive¹, the first major EU law to protect nature for us and future generations.

By adopting the Birds Directive Member States committed themselves to protect all wild birds and their habitats, in particular by conserving sites of special ornithological interest (as well as by adopting legally binding protection measures). The importance of this approach has received further emphasis with the adoption of the Habitats Directive in 1992².

The Habitats Directive creates a comprehensive framework for the conservation of other threatened species of EU interest as well as for habitats. The measures implemented to achieve this goal include the establishment of a European network of protected areas called "Natura 2000". However, the

¹ Council Directive 79/409/EEC on the conservation of wild birds.

² Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

provisions of the Birds Directive have been complemented, not replaced, by those of the Habitats Directive.

Launched in 1992, LIFE-Nature, the section of the LIFE programme dedicated to supporting the implementation of the Birds and Habitats Directives, is the only EU fund primarily dedicated to nature conservation and to the creation of the Natura 2000 protected areas network. Together with ACE and ACNAT, two earlier financial tools also focused on nature conservation, LIFE-Nature has, up to 2003, spent more than 558 million Euros on nature conservation projects. Of this total, 367 million Euros have been spent to help maintain and restore endangered bird populations and their habitats throughout the EU.

In the following pages the contribution of LIFE-Nature to the implementation of the Birds Directive is discussed, as are the most significant results and lessons learnt from demonstration projects in the field of endangered species conservation, the management of their habitats and the identification and management of SPAs.

General objective of the Birds Directive

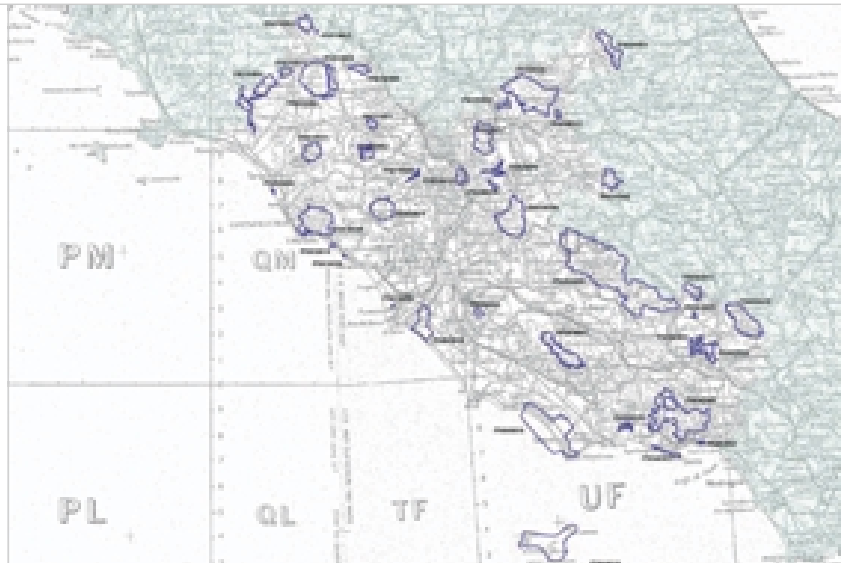
The aim of the Birds Directive is to provide a legal tool for the protection, management and control of naturally occurring wild birds and their nests, eggs and habitats within the European Union. It was designed to ensure that all wild birds receive basic protection from trapping and killing. The Directive establishes rules for their exploitation, hunting and trade. For 194 bird species and subspecies, listed in Annex I, the Directive requires Member States to also identify and implement special habitat conservation measures.

The map of Special Protection Areas in the Latium region, Italy.

In terms of *in situ* conservation, the Birds Directive requires that Member States identify and designate the most suitable sites for species of wild birds listed in Annex I and for migratory species as Special Protection Areas (SPAs). A total of 3.639 SPAs have been designated, up to June 2004, corresponding to almost 243.000 square km, equivalent to the territory of the United Kingdom. The percentage of the Member States terrestrial surface included in the SPAs network varies between 1,9 percent in France to 15,4 percent in Spain. To this one should add marine areas of coastal sites. The total marine surface in the EU is more than 37.500 square km, with the largest part in Denmark (more than 9.700 sq km) and Germany (almost 9.200).

SPAs form part of Natura 2000, the network of protected areas established by the Habitats Directive to maintain the overall viability and integrity of biodiversity across the European Union. Natura 2000 includes two types of sites: SPAs, which are dedicated to bird conservation, and Special Areas of Conservation (SACs), dedicated to habitats and species of plants and animals other than birds, according to the Habitats Directive.

SPAs are generally subject to the same protection regime as SACs, defined under the Habitats Directive. In particular, this requires the assessment of the implications of plans or projects not directly connected with the conservation management of the sites. For developments which will have an adverse effect on the site they may only be permissible if there are no other solutions and are to be considered of overriding public interest. In such cases compensatory measures must be identified to offset the loss of ecological values.



Ministero dell'Ambiente e della Tutela del Territorio, Direzione per la Conservazione della Natura

What is LIFE-Nature?

The LIFE Programme was launched in 1992 by the then European Community (Council Regulation EEC n. 1973/92) as one of the spearheads of Community environmental policy. It is structured into three thematic components, with very different characteristics, namely:

- > LIFE-Nature, which accounts for around 47% of the LIFE programme budget and has the objective of supporting the implementation of Council Directives 79/409/EEC and 92/43/EEC, especially the establishment of Natura 2000.
- > LIFE Environment, which accounts for around 47% of the LIFE programme budget but has more general environmental objectives;
- > LIFE Third Countries, with the specific objective of providing capacity building in third Countries. It accounts for around 6% of the LIFE programme budget.

LIFE-Nature has been the main Community financial instrument focusing on the conservation of sites of the Natura 2000 network and on the conservation of habitats and species of wild fauna and flora. Even though it is a relatively small fund in European terms it has contributed in a significant way to establish and manage the network of protected areas of the EU. LIFE-Nature has enabled the realization of crucial conservation initiatives: the preparation of inventories of sites

to be included in Natura 2000 (Ireland, Italy, Greece, Spain and Portugal), the preparation of management plans for sites, which has been included in over 60 per cent of the LIFE-Nature projects, and actions directed at conservation and restoration of endangered species and habitats. It has also contributed to the identification of guidelines to support implementation of the Habitats Directive provisions and the exchange of experiences to raise the efficiency and cost-effectiveness of conservation actions.

An updated report on what LIFE-Nature has done for the establishment and management of the Natura 2000 network during the last ten years has recently been published by the European Commission³ and is available on the Commission's web site⁴.

Key objectives of the Birds Directive relevant to LIFE-Nature

LIFE-Nature has been established as a tool to support the implementation of the Habitats and Birds Directives.

³ European Commission (2003) LIFE for Natura 2000: 10 years implementing the regulation.

⁴ http://europa.eu.int/comm/environment/life/infoproducts/lifepournatura2000_en.pdf

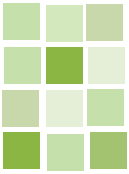


Photo © Kenny Neilson

According to the European Commission⁵, there are 19 key implementation tasks related to the Birds Directive on which Member States should undertake initiatives. At least 12 of them are tasks that LIFE projects have contributed to put in practice. Among them are the identification and designation of SPAs; the implementation of the EIA directive and provisions of the Habitats Directive to evaluate possible effects of plans and projects affecting SPAs; taking measures to maintain or re-establish bird populations at appropriate levels; managing and avoiding the deterioration of the habitats for birds; monitoring habitats and bird populations; encouraging specific research and carrying out appropriate consultation processes both for the elaboration of management plans and the evaluation of possible damages that can come from plans and projects.



Photo © Jorma Luhta

Therefore, apart from some regulatory aspects of the implementation of the Birds Directive, such as the definition of hunting periods or bird species that can be hunted, LIFE-Nature has played a major role in fulfilling the objectives of the Directive in the Member States. Projects are most of the time to be considered as pilot ones, however they had a pivotal role in spreading awareness of bird conservation issues and of the EU laws protecting them and in identifying and disseminating good management practices of habitats and species that now represent a reference point and in the field research on endangered species and their habitats. In short, LIFE-Nature has demonstrated its effectiveness as a key financial and technical tool to assist Member States in fulfilling their bird protection obligations.

Above. A LIFE river project in the UK
Below. The Whooper Swan is one of the 181 bird species included in Annex I of the Birds Directive, for which special conservation measures are to be taken

Its objectives are therefore explicitly referring to the main strategic conservation issues identified by these laws. In particular, several LIFE actions are related to achieving objectives of the Birds Directive, namely:
> conservation of species in danger of extinction, listed in Annex I;

- > conservation 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 elaboration and implementation of management plans;
- > monitoring and research, including monitoring the trends of birds populations;
- > consultation with the public on plans and projects and for the elaboration and adoption of management plans.

⁵ Handbook for the implementation of EC environmental legislation
<http://europa.eu.int/comm/environment/enlarg/handbook/handbook.htm>

What is happening to birds in the EU?

The population size of the majority of European bird species is declining.

The European Union adopted a clear strategy for the conservation of threatened bird species, taking into account the best available scientific information. The endangered species have been identified and, for those in need of urgent attention, action plans have been prepared.

LIFE-Nature has then promoted and favoured the implementation of projects consistent with the EU strategy

A large body of scientific information on the status and trends of different species supports the widely held perception that the extent of habitat modifications and the impact of human activities on bird populations in the last century has been dramatic.

Threatened bird species

Birds are very good environmental indicators and are the best known animal group, studied by professionals, amateurs and bird-watchers for a sufficiently long time to provide good data on their present and past distribution and population trends. The effort of thousands of people who devote their time to birds has made it possible to realize works which are the current reference on this matter. Some examples include the Atlas of European Breeding Birds¹, the list of Important Bird Areas in Europe² and the first assessment of the conservation status of all European birds³, which has

¹ Hagemeyer, W.J.M. and Blair, M.J., eds. (1987) The EBCC Atlas of European Breeding Birds, Their Distribution and Abundance. Academic Press

² Heath, M.F. and Evans M.I., eds. (2001) Important Bird Areas in Europe: Priority Sites for Conservation. Cambridge, U.K.: BirdLife International (BirdLife Conservation Series no.3)

³ Tucker, G.M. and Heath, M.F. (1994) Birds in Europe: their conservation status. Cambridge, U.K.: BirdLife International (BirdLife Conservation Series no.3)



Photo © Fernando Jubete

provided the basis for the identification of endangered species based on a standardised methodology.

The list of endangered birds in Europe, including Russia and Turkey, was compiled by BirdLife International in 1994. It will be revised and updated at the end of 2004, however the 1994 data are useful to illustrate the context in which the Commission has developed its conservation strategy over the last years. BirdLife has revealed that, out of 514 regularly occurring bird species, 278 qualified as being Species of European Conservation Concern (SPEC). Twenty four of these SPECs were considered to be of Global Conservation Concern: birds whose survival can be guaranteed only by strong conservation action. Such species included

Due to habitat loss through agricultural intensification the Aquatic Warbler is now a globally threatened species

Zino's and Fea's Petrels, the Ferruginous Duck, the Corncrack, the Audouin's Gull, the Spanish Imperial Eagle or the Lesser Kestrel.

The picture is however uneven across the continent. All EU countries (including new Member States) host a number of SPECs with an Unfavourable Conservation Status but some hold more of them than others. Spain is the country with the highest number of threatened bird species (106), followed by France (98), Greece (95), Italy (82) and Portugal (77). Countries with the lowest number of SPECs are Belgium (45) and Ireland (34) but this is also related to their geographical

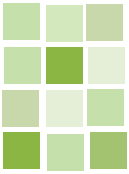


Photo © Gérard Shmitt

The analysis of the habitat use by the SPECs, carried out by BirdLife International, shows that more than 60 percent of them are linked to lowland farmland (116 species). This reflects both the prevalence of this habitat in the European Union (about 70 per cent) and the rapid pace of change in farming practices. Among the identified threats, agricultural intensification is by far the most important one, affecting more than 42 percent of threatened species, followed by hunting and persecution, affecting more than 30 percent of them. Intensification of agricultural practices is a multi-faceted process including a range of activities: crop specialization and improvement, use of pesticides, elimination of marginal habitats such as hedges and woodlots, cultivation of grasslands, loss of crop diversity,



Photo © Jorma Luhta



Photo © ATECMA

Above. *The Lesser Kestrel, a colonial falconet linked to steppic habitats*
 Right. *The Great Grey Owl, a typical taiga forest species*
 Left. *A male White-headed Duck, localized, in the EU, in South-Western Spain*

position, surface and overall smaller number of bird species.

The large number of threatened bird species indicates widespread habitat deterioration. Birds can help in identifying which habitat types are in greater danger and can help drive broader conservation strategies.

drainage, etc. The overall result is a general loss of biodiversity and of the ecological quality of the most widespread habitat in Europe.

Lowland farmland includes particular habitats on which some species are highly dependent. Examples include low-intensity hay meadows, a crucial habitat for Corncrake, traditional hand-cut sedge meadows for the Aquatic Warbler, diverse mixed farmland landscapes for the Partridge, Red-backed Shrike and Oortolan Bunting or, again, dry grasslands and extensive dry cereal cultivations in southern, central and eastern Europe, habitat for the Pallid Harrier, Great Bustard and Pin-tailed Sandgrouse.

Wetlands too hold a large number of SPECs, reflecting the biological diversity and importance of these habitats. In particular, wetland drainage and land-reclamation is the third most important threat, affecting 28% of the European SPECs. Some of the most threatened birds in Europe are wetland species, protected by the Birds Directive, such as the Dalmatian Pelican, Lesser White-fronted Goose, Red-breasted Goose, Marbled Teal, Ferruginous Duck, White-headed Duck, Slender billed Curlew and Aquatic Warbler.

The third habitat with the greater number of threatened species is forest. The total area of forest has been increasing in Europe since the twenties, due to afforestation of open land. However, the degradation of the ecological quality of forest habitats is widespread. Intensification of forestry management, spread of plantations including exotic, and non native species, overgrazing, disturbance and habitat fragmentation are only a few of the factors affecting the natural values of forests in Europe. Old-growth forests now only survive in a few significant tracts, mostly in northern and eastern Europe, and should be strictly protected. In old-growth forests trees are taller and with larger crowns, providing nest sites for raptors and other large birds; there is more dead wood of a large diameter, with foraging and nesting sites for woodpeckers and other species; the forest structure is multi-layered; gaps from fallen trees are more numerous, creating habitat and food opportunities for ground dwelling birds. These are just some of the features of a mature forest, which are now rarely seen in Europe. A number of SPECs are bound to these features, such as the Cinereous Vulture, Lesser Spotted Eagle, Greater Spotted Eagle and several other raptor species, Grey headed Woodpecker, Three-toed Woodpecker and Semi-collared Flycatcher, just to name a few.

LIFE-Nature as part of the EU bird conservation strategy

The European Commission has adopted a clear strategy, taking into consideration the European laws and the possibility of funding such strategy,

especially through LIFE. In a nutshell, the EU strategy for the conservation of wild birds, that LIFE-Nature has helped to implement in a crucial way, is based on the following main points.

1. Identify endangered species. The most endangered species have been included in the Annex I of the Birds Directive. The provisions of the Directive have to be applied to these species, both in terms of general protection and *in situ* conservation through the establishment of the SPAs network. The scientific research carried out in the years following the adoption of the Directive has supported the validity of the list of species included in Annex I. In particular the analysis made by BirdLife International, ranking all European bird species into SPEC (Species of European Concern) categories confirmed that all the globally threatened species are included in the list.

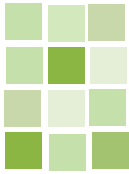
2. Prioritized listing of endangered species. Taking into consideration the threat level of each single species included in the Annex I of the Birds Directive and the limitations of the LIFE-Nature fund, a list of priority species for funding under the LIFE programme has been defined. The list, a sub-set of the species included in Annex I of the Birds Directive, was initially drafted by the European Commission, finalized in 1996 and 1997 and approved by the Ornithological Committee, an official body established under the Birds Directive and composed of representatives of the competent authorities in each Member State. In addition to its regulatory role, the Ornithological Committee is an important forum for consultation with Member States on issues related to the implementation of the Birds Directive. The list (provided in the application file for LIFE-Nature projects), includes 49 species and subspecies whose conservation status is of special concern, both for their very limited area of distribution or for the observed rapid decline of the populations. LIFE projects aimed at the protection of these species received up to 75



Many of the species for which conservation action plans have been prepared have shown signs of recovery in recent years, the best evidence of their usefulness in promoting and guiding the protection process.

percent of co-financing of the total budget by the European Commission, instead of the usual maximum of 50 percent.

3. Elaborate species action plans. To help in guiding the planning of conservation actions, the European Commission has financially supported the preparation, by Birdlife International, of international action plans for all the priority bird species. As there was already an international action plan for the Greenland White-fronted Goose and a national plan for the Scottish Crossbill, a UK endemic, EU plans were not prepared for these species. The only other priority bird species not yet the subject of an action plan is the Azores subspecies of the Wood Pigeon. These plans provide updated information on the distribution, population trends, life history, relative impact of threats, and identify the actions needed to ensure the protection and/or recovery of the targeted species. Aspects considered in action plans include policy and legislation, conservation man-



agement, monitoring, research and public awareness. All action plans are available on the Web site of the European Commission⁴. The European Commission has invited all Member States to translate these framework plans into national action plans for the species under their responsibility.

4) Launch LIFE projects on most endangered species.

Having identified priorities for action and promoted the identification of comprehensive strategies for their conservation, the Europe-

⁴ <http://europa.eu.int/comm/environment/nature/directive/birdspriority.htm>

an Commission has favoured the financing of LIFE projects that were consistent with the identified priorities and actions to be implemented accordingly.

According to these strategic lines, LIFE-Nature has been conceived to provide the best possible results in terms of the conservation of habitats and species of EU concern. As can be expected from a practical and operational tool such as LIFE, its contribution has been concentrated on the conservation of species and their habitats within identified sites (Special Protection Areas and proposed Sites of Community Importance, pSCIs). However, there have also been projects to protect species outside sites, both for wide-ranging species that cannot be efficiently managed solely within a

restricted number of sites and to favour the maintenance of those landscape features that allow the ecological linkage among protected sites. Examples, among birds, include the Lammergeier reintroduction in the Alps or the conservation of wetlands for migratory species along the Adige and Brenta rivers, important flyways crossing the Alps.

The Commission's strategy has helped in optimizing the use of the limited human and financial resources available, contributing to the conservation of the most endangered species and their habitats at the EU level. As a result, almost all of the priority species have been addressed by LIFE projects, as shown in the following table, reporting the present distribution and the number of LIFE-Nature project carried out on each of them.

List of priority bird species of Directive 79/409/EEC considered as "priority for funding under LIFE" and addressed directly or indirectly by LIFE-Nature projects

English name	Latin name	Countries (where the species is breeding)	LIFE projects
1 Fea's Petrel	<i>Pterodroma feae</i>	Portugal (Madeira)	4
2 Zino's Petrel	<i>Pterodroma madeira</i>	Portugal (Madeira)	2
3 Balearic Shearwater	<i>Puffinus puffinus mauretanicus</i>	Spain (Balearic Islands)	1
4 Mediterranean Shag	<i>Phalacrocorax aristotelis desmarestii</i>	France, Greece, Italy, Spain	5
5 Pygmy Cormorant	<i>Phalacrocorax pygmaeus</i>	Greece, Hungary, Italy Slovakia	7
6 Dalmatian Pelican	<i>Pelecanus crispus</i>	Greece	7
7 Bittern	<i>Botaurus stellaris</i>	Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom	56
8 Lesser White-fronted Goose	<i>Anser erythropus</i>	Finland, Sweden	9
9 Greenland White-fronted Goose	<i>Anser albifrons flavirostris</i>	Ireland, United Kingdom	3
10 Red-breasted Goose	<i>Branta ruficollis</i>	Austria, Germany, Greece, Netherlands, Slovakia,	2
11 Marbled Teal	<i>Marmaronetta angustirostris</i>	Spain	3
12 Ferruginous Duck	<i>Aythya nyroca</i>	Austria, Czech Republic, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Poland, Slovakia, Slovenia, Spain	16
13 Steller's Eider	<i>Polysticta stelleri</i>	Denmark, Estonia, Finland, Latvia, Lithuania, Poland, Sweden	0
14 White-headed Duck	<i>Oxyura leucocephala</i>	Spain	6
15 Lammergeier	<i>Gypaetus barbatus</i>	France, Greece, Italy, Spain	14
16 Cinereous vulture	<i>Aegypius monachus</i>	France, Greece, Spain	10

17	Corso-Sardinian Goshawk	<i>Accipiter gentilis arrigonii</i>	France (Corsica), Italy (Sardinia)	2
18	Macaronesian Sparrowhawk	<i>Accipiter nisus granti</i>	Portugal (Madeira), Spain (Canary Islands)	0
19	Lesser Spotted Eagle	<i>Aquila pomarina</i>	Czech Republic, Estonia, Germany, Greece, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia	8
20	Greater Spotted Eagle	<i>Aquila clanga</i>	Estonia, Finland, Latvia, Lithuania, Poland	4
21	Imperial Eagle	<i>Aquila heliaca</i>	Cyprus, Greece, Hungary, Slovakia	4
22	Spanish Imperial Eagle	<i>Aquila adalberti</i>	Spain	20
23	Bonelli's Eagle	<i>Hieraaetus fasciatus</i>	Cyprus, France, Greece, Italy, Portugal, Spain	12
24	Lesser Kestrel	<i>Falco naumanni</i>	France, Greece, Italy, Portugal, Slovenia, Spain, United Kingdom (Gibraltar)	12
25	Eleonora's Falcon	<i>Falco eleonorae</i>	Cyprus, Greece, Italy, Spain	5
26	Lanner	<i>Falco biarmicus</i>	Greece, Italy	1
27	Gyr Falcon	<i>Falco rusticolus</i>	Finland, Sweden	0
28	Sicilian Rock Partridge	<i>Alectoris graeca whittakeri</i>	Italy (Sicily)	0
29	Italian Partridge	<i>Perdix perdix italica</i>	Italy	1
30	Corncrake	<i>Crex crex</i>	Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Netherlands, Poland, Ireland, Slovakia, Slovenia, Spain, Sweden, United Kingdom	41
31	Purple Gallinule	<i>Porphyrio porphyrio</i>	France, Italy, Portugal, Spain	2
32	Crested Coot	<i>Fulica cristata</i>	Spain	2
33	Little Bustard	<i>Tetrax tetrax</i>	France, Italy, Portugal, Spain	7
34	Houbara Bustard	<i>Chlamydotis undulata</i>	Spain (Canary Islands)	3
35	Great Bustard	<i>Otis tarda</i>	Austria, Germany, Hungary, Portugal, Slovakia, Spain	9
36	Cream-coloured Courser	<i>Cursorius cursor</i>	Spain (Canary Islands)	1
37	Slender-billed Curlew	<i>Numenius tenuirostris</i>	Passage migrant : Austria, Cyprus, France, Greece, Italy, Malta, Poland	6
38	Audouin's Gull	<i>Larus audouinii</i>	Cyprus, France, Greece, Italy, Spain	9
39	Roseate Tern	<i>Sterna dougallii</i>	France, Portugal (Azores, Madeira), Ireland, Spain, United Kingdom	3
40	Madeira Laurel Pigeon	<i>Columba trocaz</i>	Portugal (Madeira)	5
41	Dark-tailed Laurel Pigeon	<i>Columba bollii</i>	Spain (Canary Islands)	4
42	White-tailed Laurel Pigeon	<i>Columba junoniae</i>	Spain (Canary Islands)	4
43	Azores Wood Pigeon	<i>Columba palumbus azorica</i>	Portugal (Azores)	0
44	Tenerife Great Spotted Woodpecker	<i>Dendrocopus major canariensis</i>	Spain (Canary Islands, Tenerife)	1
45	Gran Canaria Great Spotted Woodpecker	<i>Dendrocopus major thanneri</i>	Spain (Canary Islands, Gran Canaria)	0
46	Aquatic Warbler	<i>Acrocephalus paludicola</i>	Germany, Hungary, Latvia, Lithuania, Poland	3
47	Blue Chaffinch	<i>Fringilla teydea</i>	Spain (Canary Islands)	4
48	Scottish Crossbill	<i>Loxia scotica</i>	United Kingdom	0
49	Azores Bullfinch	<i>Pyrrhula murina</i>	Portugal (Azores)	4

Source: BirdLife International /European Bird Census Council (2000) *European bird populations: estimates and trends*. Cambridge, UK: BirdLife International (BirdLife Conservation Series No. 10).
European Commission LIFE database: <http://europa.eu.int/comm/environment/life/project/index.htm>, with modifications.



A short history of EU financing for bird conservation

EU financial support to assist the implementation of the Birds Directive pre-dates LIFE. Two major funding programmes, ACE and ACNAT, were, between 1984 and 1991, dedicated to the conservation of nature. LIFE was launched in 1992 and co-financed about 300 projects that specifically addressed threatened birds and their habitats



Left. Dalmatian Pelican
From: Naumann, *Naturgeschichte der Vögel mitteleuropas: Band XI, Table 2 – Gera, 1903*
Below. Cover of the European Commission report on the ACE-Biotopes projects. ACE was launched in 1984 to promote the conservation of biodiversity in the EU

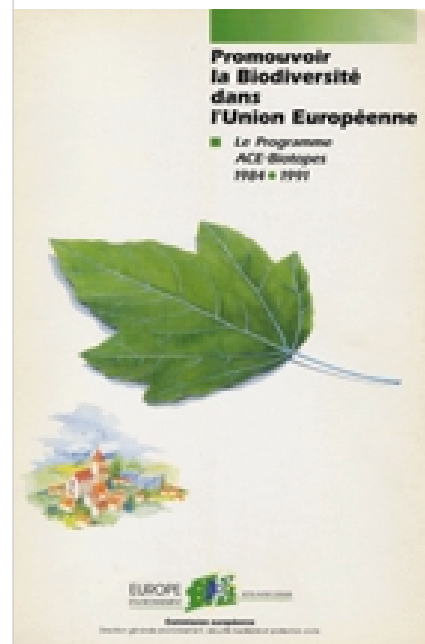
The ACE programme

The ACE programme (Actions by the Community relating to the Environment, Council Regulation 1872/84) was the main EU financial tool dedicated to funding nature conservation projects in the EU before LIFE.

ACE was a programme specially conceived to support the implementation of the Birds Directive, providing a financial contribution to maintain threatened biotopes that host endangered species of particular importance for the European Union. To achieve these objectives, several sectors of actions were included: the promotion of actions for the conservation and restoration of sites, the identification of threatened priority sites and the establishment of a European network of Special Protection Areas. Projects were co-financed by the European Community at a 50 percent rate

or exceptionally, under specific conditions, at up to 75 percent.

Between 1984 and 1991, ACE spent half of its budget (the total of which was more than 30 million ECU, the European Currency Unit, predecessor to the Euro, with the same value) on 92 projects dedicated to the protection of biotopes. Nearly two thirds of the funds were allocated to 60 projects aimed at maintaining, restoring or improving wetland sites. Specific actions were undertaken for the management and restoration of a number of other habitats, including the peat bogs of Duich Moss on the island of Islay in Scotland and the *dehesas* of the Serra de Hornachos in Extremadura, Spain, which host bird communities of international importance. Many of these sites are now classified as Special Protection Areas (and also designated under the Ramsar Convention on Wetlands of International Importance). Thirty-eight new



Special Protection Areas, with a total surface of 3.400 square km, were designated during the lifespan of the programme and 22 more were added soon after.

More than 500 sites benefited from the projects, covering a total surface greater than 17.000 square km, equivalent to more than half of the territory of Belgium.

The ACE programme also carried out conservation actions on 73 percent of the 144 bird species listed in the Annex I of the Birds Directive at that time (the list was thereafter modified and, since May 2004, includes 194 species and subspecies).

Several projects focused on the conservation of specific bird species or groups. Cinereous vulture and Griffon Vulture, White Stork, Greenland White-fronted Goose, Common Crane, Dalmatian Pelican, Bonelli's Eagle, Capercaillie and Roseate Tern are examples of species which were the focus of dedicated projects. The range of actions carried out varied according to the species: the realization of feeding points for vultures, the elaboration and implementation of a recovery plan for the Roseate Tern at the European Union scale, cultivation of arable land to provide food and compensation for damage to farmers to favour Cranes wintering populations, captive breeding and reintroduction of birds of prey, etc.

From 1989 to 1993 the French League for the Protection of Birds (LPO) carried out a project to protect the Bonelli's Eagle habitat in the southern part of the country. Financed by the

Trapping nets in Helgoland, Germany. Scientific research is often included in conservation projects so as to provide useful information to tailor the actions and to monitor project results



Photo © Fernando Jubete

EC ACE-Biotopes programme, the project resulted in the designation of five Special Protection Areas covering more than 30.000 ha and of one natural reserve. The actions to improve feeding opportunities for this rare and declining Mediterranean bird of prey led to an increase in the number of juveniles and in the re-occupation of an abandoned nesting site.

A review of the conservation of biodiversity in the European Union promoted by the ACE Biotopes programme has been published by the European Commission in 1994, including an in-depth analysis of the functioning of this financial instrument and data sheets for all the 92 financed projects, country by country¹.

ACNAT and LIFE I

The ACE programme ended in 1991, when the EU was planning to expand its competence in the field of nature conservation through the Habitat Directive. In December 1991, it was decided to adopt a separate financial instrument for nature, ACNAT (Actions by the Community for Nature, Council Regulation 3907/91). Through this programme, actions for bird species and sites considered of importance under the Birds Directive continued to be supported but, in addition, funds were also made available for the conservation of other endangered species and habitats.

With the adoption of the Habitats Directive, in May 1992, ACNAT was almost immediately replaced, by LIFE (Council Regulation 1973/92), a financial instrument aimed at helping the development and implementation of the Union's Environment Policy as outlined in its Fifth Environmental Action Programme. The first phase of

¹ European Commission. Promoting Biodiversity in the European Union. The ACE-Biotopes Programme 1984-1991. Luxembourg: Office for Official Publications of the European Communities. 1994, 152 pp.



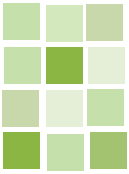
The Whimbrel and (in the middle) the Slender-billed Curlew. The latter is the rarest and the most poorly known bird in Europe. From: Naumann, Naturgeschichte der Vögel mitteleuropas: Band IX, Table 13 - Gera, 1903

LIFE lasted from 1992 to 1995, with a budget of 400 million ECUs.

One of the environmental fields addressed by LIFE I was the protection of habitats and species. Actions undertaken in this area were intended specifically to help finance projects which worked towards, and provided an incentive for the implementation of the Habitats and Birds Directive. In total ACNAT and LIFE I, contributed 149 million ECUs to 176 nature conservation projects out of the 893 proposals received.

A number of projects continued to be dedicated specifically to endangered bird species. A few examples of the bird conservation projects that benefited from the ACNAT/LIFE I funding are listed below.

> For Slender-billed Curlew: a globally threatened species, probably



The Corncrake is declining due to agricultural intensification. ACNAT has funded since 1993 actions to involve farmers in its conservation.
 From: Naumann, *Naturgeschichte der Vögel mitteleuropas: Band VII*, Table 15 - Gera,

the rarest and most poorly known bird species in Europe. This was the subject of a wide range of activities carried out during 1992–1994 across much of the European species' range, under the ACNAT project "Preparation of a rescue plan for the Slender-billed Curlew".

- > For Cinereous Vulture: this very large, tree-nesting raptor threatened by the use of poisoned baits and the loss of old-growth Mediterranean forests, extinct in much of its former range in Europe, has benefited, in the Sierra de Gata (Extremadura, Spain), from habitat restoration and food restocking.
- > For Cinereous Vulture: In the Dadiá Forest, Greece, in 1992, ACNAT

funded WWF Greece to carry out a project for the management and wardening of the Reserve, as well as the development of ecotourism with the preparation of an operational management plan. The population of the Cinereous Vulture increased from nine pairs in 1988 to 20 pairs in 1994.

- > For Fea's Petrel: another globally threatened marine species with a known population in Europe of only 150-200 pairs in the Desertas Islands, south-east of Madeira. The management of the Nature Reserve of the Desertas Islands received financial support from the EU during the period 1986–1996 through the ACE, ACNAT and LIFE programmes.

- > For Dalmatian Pelican: a globally threatened species, which has declined dramatically since the nineteenth century due to drainage of wetlands. The larger European population is situated in Greece, where about 500 pairs breed. Actions aimed at creating a new breeding habitat at Lake Kerkini were funded by ACNAT.

- > For Corncrake: declining steadily due to agricultural intensification and mechanization which destroy its habitat: hay meadows subject to low intensity farming. Voluntary schemes providing payments to farmers for Corncrake management were introduced in 1993 in France, when 6 million francs (about 900.000 Euros) were invested in management of about 6.000 ha, where 10–20% of the national Corncrake population lives. The schemes were funded through several programmes. ACNAT/LIFE funded the measure in four areas: Marais de Carentan, Basses Vallées Angevines, Val de Saone and Vallées du Nord-Est de la France (Meuse, Oise, Aisne, Chiers).

LIFE II

1996 marked the start of phase II of LIFE. This phase covered a period of four years from 1996 to 1999 with a total indicative budget of 450 million ECUs, almost half destined for nature. The overall objective remained the

same: to promote the implementation of Community policy and legislation in the field of the environment. As in LIFE I, nature conservation actions financed under this instrument have contributed to the implementation of the Birds and Habitats Directives. In particular, the actions proposed were aimed at maintaining and restoring the habitats and species listed in both Directives to a favourable conservation status.

LIFE II started after the deadline in the Habitats Directive for proposing sites under Natura 2000 had passed. It therefore supported measures aimed directly at maintaining and restoring the sites which had been proposed as SACs under the Habitats Directive or which had been legally designated as SPAs by the Member States under the Birds Directive. It also assisted actions likely to have a significant impact on the conservation of the species listed in either the Birds or Habitats Directives.

During its four years of implementation LIFE II Nature financed 309 projects out of the 849 presented. The total financing committed for those projects was some 200 millions Euros. In 1999 LIFE opened its doors for the first time to accession countries. Romania was the first country to participate: fourteen LIFE-Nature projects were submitted by various Romanian institutions and NGO's. Seven of these were finally selected.

LIFE III

LIFE III, which runs from 2000 to 2004, has allocated funds amounting to 640 million Euros to continue the promotion of pilot projects for the conservation of habitats and species and the management of the Natura 2000 network. Moreover, in 2002, the Commission has launched two accompanying measures, called "Starters" and "Co-op" to promote international initiatives and favour the co-operation between different projects. In 2002, 12 Starters projects have received 30.000 Euros each to prepare international LIFE Natura project proposals to be submitted in 2003. One was aimed at the conservation of the Lesser White-

fronted Goose on its migratory flyways and another at the preparation of an action plan for the Bonelli's Eagle in Portugal. Moreover, four Co-op projects have been approved to encourage LIFE-Nature projects to exchange experiences on specific issues. Management of grouse and tourism and management of wetlands in Finland were two such projects targeting bird species. In 2003 only the Co-op measure was launched and six projects were financed for a total expense of about 634.600 Euros. These included a project aimed at preparing a handbook for actions to promote Bittern conservation in Europe and an evaluation of Bustard management best practices.

How LIFE money has been spent for birds

All LIFE Natura projects can potentially have a direct or indirect effect on bird species and their habitats. However, only data on NA2 and on NA3 projects (see box), which are clearly aimed at bird conservation will be considered here. Therefore the figures reported below on the number of projects and the relative financial data are conservative.

Out of 777 LIFE-Nature projects financed up to 2003, both in the EU countries and in the candidate ones, at least 295 had a direct relevance to bird species and their habitats. This figure includes also the ACE and ACNAT projects. 41 percent of the LIFE-Nature projects had birds as their objective, confirming this group of animals as a leading one in terms of interest, significance and value as "umbrella species", through which important biological communities and entire assemblages of habitats can be managed.

The total expenditure for bird projects has exceeded 367 million Euros, co-financed by the European Union at a cost of almost 200 million Euros, representing 54 per cent of the total.

Since its initiation in 1992, annual LIFE-Nature expenditure for birds increased from about 10 million Euros up to 40 million Euros, with a maxi-

LIFE projects fall into three categories:

- > **NA1** – aimed at the conservation of one (or more) natural site(s) proposed by Member States as Sites of Community Importance (pSCI) under the Habitats Directive;
- > **NA2** – aimed at the conservation of one (or more) natural site(s) designated by Member States as Special Protection Area (SPA) under the Birds Directive;
- > **NA3** – one (or more) species of fauna or flora of the Habitats Directive – annexes II or IV and/or of the Birds Directive – annex I.

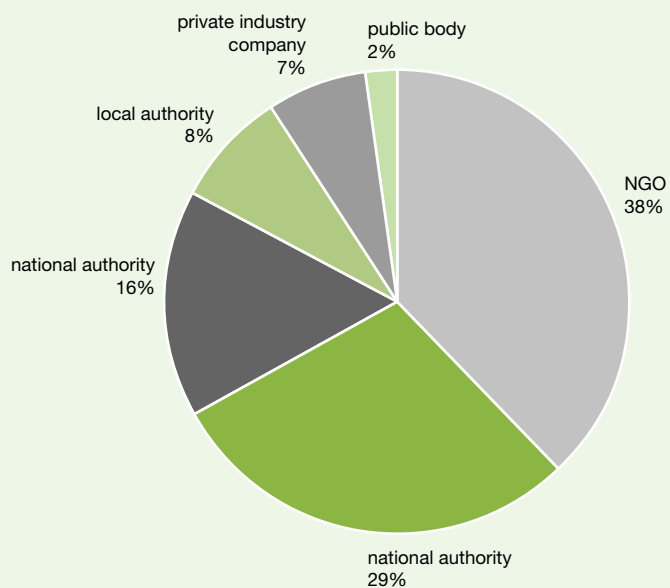
mum of 48 million Euros in 2001 (Graph 2).

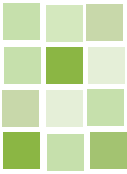
Spain, which has the highest number of endangered bird species, is at the top of the list of the beneficiary countries of ACE, ACNAT and LIFE-Nature for projects dedicated to birds. The money spent, as can be seen by the graph 3, is not always proportional to the number of financed projects.

The average cost per project (Graph 4) has been higher in Finland and France, while the less expensive projects, on average, have been carried out in Slovenia.

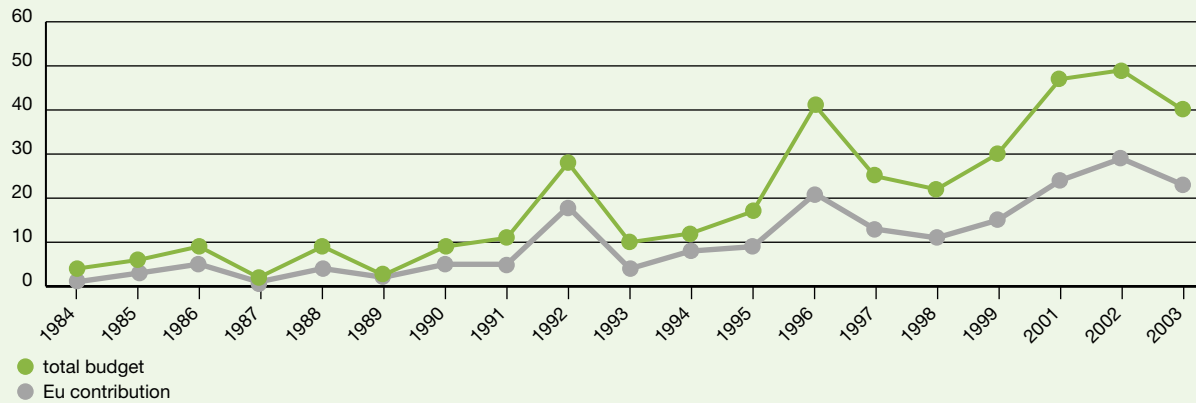
Public administrations, at national, regional and local levels, are the most numerous LIFE-Nature beneficiaries (Graph 1). This indicates that LIFE has acted as an incentive to public investment in the establishment of the Natura 2000 network. Among public authorities, the regional ones, which are often directly responsible for the sites, have taken the lead with 29 percent of the projects, followed by national authorities (generally ministries of the environment and/or agriculture) with 16 percent of the projects. Local authorities (provincial or municipal administrations) have also played a significant role, with 8 percent. An important share of the budget has been used by NGOs, often managers of protected areas. NGOs are often involved in LIFE-Nature projects also as partners, to guarantee public administrations technical and operational support.

Graph 1. Beneficiaries of LIFE-Nature funding for birds

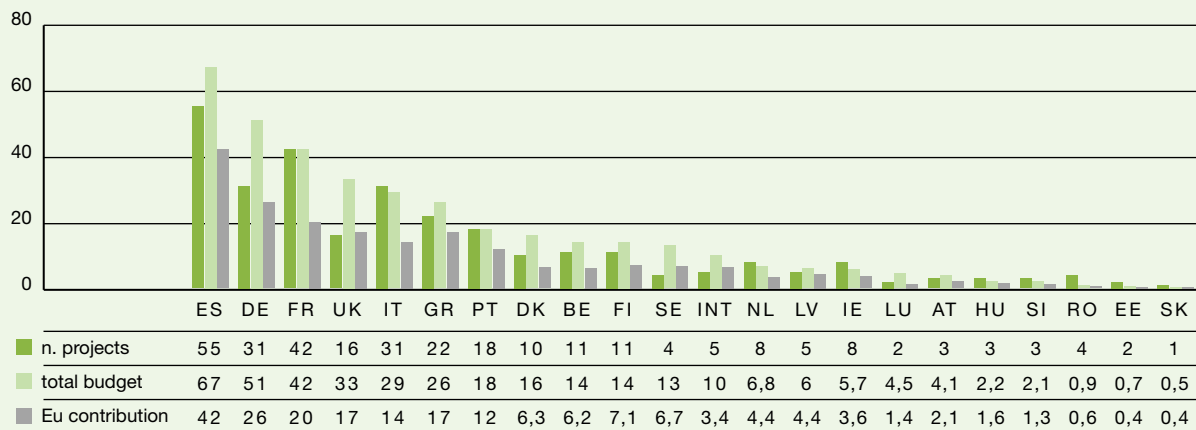




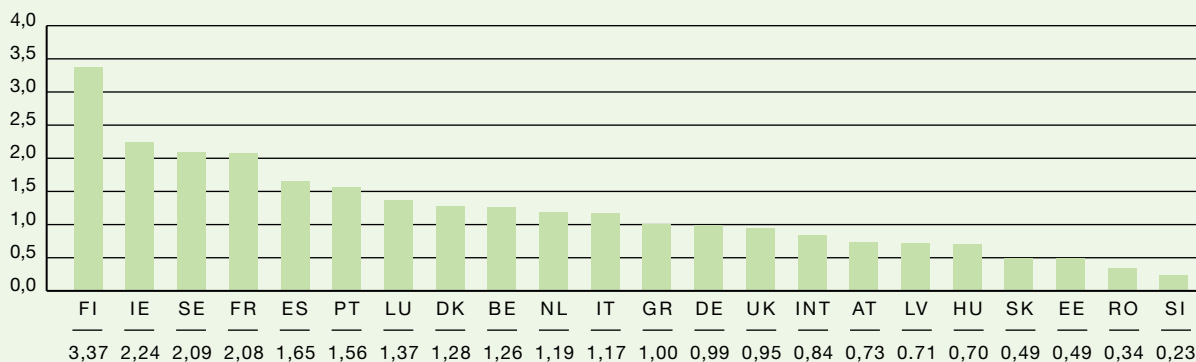
Graph 2. ACE, ACNAT and LIFE-Nature expenditure over years (million Euros)



Graph 3. Total amount of ACE, ACNAT, LIFE-Nature expenditure per country (million Euros)



Graph 4. Average cost of LIFE-Nature projects per country (million Euros)



LIFE working for threatened bird species

A number of LIFE-Nature projects has directly targeted threatened bird species and addressed the specific conservation problems that led to their decline.

Birds of prey and aquatic birds have been a favoured objective of LIFE projects but LIFE has funded projects on most threatened species throughout Europe.

It provided a major contribution to the identification of the most efficient management methods and to their protection.

Some statistics on species-oriented projects

The top-ten species-oriented projects, as for number of projects, dealt with rare species of birds of prey. France, Spain and Greece have been especially committed to the conservation of their populations of endangered raptors. Bonelli's Eagle, Cinereous Vulture, Egyptian Vulture, Spanish Imperial Eagle, Lesser Kestrel altogether account for at least 23 specific projects, with a total budget of at least 31 million Euros. The Imperial Eagle is the main focus of two projects being carried out in Slovakia and Hungary. Reintroduction projects for raptors are another important sector, including the well known reintroduction of the Lammergeier in the Alps. Eight projects, with a total cost of almost 9 million Euros, have focused on the conservation (not only the reintroduction) of this species. The Golden Eagle is being reintroduced successfully into Ireland since 2001. The total expenditure on raptors is more than 53 million Euros.

Among "freshwater" birds (taken as a very broad category), the Bittern has been the favourite, with at least 8 specific projects costing 14,5 million Euros. Other targeted species have been Aquatic Warbler, Common Crane, Dalmatian Pelican, Slender-billed Curlew, Purple Gallinule, Marbled Teal, White-headed Duck, Greenland White-fronted and Lesser White-fronted Goose, White and Black Storks. For these a total of at least 40 million Euros has been spent.



Photo © WWF Gabriel Sierra

Marine birds are another important group that has benefited from LIFE-Nature projects. Cory's and Balearic Shearwater, Zino's Petrel and Audouin's gulls are just a few examples of endangered, localized or endemic species considered. About 23 millions Euros have been dedicated to the conservation of their nesting sites and to address the main limiting factors for their survival.

A special group of projects has been implemented to protect a number of endemic species of the Macaronesian Islands (Canary and Azores), namely the Azores Bullfinch, the Blue Chaffinch, Dark-tailed Laurel Pigeon and White-tailed Laurel Pigeon. Conservation of these species has meant actions for the sustainable management of the laurel forests of those islands, with an important impact also

Above. The Egyptian Vulture, the smallest of European vultures and the only migratory one.

Below. In the Iberian peninsula, the dehesas, a fascinating mixed forest and grassland habitat, host a number of threatened birds of EU importance.

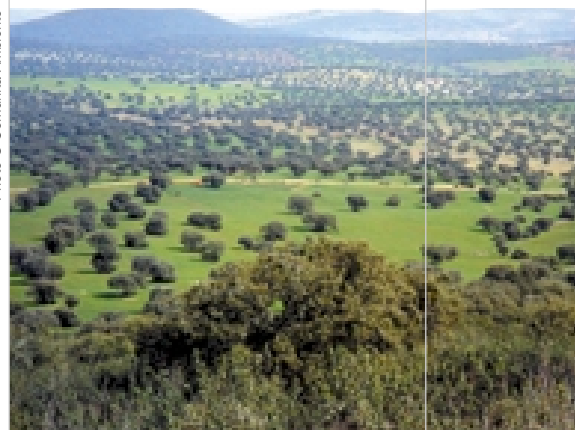
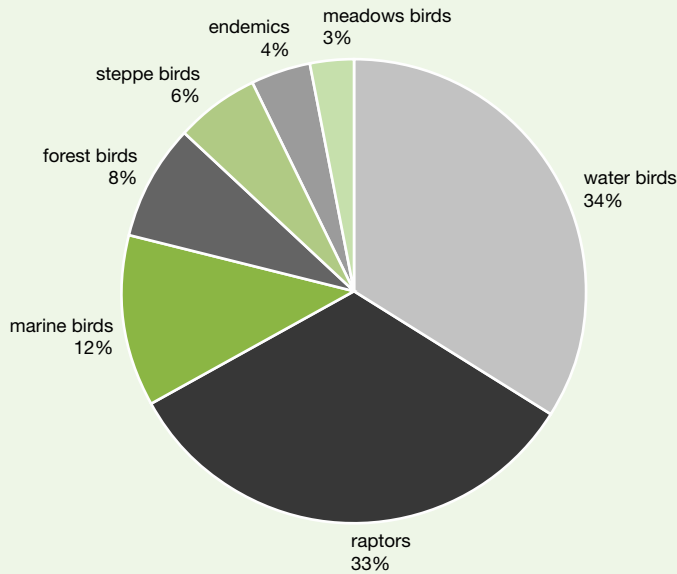


Photo © Comunitat Ambiental



LIFE-Nature expenditure for species-oriented projects



in terms of awareness raising. The budget spent for these species is about 6 million Euros.

Continuing among species-oriented projects, forest birds have concerned mainly woodpeckers (especially the White-backed Woodpecker) and the Capercaillie, both of which are good indicators of habitat quality. In seven projects 13,5 million Euros have been spent. For steppe birds, like Little, Great and Hubara Bustards, 9 projects have been carried out, mostly in Spain, where more than 10 millions Euro were spent. Finally, for the Corn-crake, dependent on traditionally managed meadows, 5 projects have spent 4,5 millions Euros.

LIFE projects involve a diversity of actions. Some of these are illustrated below. The case studies are obviously not exhaustive, but refer to species that need a specific approach rather than a more general management of their habitat. Other cases referring to species in relationship to their habitat will be reported in the following chapters.

Below. *The Purple Gallinule, a tropical and subtropical species present in small numbers in a few EU countries, Portugal, Spain and Italy*



Photo © ATECMA

Saving birds of prey

Raptors are, among the species considered as a priority for funding LIFE-Nature projects, the most represented, 13 species out of 49, due to their special ecological role. Eagles and falcons are good indicators of what is happening in the ecosystems. Being at the top of the food chain and often requiring very large areas for survival their conservation status is an indicator of habitat modification and unsustainable land management. Therefore, birds of prey are good examples of “flagship” species: their conservation implies the protection of large areas of suitable habitat.

This explains why several case studies illustrated below refer to birds of prey. LIFE-Nature projects aiming at other species are illustrated in the chapters that follow.

The Spanish Imperial Eagle, a majestic bird living only in the western Mediterranean and breeding almost exclusively in Spain with about 190 pairs, is one of the rarest birds of prey in the world. The main populations of this bird occur in Sierra de San Pedro (Extremadura), Sierra de Guadarrama (Madrid) and Montes de Toledo (Castilla la Mancha). It was brought to the verge of extinction in the 1960s, with only 30 pairs left. This dramatic decline was due to the loss of its habitat, the Mediterranean oak woodland, for agriculture and the development of irrigation schemes as well as the use of poison to control predators in the hunting reserves. Juvenile imperial eagles are especially threatened by electrocution from deadly contact with power lines.

In 1986 an intensive conservation programme was initiated by the Ministry of the Environment (Directorate-General for Nature Conservation) and the regional governments of Castilla-León, Castilla-La Mancha, Madrid, Extremadura and Andalucía. The European Union supported this programme. Three LIFE-Nature projects were funded in 1993, 1994 and 1995 in order to monitor the few remaining breeding pairs, to provide supplementary food resources to enhance breeding pro-



Photo © SIGARN

Along the birds of prey to which a particular effort has been devoted, vultures have a special position. Cinereous vulture, Griffon Vulture, Egyptian Vulture and Lammergeier are species that can be found in a complete and healthy European raptor community. The Cinereous Vulture is an impressive scavenger bird with a wingspan of three meters. Its powerful bill allows it to open dead animal carrion, paving the way for a vulture feast: Griffon Vultures eat the offal and flesh, Egyptian Vultures focus on small pieces scattered by the larger species, and, finally, the bone-eating Lammergeier finishes the job. Cinereous Vulture and Lammergeier are priority bird species under the LIFE-Nature programme.

Some of the factors affecting vultures are the loss of nesting habitats (old

ductivity and to modify power lines in critical areas to minimize further electrocution cases. The conservation efforts, including those carried out by LIFE, have resulted in a population increase to more than 148 pairs by 1994. However, since then the increase has been slower, due to both the continued poisoning in hunting reserves and to the spread of a viral haemorrhagic disease in the rabbit population, the main prey species of the eagle. There are now 193 breeding pairs, including two in Portugal.

The conservation efforts surrounding the Spanish Imperial Eagle are a good example of the practical difficulties encountered in nature conservation. At the same time, they highlight some of the most common threats affecting birds in the EU. Habitat loss, most commonly due to agricultural intensification, is the most common cause of decline of the bird species now considered as endangered. However, the list of threats includes many other factors, often not as obvious as habitat loss. Some of these are hunting and poaching, disturbance by tourists, disturbance by bird watchers and climbers, collisions with power lines, acid deposition, oil pollution and even human influences outside Europe, affecting migratory species. Even climate change may now be a factor already affecting bird populations.



Photo © Juan Jose Sánchez

Above. A LIFE information panel on a fence made in the framework of the management of the rabbit, the main prey species of the Bonelli's Eagle in the Ardeche, France.
Below. Cinereous Vulture nest in Mallorca.

Mediterranean woodland for the Cinereous vulture, undisturbed cliffs for the others), poisoning of carcasses, loss of the traditional breeding of sheep, cattle and horses, illegal shooting for the commercialization of stuffed specimens, and electrocution. LIFE has worked to halt a widespread process that has already led to the local extinction of vultures in most of Europe.

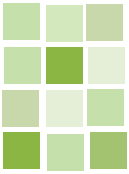


Photo © ATECMA

Currently, the main stronghold of vultures in Europe is Spain, which is why most of the LIFE projects aimed at vulture conservation have been carried out there. Examples include the work carried out on the Cinereous Vulture in the Sierra de Gata (Extremadura), on Mallorca Island, or in SPAs near Madrid (Encinares de los Rios Alberche y Cofio, Alto Lozoya and Monte del Pardo). Actions of these projects include monitoring breeding performance, using advanced radio-tracking techniques to trace birds' movements during their search for food in order to better understand their needs, providing supplementary food sources and involving stakeholders (mainly hunters) in the management of the sites to avoid the use of poison in the hunting reserves. Where these actions were implemented, the results are almost immediate. As an example, in the Lozoya SPA, near Madrid, at the beginning of the project (1997) there were 42 pairs of Cinereous Vulture, while that number rose to 53 pairs in 2001.

The same degree of success can generally be obtained for other raptor

Bonelli's Eagle is found in Southern Asia, Africa and Middle East. In the EU it lives in Mediterranean countries, being the main stronghold Spain.

species by reducing mortality factors (poaching, poisoning and electrocution), by ensuring appropriate food sources and by safeguarding nesting sites from disturbance and destruction. This has been the case for the Bonelli's Eagle, an endangered priority species of the dry grassland and garigue habitats of the Mediterranean, breeding mostly in Greece, Italy, France, Spain and Portugal. Spain is the European stronghold of this species, with about 700 pairs out of a total of about 1.000. This species declined by between 20 and 50% in the years 1970-1990.

Eight LIFE-Nature projects have been carried out in the EU with the aim of ensuring a good future for the Bonelli's Eagle in critical areas. One of these projects was carried out in Navarra, Spain, between 1997 and 2000, where

the local population had declined by 60%, with only three pairs at the beginning of the project. LIFE-Nature funded actions to face the most common threats affecting the species (habitat quality, electrocution, shooting, etc.) plus a peculiar, but ever more common one: the impact of climbers on cliff nesting raptors. Disturbance by unaware climbers during the breeding season very often leads to the loss of the clutch and to the abandonment of the nest by the pair, possibly for years afterwards. The main objectives of the project were achieved. The population decrease was stopped, and currently there are records of individual Bonelli's eagles all around the Navarra Region. The collaboration obtained from different stakeholders, especially the electricity firms and climbing associations resulted in a decision to prepare a widely disseminated booklet for climbers and a booklet on power line modification to support the implementation of similar measures in other Natura 2000 sites. This is a typical case of how LIFE can prompt action well beyond the geographical scope of a single project.

When a species has become locally extinct, oftentimes the only chance for its return is through reintroduction programmes. Reintroduction projects supported by LIFE have been carried out for the Lammergeier in the French Alps: currently about 70 birds fly again over these mountains after almost a century of absence and recently the first pairs have started to breed naturally. The Cinereous Vulture has been reintroduced successfully in the Gorge de la Jointe (Massif Central, France) and the first successful breeding attempt was reported in 1996. A LIFE project was financed in 1997 to support this long-term activity. At the end of the four years the population was of 38-50 birds, including 9 juveniles born during the project implementation: today tens of thousand of visitors enjoy watching the Cinereous Vulture fly in French skies once again.

In 2001, a LIFE project was started in Ireland, in the Glenveagh National Park in Donegal, to reintroduce the Golden Eagle, where it had been



Photo © WWF Finland

datation on nests, caused by this carnivore's expanded range towards the north. However the major impact is believed to be that of hunting in the wintering areas. Apart from a major site in Azerbaijan, current wintering areas are largely unknown. Formerly they were located in the steppe areas in Eastern Europe and southwest Asia, which have now been reclaimed for agriculture. In particular, wintering areas of the EU population are not known and their identification is crucial to allow for a sound conservation strategy to be put in place. A LIFE project has been carried out in Finland, and among its objectives this project aimed at the *in situ* conservation of the known 50 breeding pairs. Twelve birds were tagged and equipped with satellite transmitters. Of these, only three did their job and followed the birds to the wintering grounds; the others either did not work long enough to reveal wintering areas or the birds were killed along the way.

wiped out by poison and shooting, and considered extinct since 1912. Due to the very limited chance of natural re-colonization it was decided, in collaboration with the Scottish nature authorities to take six week-old chicks from the nests of the Scottish population, in order to raise and then release them in the wild. Currently a few dozen birds have already been released and the first courtship behaviour has been observed at some sites, giving hope for the first breeding attempts in Ireland in the near future.

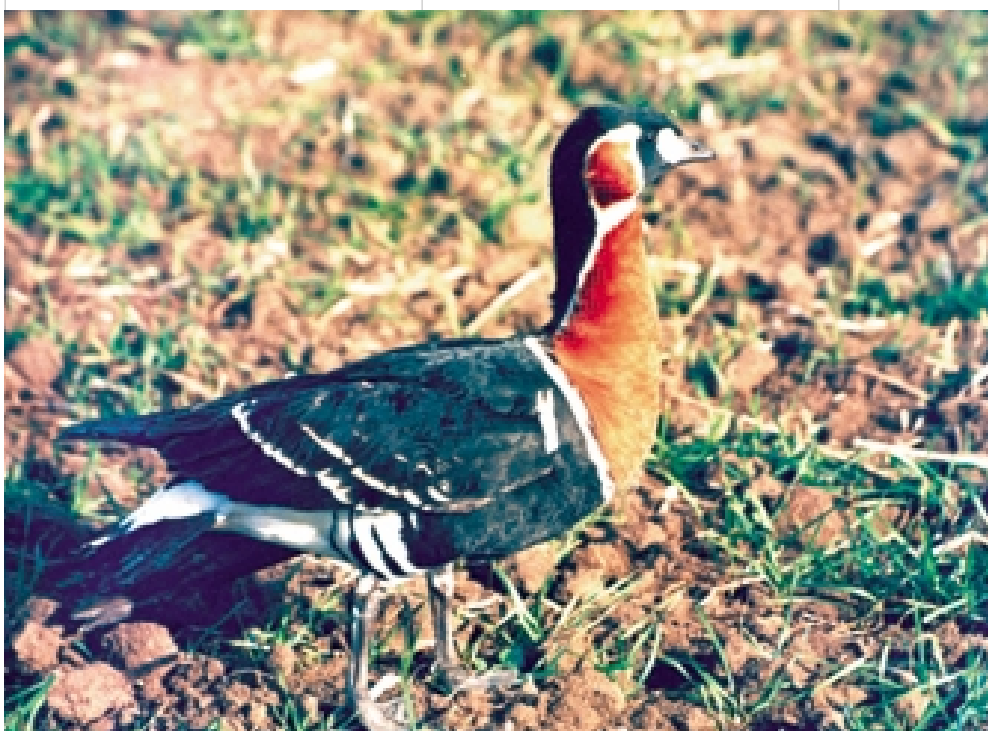
Obviously, LIFE has supported conservation projects for birds other than raptors, even though they seem to be one of the preferred subjects.

Rare geese to be saved

LIFE projects aimed at the conservation of the Lesser White-fronted Goose are a good example of the importance of an international approach to the conservation of a migratory species. This goose, a priority species for funding under LIFE, breeds from northern Fennoscandia to eastern Siberia and has declined rapidly during the second half of the 20th century, especially in the breeding grounds of Sweden, Finland and Norway. This trend is partially due to local threats, such as hunting at staging and wintering areas (complicated by difficult identification in the field) and, perhaps, red fox pre-

Above. *The Lesser White-fronted Goose is a globally threatened species, breeding from Fennoscandia to Eastern Siberia, addressed by several LIFE projects.*
 Below. *The Red-breasted Goose world population winters almost entirely in Romania and Bulgaria. LIFE has helped in managing the critical wintering wetlands in the Techirghiol lagoons, Romania*

Photo © National Administration of Romanian Waters





Lesser White-fronted population has been confirmed. The main western flyway consists of several separate routes that direct geese like a funnel between Nordic countries and Central Taimyr in Siberia towards Northern Kazakhstan to the main staging area: from there the routes divide to different wintering areas. The westernmost native population migrates via the Nordic countries-Kanin peninsula-Estonia-Poland and Germany-Hungary-Greece. The main eastern flyway from east Taimyr collects the geese to China, mainly to Lake Dongting.

In the same way, the Red-breasted Goose, has benefited from LIFE in two projects in Greece and Romania. The Drana and the Techirghiol lagoons are wintering areas of these species that suffer from hunting, disturbance at roosting sites and feeding grounds and scarce availability of food during the coolest months. Important measures are being carried out to address these threats, including farming of 30 ha with winter wheat and maize, to ensure effective and efficient freshwater circulation from the lakes to the sea and increase penalties to prevent deliberate poisoning of feeding geese.

Restricted endemic species in Macaronesia

The Macaronesian Islands, Canary, Azores and Madeira archipelagoes, host a very rare, primitive habitat, the laurel forest, which is home to several endemic birds whose conservation is

Above. Some of the awareness raising products financed by LIFE through projects for the conservation of endemic bird species in the Canary Islands. Below. The White-Tailed Laurel Pigeon is one of the endangered bird species found in the Canary Islands, Spain

a priority under the LIFE programme. These include three species of pigeons, two of which live in the Canary Islands and one, the Long-toed Pigeon, that lives in Madeira. Moreover, the Macaronesian region hosts the Blue Chaffinch, restricted to the Canarian pinewoods on Tenerife and Gran Canaria, and two endemic subspecies of the Great Spotted Woodpecker, one on Tenerife and the other one in Gran Canaria. Finally, the Azores host the endemic Azores Bullfinch, a further species linked to the laurel forest. Considering their conservation status, all these species have been included in the list of the priorities for conservation, as well as the endemic pigeons treated in the following lines.

The Macaronesian laurel forest is the remnant of the humid thermophile forests, which in the Tertiary period covered Southern Europe and North Africa. It hosts an exceptional diversity of endemic plants and animals and is considered a priority for conservation under the Habitats Directive. The largest extent of this "laurisylva" can still be found in Madeira and has been declared a World Heritage Site by UNESCO. The endangered White-tai-

Photo © Pedro Felipe Acosta



Photo © Pedro Felipe Acosta



led Laurel Pigeon and the Dark-tailed Laurel Pigeon live only in the laurel forest of the Canary Islands. The former nowadays occurs on the islands of Tenerife, La Palma, La Gomera and El Hierro, while the latter only occurs on the islands of Tenerife, La Palma and La Gomera. Both species are affected by a number of negative impacts: poaching, forest uses, rats and other exotic mammals, water scarcity, and habitat scarcity. Moreover, reasons for low breeding success have been investigated.

Two LIFE projects, starting in 1993, took into consideration the condition of these two species and of the laurel forest in which they live in Tenerife, with the aim of consolidating a large and viable core population both in the Las Lagunetas Protected Landscape and in Las Palomas Special Nature Reserve. This effort generated an unprecedentedly clear picture of the distribution and ecological needs of the two species and of the relative impact

Two subspecies of the Great Spotted Woodpecker endemic to the Canary Islands are a priority for funding under LIFE

of the pressure factors on them. This, in turn, allowed for the elaboration of an action plan that became the basis for future conservation measures. Moreover, several threats were directly tackled by the projects and actions were successfully undertaken:

1. The use of forest wood for agricultural purposes (poles for vine grapes) was stopped, finding good alternatives that were accepted by the farmers.
2. A culling campaign of rats, with innovative methods, allowed the halt of their predation on pigeon nests.
3. The analyses identified suitable habitats for possible reintroduction

of the White-tailed Laurel Pigeon on Gran Canaria at some point in the future.

4. A wide awareness campaign was held, involving both the general public and specific interest groups, such as hunters.

But work has still to be done: notwithstanding an in-depth research and rat eradication programme, the breeding success of the species remains low for unknown reasons.

The work on Tenerife is however undoubtedly an unprecedented step forward in conserving the pigeons. The information obtained has proved to be essential for re-orienting many aspects of environmental planning in the Canaries, impacting several topics, such as defining some Sites of Community Importance, drafting plans for protected natural areas, drafting reports on environmental impact assessment, evaluating plans, etc. The LIFE project has also played a pivotal role in bringing forth complementary research and had an enormous influence on the social groups most directly associated with the conservation of these species.

Conclusions

BirdLife International is currently carrying out a revision of the conservation status of birds in Europe. As the previous assessment was published in 1994 it will be possible to document the changes in conservation status of species that have taken place in the intervening decade. Among the first results of this revision it is worth mentioning that out of the 23 globally endangered bird species for which action plans have been elaborated, 12 have shown signs of recovery. This is really an encouraging result which, at least partially, is due to the implementation of the conservation strategy elaborated by the European Commission.

Priority bird species, i.e. those whose conservation is especially favoured under the LIFE programme, have been addressed by the majority of the LIFE projects: in total 322 of them included actions beneficial to these species

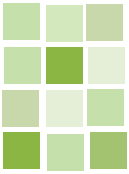


Photo © Sergio Socorro

A view of the Macaronesian Laurel forest, Canary Islands. This forest is the remnant of the humid thermophile forests which in Tertiary period covered Souther Europe and North Africa

(see table, page 10). This means that the management of the LIFE programme by the European Commission has been highly efficient in canalizing the limited human and financial resources available towards the more urgent conservation needs.

The list of priority birds includes species that are linked to extremely diverse habitats that range from Mediterranean steppe, northern tun-

dra to marine islands, and with different geographical distribution. Carrying out an effective conservation project requires the identification of the most suitable actions according to the species, to the threats to be addressed, to the sites of intervention and to their socio-economic assets. Tailoring the actions according to an in-depth knowledge of all these issues, even though demanding, has clearly been successful.

LIFE working on habitats for birds

As part of the Commission strategy, LIFE-Nature has focused on the protection of Europe's wild birds and on practical actions for the conservation and restoration of a wide range of key bird habitats, ranging from wetlands, forests, steppe and agricultural areas to marine and coastal zones and ranging from Mediterranean arid lands to the Arctic tundra

LIFE-Nature has focused, as part of the Community strategy to protect European wild birds, on practical actions for the conservation and restoration of a wide range of key bird habitats. The list of habitats that have been managed or restored for the conservation of rare and endangered bird species is remarkable. It includes wetlands, one of the most endangered and therefore frequently targeted habitats, coastal salt marshes and lagoons. Forest bird communities that have received assistance from LIFE projects include boreal, temperate, Mediterranean and riverine/wetland wooded habitats, both in the lowland plains and in the mountains. Also Mediterranean shrubland and steppe habitats, coastal habitats for seabirds, island ecosystems and semi-natural habitats, such as traditional farming areas, have all been addressed by a number of LIFE projects.

Some statistics on habitat-oriented projects

Even though classification of the main habitats benefiting from conservation projects is very difficult, due to overlapping of different habitats types in any single project, a general analysis reveals some major trends.

Undoubtedly, wetland is the habitat type most addressed by LIFE projects aimed at bird conservation. This category includes a wide array of habitats, from mires, to wet meadows, and from lakes to rivers and lagoons. Conservative estimates indicate that more than 120 projects benefited wetland habitats, upon which more than 160 million Euros has been spent up to 2003. The reason for this high representation of wetlands is clear: they are rich in biodiversity, about one-third of the European birds are wetland spe-

Photo © ATECMA



cies, and they play a pivotal role for wild birds during breeding, migration and wintering periods. Moreover, due to land reclamation and drainage, wetlands are one of the most threatened natural habitats.

Above. The Lesser Kestrel habitat: mediterranean steppe in Aragon, Spain. Below. Artificial nesting sites for Lesser Kestrel were financed by LIFE in Aragon, Spain

Photo © ATECMA



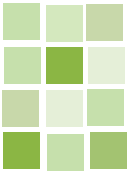


Photo © Jorma Lunta

Forests are another habitat to which LIFE has made a major contribution. More than 21 million Euros has been spent on the conservation of forest habitats that range from the northern taiga in Finland, to natural deciduous forest in Denmark and several forest habitat types in the Mediterranean. The Monte Arcosu Mediterranean forest in Sardinia, covering 3000 ha and hosting the endangered Corso-Sardinian Goshawk, has been bought by an NGO and is currently being managed in order to protect this bird species. The management of the Dadia Forest in Greece, a site hosting 36 species of raptors, has been the focus of three projects, starting with ACE in 1985.

Conservation of mountain environments has been addressed less frequently, but there are important projects including those at Mount Athos in Greece, the Valgrande National Parks in Italy or the Ardennes biotopes in Belgium and Luxembourg. For these projects about 4 million Euro have been spent.

Spain and Portugal have dedicated their efforts to the conservation of steppe habitats, important for a community of endangered bird species, including the Lesser Kestrel and the Great and Little Bustards. In Spain several projects have been carried out in the Extremadura and Caceres regions, while the adjoining Castro Verde

Wetlands are among the most commonly addressed habitats by LIFE projects. In the picture, juveniles Whooper Swans in a Finland wetland

area in Portugal has been the subject of several projects. Finally, in Hungary, several projects are being carried out on the pannonic steppe, a peculiar habitat type almost exclusive to that country. At least 10 million Euros have been spent on these habitat-oriented projects.

Projects focusing on bird communities linked to coastal habitats, including dune systems, have been carried out especially in northern Europe. More than 7 million Euros have been spent on these habitats.

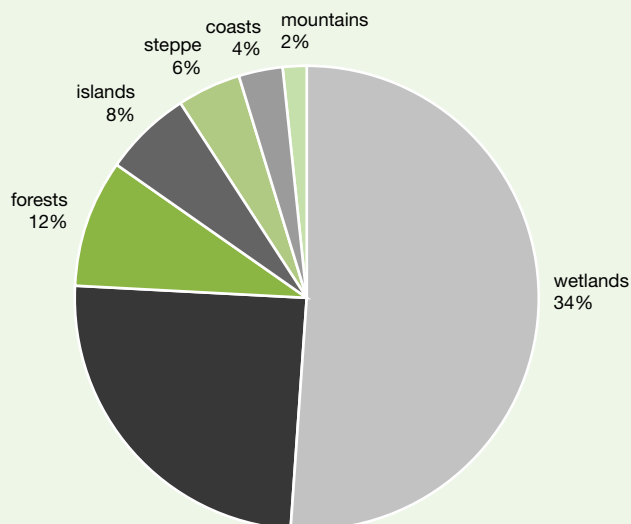
Islands and marine bird communities are also favoured for bird conservation projects. At least 15 million Euros have been shared among 17 projects, in this case mostly in the Mediterranean region: Spain, France and Italy are the countries with the largest number of projects. However, the UK, Ireland, France and Netherlands have also carried out a number of projects for the conservation of these ecosystems for birds.

An examination of the contribution of LIFE to the conservation of three broad classes of bird habitats is given below and illustrated by case studies.

Wetlands

Wetlands, including rivers, lakes or marshes, are an astonishing reservoir of biodiversity. In Europe, according to BirdLife International, inland wetlands are the main habitat for more than 102 endangered bird species (one fifth of the European bird species), more than half of them with

LIFE-Nature expenditure on habitat-oriented projects



small or strongly declining populations in Europe. Among the eight main habitat types present in Europe, as identified by BirdLife International in its seminal work on *Habitats for birds in Europe*¹, inland wetland is probably the one that in recent decades has seen the most rapid contraction across the whole of the continent. The destruction of this habitat started with the onset of the agricultural revolution 10.000 years ago, but the rate of destruction has greatly accelerated during the second part of the 20th century with the drainage of huge expanses of wetlands, especially in Mediterranean Europe. Other threats that require action to counteract their negative effects are the destruction of riparian habitats, development of tourism and recreation infrastructure, pollution, over-abstraction of water, only to mention a few.

Avoiding a further loss of wetland habitats requires action from a range of legislative, social, economic and ecological sectors, which in turn requires a comprehensive strategy at the international, national and local levels. The elaboration of these strategies is linked to the identification of the best work methodologies, the realisation of repeatable experiences and the demonstration that viable alternatives to the destruction of wetlands do exist. The case studies that follow illustrate the strategic role of the EU funding for the conservation of wetlands.

The sustainable use of wetland habitats can also favour economic revenue opportunities. This is one of the reasons behind the large amount of money spent on this habitat type by LIFE-Nature and its preceding financial instruments, ACE and ACNAT. Between 1984 and 1991, ACE funded

¹ Tucker, G.M. and Evans, M.I. (1997) *Habitats for birds in Europe: a conservation strategy for the wider environment*. Cambridge, U.K.: BirdLife International (BirdLife Conservation Series no. 6).



Photo © ATECMA



Photo © ATECMA

Above. *The Ebro Delta, Spain*
Below. *Organic rice fields in the Ebro delta*

59 wetland habitat oriented projects. ACNAT financed, in 1992-1996, the initial phase of the Med-Wet (Mediterranean Wetlands) initiative, which is probably the best known international wetland project it financially supported. This initiative represented the first co-ordinated action for the conservation of wetlands in the Mediterranean basin and was launched in the Grado symposium in 1991. At that time MedWet consisted of projects aimed at developing methods and tools for the sustainable use of wetlands. A Mediterranean Wetlands Committee was later established, in which the basin's states were represented, and MedWet has become an important regional collaboration and networking mechanism. In 1999 this initiative came officially under the

Ramsar convention on Wetlands. After having been financed by ACNAT in the first years of activity, LIFE financed the second phase of implementation in sites requiring urgent action in Morocco, Tunisia and Algeria and was a catalyst for the continuation and enlargement of Med-Wet, which was then supported by other mechanisms. Currently, the MedWet initiative has spent more than 23 million Euros on projects of conservation and management. Through these projects it has been possible to identify wise land use practices that have been widely disseminated and represent an invaluable resource for wetland conservation projects, including those funded by LIFE.

Similar catalytic contributions have been provided by LIFE in several cases. A significant one is that of the Friesland Buitendijks salt marshes and mud flats in the Netherlands.

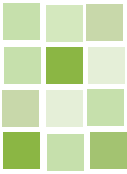


Photo © Conservatoire Rhône-Alpes des Espaces Naturels



50.000 foraging, nesting and resting birds per day, and even more during migration periods. The population density and population size of bird species listed in Annex I of the Birds Directive and of migratory species makes it of exceptional importance.

A LIFE project was therefore financed by the European Commission in 1993, which came to a successful end in 2001 when the beneficiary was able to buy a significant part of the “Bildpollen area” and to complete the salt-marsh restoration project in “Noorderleegh”.

LIFE financing of this project has prompted co-financing by the Province of Friesland and the Ministry of the Environment. Without the first *tranche* of the EU co-finance, this would never have happened. Furthermore, as a consequence of the prestige of LIFE-Nature and the EU a number of difficulties at the local level were overcome, including the adoption, in May 1997, of the site management plan, officially laying down the reflooding targets. In the absence of LIFE funding the land in question would have remained as private property, and it would be impossible to convert any farmland to salt marsh. The project has also had a further effect: a parallel campaign by WWF (1994) raised 270.000 Euros in donations in addition to the LIFE-Nature funds to implement management actions.



Photo © Jorma Luhta

For centuries the salt marshes and mud flats along the North Sea coast from Denmark to Calais were slowly enclosed by dykes, drained and converted to land. This is how the Dutch created much of their country. In front of the sea dykes, mud flats and eventually salt marshes would form, which were then enclosed and drained and the process would start again in front of the new dyke. In the mid eighties, the remaining 3.000 ha of salt marsh and mud flats were to be drained.

About 10% of Europe’s salt marshes occur in the Netherlands, with Friesland Buitendijks contributing to a large part of this, with remnants of very rare priority habitat types according to the Habitats Directive and harbouring 40-

Above. *Habitat restoration work at the Rhone River, France*
Centre. *A Crane in the taiga, Finland*
Below. *A White-backed Woodpecker. This species is linked to old forests rich in decaying trees*



Photo © Harri Miettinen

In some cases wetlands have a relevant economic value, especially as agricultural areas. Linking nature conservation and relevant socio-economic activities is a challenge that is ever more often being addressed, as it was in the case of the Ebro Delta, in Spain.

The Ebro Delta is one of the main wetlands in the Mediterranean area, designated as a Special Protection Area, Natural Park and Ramsar Site. It is about 33.000 hectares and represents a critical area on bird migration routes with over 180.000 waterfowls wintering there and around 40.000 pairs nesting, many of them species included in Annex I of the Birds Directive. Most of the area has been given over

to rice farming although large natural areas do still remain, such as coastal lagoons, marshes, springs, dunes and riverine woodland, many of which represent habitats of Community interest.

In 1996 LIFE funded a project with the objective of improving the management of the delta rice-fields, marshes and lagoons system. Best habitat management models for nature conservation were identified and promoted, comparing the effects of setting aside rice fields with traditional, agri-environmental and organic rice growing. These environment-friendly techniques, despite having slightly higher production costs and lower outputs, are economically viable, provided they receive subsidies or that products are sold at a higher price, as in the case of organic rice. Thanks to the wide awareness-raising campaign, these practices started to be considered as real alternatives and a company was set up to continue applying organic farming methods in the area after the LIFE project ended. About 80% of the farmers were applying at least one of the five measures included in the agri-environmental scheme that was approved in 1998 for this area.

In general, the promotion of organic and/or agri-environmental farming improved the feeding habitat of bird species. Seventy species were recorded in the rice-fields during the monitoring. Among them, 36 regularly used the ecological plots. Breeding of rare species was confirmed: among others, seven nests of Purple Gallinule and 19 of the Black-winged Stilt were found. Finally, the SPA was enlarged and 61 hectares were purchased (against 16 charged to the project) and included in the SPA.

Forests

Forests are one of the main habitat types in the EU. LIFE-Nature has funded 237 projects for the conservation of forests and their natural resources, with a total cost of almost 316 million Euro² with the objective of identifying and spreading sustainable and “naturalistic” management. These projects, always have a positive impact on the



The habitat of the Corncrake in Germany

protection of birds, even when not directly targeted. A number of LIFE-Nature projects have been explicitly dedicated to the conservation of threatened forest bird species.

In Sweden, the western taiga, characterized by firs and pines (*Picea abies* and *Pinus sylvestris*), is the main vegetation type in large parts of the country. Today, only 1-2% of virgin taiga is left, the large majority of it having been exploited for commercial purposes. Western taiga has been identified as a priority habitat for conservation under the Habitats Directive. In 1995 a LIFE project was started with the main aim of preserving the 10 most important areas of the western Taiga that still host populations of the White-backed Woodpecker in south-western Sweden. The protection of this bird is dependent on active management to provide old, dead or decaying deciduous wood, that are required by this species To achieve

the objective the project foresaw the purchase of about 625 ha of land, to be declared as nature reserves. Management agreements were made with private landowners to maintain or restore the conservation value of the site and financial incentives were provided within a further 475 ha to encourage foresters to use more expensive but nature-friendly commercial exploitation techniques. The latter action was particularly important to avoid further fragmentation and isolation of the remaining pristine sites.

The key elements needed by the woodpecker will now be provided at the ten sites. The majority of land will still be managed primarily for commercial forestry and timber production, but sites of high nature conservation value will be protected in the long-term as nature reserves. Agreements with landowners allow for the adjustment of the land use to the benefit of the White-backed Woodpecker. For the moment, the target species is only reported in seven of the ten sites, and it is still too early for a definitive evaluation of the project success. However all the sites have been included in the SPAs European network and the perspectives of success are good.

This LIFE project prompted, as a side effect, voluntary agreements for “environmentally managed forests”. Without any economic compensation, and without any legal status, the agree-

² European Commission. Natura 2000 and forests ‘Challenges and opportunities’ – Interpretation guide. Luxembourg: Office for Official Publications of the European Communities, 2003



ments do have some “political status”, making it more difficult for a landowner who has signed this kind of agreement to escape his “moral responsibility” afterwards. The total land area for these agreements was about 3.400 ha in the ten sites; therefore this potential additional benefit must not be overlooked.

Agricultural habitats

Agricultural land and grasslands are the most widespread habitat in Europe, covering about 50 per cent of the land surface. This broad category includes several habitat types with a relevance for bird conservation, from arable grassland, pastoral land and

steppic habitats to mountain grassland. A rich bird fauna is linked to these open environments, including more than 100 endangered species. The loss of the ecological quality of agricultural land and grassland is the main reason of the reported decline of many common species, such as the lark or the swallow and the near ex-

Mitigation of infrastructures impact

Landscape restoration can assume a less traditional shape when coping with infrastructure development and its damage to the environment. Power lines are a typical case of structures that can have a negative impact on birds due to the physical collision with the cables or through the so-called electrocution, the deadly contact with two cables and the passage of high voltage electricity through the bird body. In order to mitigate the impact of the power lines LIFE has financed several pro-

jects. One of them started in 2000 in Italy, in the Po river delta area.

The Po Delta Regional Park, covers part of one of the major European river estuaries and the most important wetland in Italy. The area is of great significance for the presence of 27 species of nesting birds on Annex I to the Birds Directive. A further 23 species listed in the Annex winter in the area or migrate through it. The park area is crossed by 340 km of high and medium voltage electricity power lines, 120 km of which are in areas particularly sensitive in terms of birds. Data collected have shown that power lines have a severe impact on bird populations, causing a high death rate through electrocution or collision. A comparative analysis of the distribution of the power lines and data on the number and territorial distribution of fatal acci-

dents has made possible to identify the most hazardous power.

The LIFE project focused on a total of approximately 91 km of electric power lines. The action, to be taken in 23 areas identified on the basis of scientific analyses, consists of burying or modifying power lines in ways (such as using Elicord protected cables) which eliminate or substantially reduce their potentially negative impact on bird populations. Disused pylons will be adapted for use as perches and nesting sites.

This is the first large-scale project to tackle the problem of power lines affecting bird species in Italy. Its importance is also underlined by the commitment of the national electricity company, Enel, as partner of the Po Delta Park in carrying out the project, that it will extend the action to Special Protection Areas throughout the national territory.

Another very interesting action to mitigate the impact of human infrastructures was carried out in El Hondo SPA, in Spain. Here an irrigation channel (Azarbe del Convenio) was a deadly trap for many Marbled Duck chicks, that fell down in the channel without being able to get out any more. In 1998, six ramps, 5 meters wide were built in the most dangerous parts of the channel and the channel walls were re-modelled reducing their steepness. These measures allowed the chicks to get out on their own. Monitoring carried out one year later showed that the corrective measures were effective and no more individuals of that very rare species were found dead.

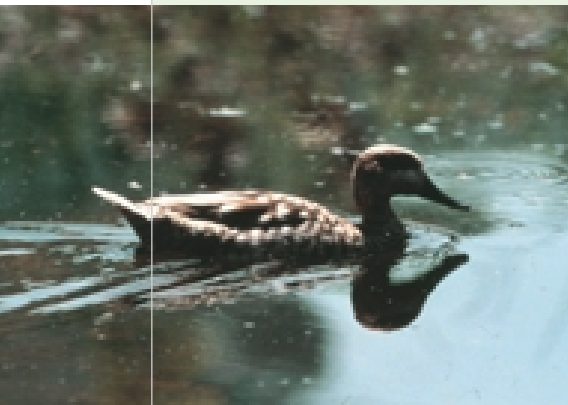


Photo © ATECMA

The steep slopes of this artificial channel in El Hondo SPA, Spain, were a deadly trap for Marbled Teal chicks. Ramps were build successfully to stop unnatural mortality of this very rare species.



Photo © ATECMA

tinction of more localised ones. Some of these rare species have been used as a flagship to promote conservation, restoration and sustainable management of open habitats.

The Corncrake was once a common and characteristic part of the countryside. Its numbers have fallen dramatically in western Europe as a result of agricultural intensification and now stand at only a few thousands. A LIFE-Nature project launched in 1993 involved all the 26 remaining core sites in France, Ireland and the UK. At these sites the recommendations of the Corncrake action plan were implemented in an effort to reverse the decline of this species. The actions included advising and persuading farmers to use more Corncrake friendly approaches, devising new management techniques for their conservation and monitoring their effects. As a result of these actions, many of the areas would become eligible for agri-environmental schemes.

The results of this international project were significant. In the core range of the United Kingdom, numbers of singing male corncrakes increased by 30%, from 449 in 1993 to 584 in 1996, and the total British population was estimated at about 615 singing males (the project target was to reach 600 by 1998). Annual monitoring suggests that range extensions have occurred, especially in Orkney, in parallel with the increase in population size.

In Ireland, the decreasing trend was stopped and the population had returned to pre-1993 levels with 186 singing males in 1996, although there have since been continuing problems in one of the core areas along the floodplains of the river Shannon. In France, actions to halt the rate of Corncrake decline have been successful in 5 of the remaining core areas for this species.

Project managers established clear solutions to the threats to corncrakes, based on agricultural land management, particularly the timing and methods of cutting silage and hay crops and establishing a scientific basis for Corncrake conservation actions in north-west Europe.

Steppe habitats projects have been numerous in Spain and Portugal, to protect and restore the typical bird communities, including the Great Bustard, the Little Bustard and the Houbara, just to name a few. Information on these projects and their results, as well as on all LIFE-Nature projects, is available on the web site of the Commission³.

An unusual steppe habitat type, which is a major contributor to the biodiversity of the EU, thanks to the accession of Hungary, is the Pannonic steppe and marshes, considered a priority for conservation under the Habitats Directive. LIFE financed in 2002 the restoration of this habitat type and its exceptional bird community within the Hortobagy National Park.

The Hortobagy National Park, in eastern Hungary, is a hotspot for bird-watchers from all over Europe. Here the Pannonic salt steppes and marshes are well represented. They are wide, open expanses formed over tens of thousands of years by the combination of a continental climate, flat topography and the regular spring flooding coming from the Tisza river. In this habitat, grazing of local breeds of cattle and sheep contribute in avoiding vegetation encroachment.

During the communist period, a vast network of dykes and irrigation channels was laid out over several thousands of hectares, in order to create endless rice fields and grassland irrigation systems. The experiment eventually failed, but its earth-works are still spoiling the landscape and disrupting the natural surface hydrology. Consequently, the steppes and marshes mosaic is now largely altered and the populations of steppe birds are much lower than they could be.

The main objective of the actions financed by LIFE is restoring a total area of 6.650 hectares within the National Park through the removal of

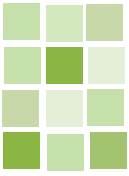


The landscape of the Pannonic steppe, the pustza, in Hungary in a painting of 1853: The Puszta (Oil on canvas, Hungarian National Gallery, Budapest)

360 km of artificial dykes and irrigation channels, recovering the original landscape. The necessary bulldozer works, which are to be done by a local company, entail moving more than 400.000 m³ of soil. The restoration work includes the removal of shrubbery from 400-500 ha of degraded steppe, the restoration of the natural soil topography on more than 1000 ha and the creation of a shallow 200 ha wetland.

The landscape restoration work is accompanied by management actions, the first of which being the re-establishment of a traditional farming and breeding system. This involves the purchase of traditional cattle breeds (such as Hungarian grey and flecked cattle, mangalica pigs, racka sheep and goats) and the building of shelters. Land is to be leased to cultivate the winter fodder so that animals can be kept on site year-round and maintain high grazing pressure, vital to obtain the optimal vegetation structure for the bird community.

³ <http://europa.eu.int/comm/environment/life/project/index.htm>

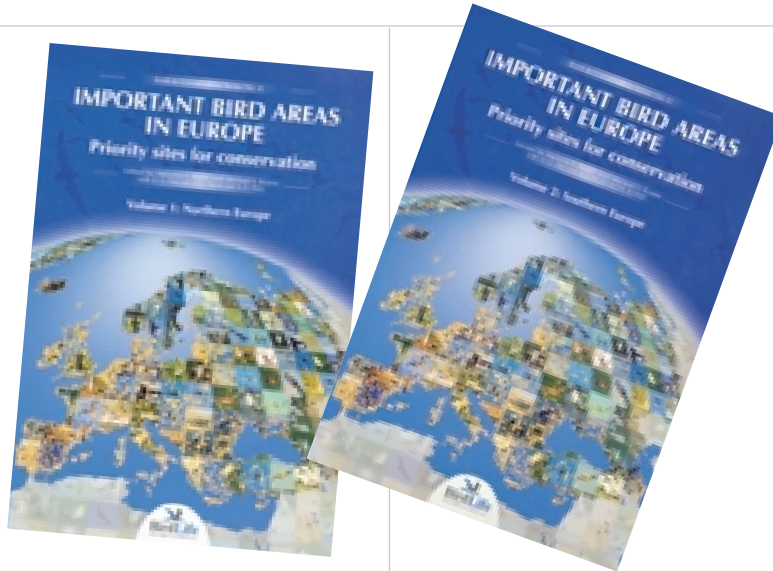


LIFE initiatives to manage the SPAs

The protection of birds in their natural habitats is one of the strategic approaches of the Birds Directive, for which the SPAs network is crucial.

Even though the main objective of SPAs establishment is the conservation of bird species, economic activities are not off-limits.

On the contrary, SPAs are areas where nature conservation and socio-economic issues can often be combined. LIFE-Nature projects have demonstrated that conserving birds and their habitats may also be the best way to improve our life quality



Important Bird Areas and Special Protection Areas

Member States are obliged to classify as Special Protection Areas (SPAs) all the sites which, applying ornithological criteria, appear to be the most suitable for the conservation of bird species listed in Annex I of the Birds Directive. This was the key conclusion of the Court of Justice in its landmark judgement, delivered on May 18, 1998¹

Different scientific references have been established which identify bird sites of high conservation value for Annex I and migratory bird species.

¹ Case C-3/96, Commission versus Netherlands, supported by Germany.

The Birds Directive provided the impetus for the preparation of the first list of Important Bird Areas (IBAs) in the European Union in 1981, which was financially supported by the European Commission. The identification of the IBAs is based on clear ornithological criteria, which are also necessary for the selection and delimitation of SPAs. The most comprehensive lists of IBAs have been prepared by BirdLife International (and its forerunner ICBP, International Council for Bird Preservation) in 1989 and 2000².

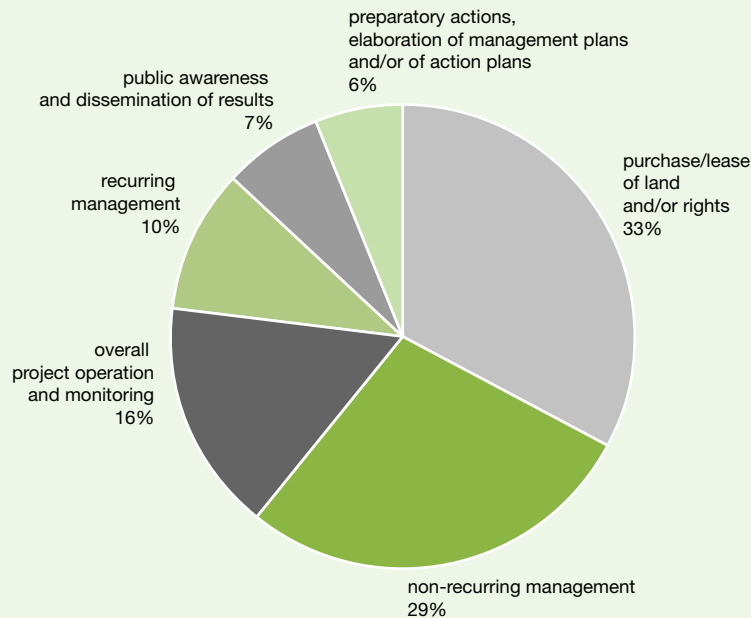
² The latest edition of the IBAs inventory is a two volume work: Heath, M.F. and Evans, M.I., eds. (2000) *Important Bird Areas in Europe: Priority sites for conservation*. 2 vols. Cambridge, UK: BirdLife International (BirdLife Conservation Series No. 8).

Above. The IBAs inventory made by BirdLife International is now a monumental two volumes set
Below. Purchased and signposted lands at Villafafila SPA, Spain

Photo © Ignacio Torres ATECMA



LIFE Nature projects carried out in SPAs
Share of budget dedicated to each project section



These publications have been used by the Commission in evaluating the completeness of the SPA designation by Member States in the absence of similar national inventories. The EU Court of Justice, while accepting that they are not legally binding references, has recognized the high value of the IBAs.

The progress in the designation of SPAs by Member States is closely followed by the Commission that provides regular updates. The “barometer” of Natura 2000 sites is published in the Natura 2000 newsletter and in the Commission website. By these assessments it appears that, 25 years after the adoption of the Birds Directive, most Member States have still to complete their SPA networks.

Initially, LIFE I projects required that sites be designated SPAs before the end of the projects, however, since LIFE II, designation has been a prior requirement of LIFE funding. The legal commitment of Member States to ensure long term protection to the sites is carefully evaluated by the Commission in the selection phase of the projects.

How was money spent in SPAs management?

Even though the range of actions that has been financed within SPAs is very diverse, a general assessment of how LIFE money has been spent is possible by considering the share of the budget dedicated to each section of the project. The graph gives an overview of the results.

Land purchase has taken up one third of the whole budget. Even though the acquisition of land cannot evidently be considered the solution to the problems of the whole SPAs network in the EU, it has been widely practiced as it guarantees the direct control on the sites of intervention and ensures their long term conservation management. It has to be underlined that LIFE beneficiaries are requested by the Commission to guarantee that the purchased plots of land will be destined to long term nature conservation and uses not compatible to this objective will not be allowed. As a general rule, land purchase appears to be a cost effective solution when compared to lease or long term agreements.

The direct field conservation management has taken up another 38 percent of the budget, with non-recurring management (actions to be carried out once) requiring almost three times the budget of the recurring one (actions to be repeated on a regular base). This is because LIFE money has been spent to create conditions that ensure a less demanding day-by-day management. As noted previously, LIFE is intended to finance pilot projects to be followed up by a long term management strategy supported by other financial tools.

A good share of the budget, 7 percent, has been dedicated to public awareness and dissemination of results, activities that are crucial for the involvement and participation of the local population and stakeholders. Finally, the management of the project itself, has taken up 22 percent of the whole budget, spent on administrative duties, project implementation planning and payment of manual and expert personnel, the latter representing the largest expense. Carrying out conservation projects require structures and personnel in a measure that is not easily appreciated by the general public and is an important source of nature conservation employment and development of professional skills.

Monitoring is included in the overall project operation section. Monitoring is defined as the collection of data on bird populations and habitats made in a standardized, scientifically rigorous and repeatable manner at regular periods of time. This is of course an essential part of any project because it permits the verification of the effects actions had on bird populations and habitats. The future collection of comparable data, with the same methodologies, will enable to verify trends over time.

Planning management of SPAs

Sites designated for bird conservation are often subject to multiple uses, which are to be complemented and managed within the framework of a comprehensive strategy. Management plans are the most frequently used tools to address this objective. The



collection of scientific information on habitats and species to be protected is obviously the basis to identify the best nature management practices. However, proper consideration of the human activities affecting the site is pivotal to elaborate a long term, effective, conservation strategy.

Management planning is a measure that has been included very often in LIFE-Nature projects: more than one third of them included the elaboration of similar planning documents. In order to facilitate the work of preparation of the management plans several guidelines have been elaborated at the European level, which now represent a general reference. Two of these guiding documents are the Eurosite toolkit³ and the recommendations emerged from the workshop held in Galway, Ireland, in 1996 on the management of the Natura 2000 sites⁴.

³ http://www.eurositnature.org/article.php?id_article=77

⁴ http://europa.eu.int/comm/environment/news/natura/nat3_en.htm

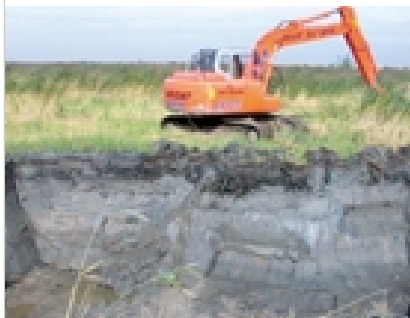


Photo © RSPB

Above. *The Ebro delta, Spain*
Below. *Creating a pool in Tichwell saline lagoons, UK*

Designated SPAs are often important areas for bird conservation, which host several traditional, or non-traditional human activities: e.g. agriculture, hunting, fishing, wood collection, water abstraction, etc. Even though the current importance of bird sites is often linked to traditional land use, the management options needed to ensure the long term presence of viable populations of the species may cause some conflict with the local interest groups if not carried out in a sensitive and transparent way.

Both the Habitats and Birds Directives do not impose any specific constraint

on the activities that can be put into place in the SPAs. The only requirement is that the species have to be maintained in a favourable conservation status. How to reach this objective is a matter of good knowledge of the local ecological conditions and needs of the local population, combined with ability of the managers to actively involve the stakeholders in the present and future management of the sites. Diplomacy, inventiveness and a solid scientific base are the main ingredients for an efficient management of the Natura 2000 sites, including the SPAs.

Sustainable use and involvement of locals: the case of the Comana wetland, Romania

LIFE-Nature provides several cases of the successful identification of management options that put together nature conservation and continued or revived land use by the local stakeholders.

The Comana Wetland System is located in the south part of Bucharest and includes the largest natural lake (about 800 ha) on the Romanian plane. This wetland area is a designated Ramsar site, and is partly protected under national law. This area was a delta ecosystem of 1.900 ha that suffered dramatic changes due to artificial draining measures taken in past years. A disastrous effect was the decrease of the underground water level by 8–10 m.

A LIFE project was launched in 2002 to restore the water table and manage activities carried out by the local communities, land farming, livestock breeding, reed cutting, fishing and hunting, guaranteeing their sustainability and economic value while ensuring the conservation of wild birds populations.

A few examples help in understanding how local activities have to be considered in detail to achieve the desired results. On the northeast side of Comana Lake there is a 50 ha fish farm that, thanks to the presence of constant water with fish and vegetation, attracts most of the birds from the surroundings, with an impact on

the economic revenue of the farm. Improving the habitat conditions for fish and birds populations in the lake will decrease the birds' pressure on the fish farm area.

The Comana wetland is an important tourist destination, being only 60 km far from Bucharest. The tourists' access in the area is not restricted and their impact on birds is a major one. Thus, besides habitat restoration, the LIFE project is focusing on tourism and regulation of intensive hunting, in order to guarantee sustainable conservation of the area.

Cattle grazing is a further activity in the area, mainly on the drained parts of the lake, which become meadows with low economic value. The activity is disturbing the birds, especially in the nesting period. By restoring the area, the impact of this activity will be reduced.

Finally, forest is the only source that provides wood for heating in the houses. Wood collection affects the 600 ha of forest around the Comana Lake, with a direct impact on birds' habitat. The project tries to implement suitable management of the forest, making its exploitation compatible with the conservation of its natural values.

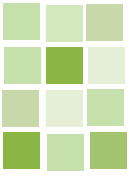
The Comana Lake LIFE project is an example of how nature conservation and restoration can combine with the establishment of long-term sustainable use of the nature resources in a largely traditional land use economy.

Right. *During courtship the Ruff males shows a striking neck plumage, with several combinations of black, white, cream and brown.*
 From: Naumann, *Naturgeschichte der Vögel mitteleuropas: Band VIII, Table 23 - Gera, 1902*
 Below. *Cranes in a Finland wetland*



Photo © Jorma Luita





Farming and bird conservation: the case of the Termoncarragh Lake, Ireland

In several cases LIFE-Nature has been successful in linking nature conservation and farming needs, identifying best management practices and establishing the base for a long term sustainable management.

Located in the Mullet peninsula in western Ireland, Termoncarragh Lake is situated in extensive machair grassland ("machair" is a Gaelic word that describes an extensive low-lying fertile plain). The coastal freshwater lake and surrounding areas are of importance for breeding waders and for wintering wildfowl, including the Bernacle Goose and the Greenland White-fronted Goose. The Corncrake also uses the area occasionally, and there is a high potential for the restoration of suitable habitat for this priority species. The nearby Annagh Marsh is a small coastal machair and wet grassland site, just south of Termoncarragh Lake and within the SPA. It is an important breeding site for several water species and, until recently, it was the only regular Irish breeding site for the Red-necked Phalarope.

The prevalent economy in this area is low intensity agriculture within small properties. It is essentially based on subsidies with low returns on the sale of farming products. An estimated 75% of farmers are in the national scheme for EU agri-environment subsidies, called REPS. Paradoxically this scheme seems to be hindering rather than encouraging the conservation of the local birdlife. This may be due to a number of factors: a lack of awareness of species needs, negative attitudes from farmers to site designation, inadequate linkages between farming and conservation and a lack of indication of good practices to be spread and repeated.

To address these challenges LIFE has funded the purchase and development of a demonstration plot of land

outside the SPA. At this site best management practices for Corncrake are being implemented. Moreover, management agreements have been signed on 100 ha within the SPA to spread more environment-friendly farming practices and to demonstrate potential measures with a view to their inclusion in future REPs schemes. The project is rapidly getting a national reputation for its work and the experience gathered through the project is being considered in the mid term review of REPs. The project site has been visited by over 200 farmers as part of an awareness raising exercise on conservation friendly farming practices.

Managing multiple uses of bird sites: the case of Finland's estuaries and lakes

In southwestern Finland, the process of bringing together the interests of several social groups, together with nature conservation and habitat restoration has been realized in the area occupied by two river estuaries, Mietoistenlahti and Oukkulanlahti, and three shallow lakes of Koskeljärvi, Otajärvi and Omenajärvi. As grazing declined significantly over the past 20 years, the meadows that once surrounded these waters are now overgrown. This has led to a decline in populations of bird species such as the Ruff. The gradual overgrowing of the shallow lakes has also posed problems.

Anglers, boaters, hikers and bird-watchers frequent these areas but there have been no restrictions on their use and no infrastructure to guide visitors' movements. LIFE gave the opportunity for reconciling the needs of nature conservation, fishing, hunting and tourism. Since the project areas are used for a variety of purposes, it was considered vital that all parties concerned were committed to participating in project planning and management. The main objectives of the project include the elaboration of new management plans for each tar-

get area and the revision of existing plans, in an effort to resolve conflicting pressures. In particular, ensuring that growing ecotourism in the area will develop in a sustainable way was a special aim.

This project has provided some interesting hints on the process of the elaboration of a management plan. It has become clear, for example, that even though the project managers are doing their best to speed up the work, they generally cannot accelerate the participatory planning process: stakeholders' need time to understand, trust and be involved. When this timing is respected, positive results will come.

According to the projects' managers, the project's sites have been used as models in preparing management plan guidelines for Natura 2000 sites in Finland. Additionally many other similar projects have been asking their advice on the management planning of wetlands.

Conclusions

LIFE-Nature has proved to be a key tool for demonstration and pilot projects for SPA management. Requiring SPA designation as a condition for project financing has promoted the expansion of the network. LIFE has also provided many examples of reconciliation of potential conflicts among different interest groups and has demonstrated that birds and nature conservation are compatible with socio-economic development and the long term sustainable use of natural resources. LIFE-Nature projects have also contributed in the identification of best management practices, which can now be adopted at sites throughout Europe.

Finally, projects aimed at birds have increased EU citizens' awareness of the importance of Natura 2000 and, in particular of the SPAs role in bird conservation.

Communicating and networking

The success of a LIFE-Nature project depends in a crucial way on the involvement of the local population. Letting people know why a nature conservation project is carried out, with which objectives, by whom and, most of all, what consequences it will have on them, are pivotal issues to consider when a project is launched.

Therefore, LIFE-Nature strongly supports communication and public awareness raising.

Exchanging the experience gathered in one project with other similar projects (not necessarily funded by LIFE) is also an essential part of the programme

Communicating with the public and stakeholders

Environment ministers from all Member States, included the then 13 EU candidate countries, signed the El Teide Declaration in 2002, committing themselves to tackle the problem of biodiversity loss in their respective countries. The El Teide Declaration, a joint initiative of the European Commission and the Spanish Presidency, recognizes that the success of Natura 2000 will require the support and participation of the European citizens in the conservation and management of Natura 2000 sites. The Declaration recognizes also that many of the valuable EU habitats are the result of traditional land use and their conservation is dependent on traditional practices and skills. To obtain citizen's support and involvement, Member States have committed themselves, among other things, to promote awareness and understanding on Natura 2000, to promote the development of partnerships involving a broad range of stakeholders in the conservation and management of Natura 2000 sites and to support the sharing of experience and of good practices in managing the network.

These issues are constantly addressed by LIFE-Nature projects, which include a specific provision for actions dedicated to public awareness and dissemination of results. About 7 percent of the budget of LIFE-Nature has been spent in this field. The most common measures of awareness raising are placing information signs at the sites of intervention and distributing leaflets,



Photo © Ignacio Torres ATECMA

Above. Exhibition at Villafafila visitor centre on Lesser Kestrel and Great Bustard, Spain
Below. Information panel on an experimental plot to assess the evolution of non grazed Lesser Kestrel habitat in the Crau Plain, France.



Photo © LPO-FIR



brochures, booklets and videos on the project objectives and realization. Almost all the LIFE-Nature projects have prepared similar materials. It is also common to conduct more complex campaigns, with meetings of the local population, school lessons, preparation of books and regular reports, films, videos, organizing international seminars and meetings.

These actions are aimed at informing the general public on the conservation problems being targeted in the affected sites, raising awareness of the stakeholders and favouring their participation in nature conservation actions. Moreover, through these activities, the public is made aware of the efforts and the commitment of the European Union in nature conservation and sustainable development.

Awareness raising is a critical part of most LIFE projects. Here a presentation is made to a school class along an educational path in the Canary Islands, Spain

Networking experience

Available LIFE funds are limited, if compared with other EU financial tools. Therefore the maximum effort has been made to optimize the use of the funds, avoiding useless duplication, and helping people facing similar problems to find the best operative solutions without wasting time, human resources and money.

Sharing experiences among managers of LIFE projects and allowing people to know what has already been done in their field of work are crucial tasks that are actively promoted by the EU Commission. With the ever spreading use of the Internet, for example, one of the mandatory tasks of LIFE beneficiaries is to set up a Web site to distribute easily accessible information on the project sites, the main project objectives, techniques adopted, results, awareness materials, and available expertise.

Apart from this kind of "passive" sharing of experiences, many LIFE projects have carried out an "active"

exchange, establishing a networking system among similar projects or among experts in the same field. To this aim a special, limited sub-fund of LIFE, called LIFE Co-op, supports actions to establish an operative link among similar projects.

Among the "Co-op" financed projects there is one aiming at producing a handbook for actions to promote Bittern conservation in Europe, another planning to evaluate Bustard conservation best practices in Western Europe, one dedicated to the problem of the conflict between the grouse and tourism in Natura 2000 areas and another aiming at identifying and propose best management practices in Finnish wetlands. All these projects take into consideration the experience gained in several LIFE projects across Europe, identifying good results, best practices, solutions to common problems and producing documents that become a reference in the specific field addressed.

LIFE-Nature projects often include a networking action, generally aimed at improving the actions' performance through exchange with other projects of documents and reports, the organization of workshops, meetings and conferences or through an exchange visits between project sites and countries. Most of the results of this activity are then physically distributed to those who need it or through the Internet.

The following case studies illustrate how this work of dissemination has been carried out.

The Capercaillie is the largest species of grouse in the world, with its main distribution range in the woodlands of northern Europe and Russia. It is an old-growth forest dweller, whose conservation is closely linked to proper forestry management and low disturbance of the courtship arenas, (called leks). Illegal hunting can be a further problem. An EU-funded Caledonian Partnership European LIFE project, started in 2002, has helped Capercaillie conservation through predator control and habitat management and monitoring. Identification and spread



Photo © Nicolás Trujillo



Left. *The Bearded Vulture is the subject of a large scale reintroduction project in the Alps made thanks to an efficient networking effort*
Below. *The Capercaillie conservation has been the subject of an international initiative funded by LIFE, in Northern Europe*

Photo © J.F. Seguin, PNR Corse

of best practices has been supported by intense networking between experts and project managers in Sweden and Latvia. The networking has included visits to Sweden and Norway in order to obtain direct knowledge of the experience being gained in similar situations.

International cooperation is the form of networking that has been strongly supported by LIFE, and applied in several cases. Management of ecosystems at the transboundary level is a case in which efficient networking can lead to fruitful results, as in the case of the Austrian floodplains.

The floodplains along the March and Thaya rivers, which form the boundary between the Slovakia and the Czech Republic, are among the most remarkable wetlands in Austria. Here, a LIFE project has been carried out to implement a river regeneration plan. Considering the relevance of the transboundary dimension of such a project, a first trilateral conference was held in Vienna in 1999, with representatives from the transboundary river commis-

Photo © Jorma Luhtia





sion (GGK), river management administrations, nature conservation administrations and NGOs. In 2000, an international conference on the subject "Nature conservation in a boundary area – chances for dynamising the Danube-March-Thaya area" was organized by the beneficiary at Deutsch-Wagram. The conference was attended by participants from Austria, the Slovak and Czech Republics as well as from Hungary, and conference proceedings were published.

Trilateral communication with the beneficiary's partner NGOs from the Czech and Slovak Republic has continued since May 2000. The trilateral March-Thaya-Platform of the beneficiary and its Czech and Slovak homologues were adopted by the Ministries of Environment of the three concerned countries. On the third platform in 2001, the Ministries signed a Memorandum of Understanding about collaborating on the protection of the March-Thaya floodplains. In 2003, the 5th platform was held, aimed at the elaboration and implementation of a trilateral management plan for March-Thaya-Auen. International networking could not have been more successful and were appreciated internationally: a grant of the Wetland Conservation Award 2002 was accorded during the Ramsar meeting in Valencia.

International cooperation is very useful when similar projects are being carried out on rare and now localized species as in the case of the Lammergeier.

A LIFE project aimed at implementing a recovery plan for the Lammergeier in northeastern Spain has promoted a major exchange of the experiences of people working in almost all the distribution areas of the species in Europe. Periodical meetings with other LIFE project beneficiaries have been held in Crete, Nice, Corsica, Greece and Aragón and the resulting documents have been made available. They represent an important step forward in the sharing of knowledge of the species conservation status and in the experience gained in the conservation programmes all over Europe.

A similar approach has been adopted for the Bittern, a reedbeds mimic heron that has often been the subject of LIFE projects across the EU. In the UK, one of these projects was aimed at developing a strategic network of SPA reedbeds for this species. A good level of coordination between the central operations and the sites addressed was guaranteed. A high quality web site was created in 2003, providing links to other similar projects in Europe. Several meetings have been held to allow site managers to share their experience and encourage better networking within the UK. Finally, the project manager has established contacts with organizations and projects with similar remits, including the National Trust, the Norfolk Naturalists Trust, the Lincolnshire Wildlife Trust, the French Ligue pour la Protection des Oiseaux, the Brandenburg State Agency for Large Conservation Areas, the Hampshire County Council and

the Finnish Department for Conservation. These networking links were efficiently developed and the contacts led to the submission of a LIFE Co-op application in 2003.

Conclusions

In its history, LIFE-Nature has undergone an important evolutionary process, with a progressive recognition of the critical importance of communication, participation of the local interest groups and sharing of the accumulated experience between project managers. This process has been influenced by the growing use of the Internet, which allows immediate exchange of information and experience. Moreover, the creation of web sites, which is now mandatory for each project, provides a great deal of useful data for citizens, interested people and new project managers.

This availability of this information allows to build on previous experience, especially on selected issues, and increase efficiency in project management. Often this has led to a formal link between projects, as it has been the case of the action for the conservation of the Lammergeier.

Recognizing this potential, the Commission has increasingly focused its effort in promoting networking. The Co-op measure has been created with this aim.

Birds after LIFE

Obviously, a single project lasting four or five years is only a first step in the long-term management of sites or to protect endangered birds.

The Commission's strategy is to insure that there is a commitment to continue when needed.

The results achieved with LIFE have to be maintained in the future.

Other financial instruments can be tapped to ensure the long-term conservation after the LIFE project end. These can be own funds from the site's management body or supplementary resources from national institutions or from the EU

There is an increasing focus in LIFE-Nature project selection and monitoring on the issue of the long term commitment and sustainability of the conservation actions taken. However, as yet there is not sufficient data for a systematic overview available.

DG Environment has commissioned a study to verify what happened in nine different cases after the end of projects¹. In all cases, LIFE was shown to have been the starting point for further actions aimed at reinforcing the achieved results. Continuation of project actions is favoured where there had been a good project design, capacity building and a good relationship with the local community. However the critical issue is, of course, the availability of financial resources that can be sought from different sources. Three of the above projects, for example, were able to continue their action with funds linked to agri-environmental schemes.

Funding the conservation of birds and their habitats after LIFE

Funds made available by Council Regulation 2078/92, established in 1992, have been used to pay farmers for farming practices that protect and manage habitats and species linked to agricultural habitats. This Agri-envi-



The Great Bustard population of Villafañila SPA, in Spain, and of Castro Verde SPA, in Portugal, have significantly benefited from LIFE project and the subsequent agri-environmental schemes. In Portugal the population raised from 400 birds before 1998 to 1.022 in 2004

From: Naumann, Naturgeschichte der Vögel Mitteleuropas: Band VII, Table 5 - Gera, 1899

¹European Commission. Life after LIFE. Luxembourg: Office for Official Publications of the European Communities. 2002



Environment Regulation is part of the EU Common Agricultural Policy, a sectorial policy that has a very important effect on the land use in the EU with potential for both damage to biodiversity (favouring agricultural intensification) and benefits through environmental protection.

EU Structural Funds are another main option. They are the main instruments of the European Union to achieve social and economic cohesion and serve six main objectives related to industrial and economic development. Of these, Objective 1 covers the regions where development is lagging, Objective 5a is specifically related to the adjustment of agricultural structures and Objective 5b widely addresses rural development issues. Even though the use of these EU funds has been criticized due to their frequent negative impact on biodiversity, if properly used, the Structural Funds can provide long-term financing for conservation and socio-economic activities, as is illustrated by the following case studies.

The use of agri-environmental schemes for long-term conservation

The Varde river valley is the only remaining large river in Denmark to have escaped from regulation through dikes and locks. The estuary and the surrounding meadows however have been subject to agricultural intensification and become a major centre for the production of grass feeding pellets, through the draining of wet areas and a heavy use of fertilizers. With the crash in grass pellet prices, the Varde farmers Union began exploring ways to change agricultural practices. They found that the areas would be ideally suited for agri-environmental schemes, which would give them at least a 20-year span of activity. However, for these schemes to be eligible, the fields would have to be restored to their former wetter state. The Ministry of Environment recognised this to be an ideal opportunity to improve the conservation status of the areas as well. Therefore, in partnership with the Ministry of Agriculture and the local farmers union, a LIFE project was

launched to restore the SPA. The objective was to determine the best hydrological asset for each of the 13 compartments in the project area and to construct an extensive system of sluices and dams to allow for the rewetting of the areas. Once this was done and the farmers agreed to several restrictions, such as a ban on fertiliser use, then they were able to access the local agri-environment schemes.

The final result was that around 260 landowners joined the agri-environmental agreements by the end of project: 2.488 ha, or 92 % of the initial target of 2.700 ha, was restored to a level where it could enter long-term agri-environmental agreements, securing its conservation over the next 20 years. Each agri-environment plan follows the prescriptions appropriate for the conservation of the area. Moreover, even the landowners outside the project site were interested in joining the agri-environmental agreements.

This project represents an excellent “case study” showing the potential of LIFE money to favour long-term management agreements within agri-environmental schemes. The LIFE funding allowed the crucial restoration actions necessary to recover habitat quality, while the long-term management was ensured by the EU Agri-environment funds.

Long-term management of steppe habitat through EU funding

Another LIFE-Nature project carried out in Spain can be considered a pilot experiment that encouraged the promotion of traditional practices to be supported by agri-environmental programmes, and implemented a formula that may be the best solution for many cases of SPA management.

The Great Bustard, a priority species for conservation in the EU, is one of the most representative species of European steppes zones. In the Castilla y León Region in Spain, and especially in the Reserva Nacional de las Lagunas de Villafáfila, the Great Bustard finds its best habitat in the cereal pseudosteppe, where extensive cereal fields are the predominant

landscape feature. The area has been declared an SPA and contains a sub-population with the highest density of Great Bustards in the world, estimated at 2,000 individuals, approximately 8% of the world population.

The main threats to this species are habitat loss due to the irrigation schemes and the disappearance of the traditional crops, mainly the dry-farmed alfalfa (*Medicago sativa*) on which the bustards rely, especially in the breeding season.

A LIFE project was funded in 1996 for the conservation of the Great Bustard and it was assessed that a minimum of 8.4 percent of the SPA area needed to be sown with alfalfa to avoid conservation problems. .

The LIFE-Nature project was linked to the agri-environmental programme with excellent results for the Great Bustard population. The regional government, beneficiary of the LIFE funding, managed the acquired plots by following the agri-environmental scheme, particularly by promoting alfalfa cultivation. At the end of the project the area sown with alfalfa covered 2,622 ha (8.5% of the SPA), with an increase of 80% in comparison to the initial area, and reaching the needed percentage to guarantee the Great Bustard presence. Moreover, during the four years of project implementation, the beneficiary invested 168,000 Euro, outside the LIFE co-financing, in actions related to the species and the project. Likewise, Great Bustard population trends in the SPA are showing a slight increase. Implementation of the LIFE-Nature project was, therefore, exemplary for the conservation of the steppe area.

A second phase was also financed by LIFE-Nature as well as a further project for the conservation of the Lesser Kestrel in the same SPA. Other European funds (Structural Funds, INTERREG, LEADER, etc.) were also invested in this area simultaneously. This is a further case in which LIFE-Nature has complemented EU and local funds to achieve several objectives: the conservation of a rare habitat of the EU with its important bird com-

munity and the sustainable support of the local farming activity.

Conclusions

Carrying out a project with clear objectives, efficient resource management and good relationship with local communities, is the best way to guarantee maintenance and improvement of the conditions of the targeted habitats and species after the end of a LIFE project.

LIFE-Nature projects often have a pump priming effect, catalyzing the use of additional human and financial resources. Many project managers have demonstrated that tapping other financial resources, either local, national or from the EU, is feasible and can guarantee, if some basic conditions are satisfied, long term conservation of habitats and species together with development of sustainable human activities. The issue of the long-term commitment to continue conservation actions initiated under LIFE-Nature projects is a subject that merits further consideration.

Photo © Jorma Luhtia

General conclusions



LIFE-Nature has made a strategic contribution to the conservation of endangered birds in the European Union.

This has been achieved because there has been a clear strategy that focused on actions directed at the conservation of the most threatened birds and their habitats. LIFE-Nature has also made a significant contribution to the establishment and management of the SPAs network, as well as in iden-

tifying participatory mechanisms to engage local interest groups and stakeholders.

The achievements of LIFE projects can be summarized using some “indicators” of success, listed below.

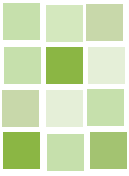
LIFE-Nature indicators of success in bird conservation

Bird species conservation Almost all the 194 bird species and sub-

Above. *Golden Eagle*, Finland
Below. *Goosander*, Finland

Photo © Jorma Luhtia





Ptarmigan in Finnish landscape

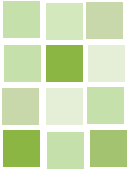
species included in Annex I of the Directive, have been addressed, directly or indirectly, by at least one LIFE project. For some bird species, as in the case of the Lammergeier or the Spanish Imperial Eagle, almost the entire European population has been targeted. All the species, with a few exceptions that are considered as priority for LIFE funding, have been the subject of at least one project. The few, non directly addressed priority species are the Corso-Sardinian Goshawk, the Canarian-Madeiran Sparrowhawk, the Gyrfalcon and the Scottish Crossbill. However, some of these species have indirectly benefitted from LIFE-Nature projects aimed at the conservation of habitats, as in the cases of the Mediterranean forests, the habitat of the Corso-Sardinian Goshawk and of the Caledonian Pine Forest, home of the Scottish Crossbill. LIFE has been highly effective in implementing the EU's strategy for the conservation of endangered species. According to a recent evaluation by BirdLife International, some of the priority bird species have shown clear signs of recovery, which is also a result of the preparation of the species action plans and their implementation.

Habitats for birds A significant part of the habitats most rapidly being lost in the EU, such as wetlands or steppe have been targeted by numerous LIFE projects, with a continent wide impact. Mountains, forests and agricultural land are among the "under represented" habitats in LIFE proposals. Even though some experience has been gained, a stronger effort for their protection is needed. Agricultural intensification is the main factor responsible for the general loss of bird diversity and shrinking populations density of many formerly common bird species across the whole of the continent.

Photo © Jorma Luhta

SPAs designation The designation of the SPAs is a mandatory task of the Member States and is to be carried out by the relevant national authorities. LIFE-Nature, given its limited

<p>resources is not aimed at the establishment of the SPAs network. However LIFE projects have often promoted the enlargement or even the new designation of SPAs all over Europe. A typical case is when a project aimed at bird conservation is submitted for an area that is still not designated as SPA as required by the LIFE regulation. In many cases, SPAs have been created to comply with this rule and obtain funding of the project. In other cases, on the basis of the results of scientific research or results of LIFE project, the European Commission has asked to enlarge the SPA. Where the site boundary did not follow its natural ecological boundaries the beneficiary was asked to promote its modification.</p> <p>SPAs management A major step in ensuring the conservation of a SPA is the elaboration of a management plan. Out of 300 projects dedicated to birds, about one third have included the preparation of management plans, in order to promote the collection of complete and updated information on the sites and identify the most coherent actions to be implemented, according to the identified threats. A large number of the management plans elaborated have been adopted by the competent authorities with a recognized regulatory value.</p> <p>Species action plans LIFE has also directly contributed to the conservation of endangered bird species supporting the preparation and implementation of action plans. Species action plans are tools aimed at identify and establishing priority conservation actions. They have been elaborated for all the priority bird species and many of these plans have bene-</p>	<p>fited from the experience and the achievements of LIFE projects.</p> <p>Identification of best management practices Identifying best management practices for habitats and species has been one of the major contributions of LIFE-Nature. This funding opportunity has led to the acquisition of relevant field experiences. Unsuccessful experiences have had also a positive value to avoid mistakes in the future. A number of different conservation approaches has been experimented. These include “traditional” conservation measures based on the scientific knowledge of birds biology and ecology, as well as innovative management techniques (i.a. use of traditional breeds of domestic animals to manage pastures, mitigation of impact of electrocution cases on power lines, reintroduction methods, etc.) and establishment of participatory processes to reconcile nature conservation and socio-economic development. As a result a great deal of knowledge is now available on many crucial and frequently encountered issues such as how to restore the water balance of wetlands, how to manage reedbeds and obtain economic revenue, how to involve stakeholders and face socio-economic issues in rural areas or how to improve the breeding performances of grassland birds.</p> <p>Land acquisition The strategy of land acquisition, either purchase or long term lease, has enabled the highest level of protection for some key bird habitats. Thousands of hectar have been acquired in the framework of LIFE projects. Land acquisition is generally followed by dedicated management by conservation NGOs or authorities.</p>	<p>Participatory approach LIFE has been a strategic mechanism to reconcile different land uses with conservation of SPAs. LIFE, for example, has encouraged the involvement of hunting associations, through agreements and/or the establishment of local groups which commit themselves to habitat management of both protected and hunted species. Thanks to LIFE, hunters have often become active parties in management bodies of the Special Protection Areas. These results are important for at least two reasons: the improved awareness among hunters of the conservation problems affecting bird species, and the promotion of pilot experiences in which hunters are relevant actors.</p> <p>Catalyze use of other EU funds LIFE projects have generally been aimed at establishing the prior conditions needed to allow long term conservation management. Often, actions to favour the participation of the stakeholders in agri-environmental schemes or other Community funded programmes were included in the projects. This has led to a greater knowledge of the various alternative funding sources that are available for the long term management of the sites.</p> <p>Awareness raising and dissemination of results A great deal of work has been devoted to awareness raising. Hundreds of LIFE projects have provided information about Natura 2000. The spread of the Internet has represented a major step forward in sharing of experience and facilitating contacts with project managers, experts and local communities across Europe.</p>



Appendix

List of cited bird species scientific names

Aquatic Warbler	<i>Acrocephalus paludicola</i>
Audouin's Gull	<i>Larus audouinii</i>
Azores Bullfinch	<i>Pyrrhula murina</i>
Azores Wood Pigeon	<i>Columba palumbus azorica</i>
Balearic Shearwater	<i>Puffinus mauretanicus</i>
Bernacle Goose	<i>Branta leucopsis</i>
Bittern	<i>Botaurus stellaris</i>
Black Stork	<i>Ciconia nigra</i>
Black-winged Stilt	<i>Himantopus himantopus</i>
Blue Chaffinch	<i>Fringilla teydea</i>
Bonelli's Eagle	<i>Hieraaetus fasciatus</i>
Canarian-Madeiran Sparrowhawk	<i>Accipiter nisus granti</i>
Capercaillie	<i>Tetrao urogallus</i>
Cinereous Vulture	<i>Aegypius monachus</i>
Common Crane	<i>Grus grus</i>
Corncracke	<i>Crex crex</i>
Cory's Shearwater	<i>Calonectris diomedea</i>
Crane	<i>Grus grus</i>
Dalmatian Pelican	<i>Pelecanus crispus</i>
Dark-tailed Laurel Pigeon	<i>Columba bollii</i>
Egyptian Vulture	<i>Neophron percnopterus</i>
Fea's Petrel	<i>Pterodroma feae</i>
Ferruginous Duck	<i>Aythya nyroca</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Great Bustard	<i>Otis tarda</i>
Great Grey Owl	<i>Strix nebulosa</i>
Great Spotted Woodpecker (Gran Canaria subspecies)	<i>Dendrocopos major tanneri</i>
Great Spotted Woodpecker (Tenerife subspecies)	<i>Dendrocopos major canariensis</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Greenland White-fronted Goose	<i>Anser albifrons flavirostris</i>
Grey headed Woodpecker	<i>Picus canus</i>
Griffon Vulture	<i>Gyps fulvus</i>
Gyr Falcon	<i>Falco rusticolus</i>
Hubara Bustard	<i>Chlamydotis undulata</i>
Lammergeier	<i>Gypaetus barbatus</i>
Lark	<i>Alauda arvensis</i>
Lesser Kestrel	<i>Falco naumanni</i>
Lesser Spotted Eagle	<i>Aquila pomarina</i>
Lesser White-fronted Goose	<i>Anser erythropus</i>
Little Bustard	<i>Tetrax tetrax</i>
Long-toed Pigeon	<i>Columba trocaz</i>
Marbled Teal	<i>Marmaronetta angustirostris</i>
Nightingale	<i>Luscinia megarhynchos</i>
Ortolan Bunting	<i>Emberiza hortulana</i>
Pallid Harrier	<i>Circus macrourus</i>
Partridge	<i>Perdix perdix</i>
Pin-tailed Sandgrouse	<i>Pterocles alchata</i>
Purple Gallinule	<i>Porphyrio porphyrio</i>
Ptarmigan	<i>Lagopus mutus</i>
Red-backed Shrike	<i>Lanius collurio</i>
Red-breasted Goose	<i>Branta ruficollis</i>

Red-necked Phalarope	<i>Phalaropus lobatus</i>
Roseate Tern	<i>Sterna dougallii</i>
Ruff	<i>Philomachus pugnax</i>
Sardinian Goshawk	<i>Accipiter gentilis arrigonii</i>
Scottish Crossbill	<i>Loxia scotica</i>
Semi-collared Flycatcher	<i>Ficedula semitorquata</i>
Slender billed Curlew	<i>Numenius tenuirostris</i>
Spanish Imperial Eagle	<i>Aquila adalberti</i>
Three-toed Woodpecker	<i>Picoides tridactylus</i>
White Stork	<i>Ciconia ciconia</i>
White-backed Woodpecker	<i>Dendrocopos leucotos</i>
White-headed Duck	<i>Oxyura leucocephala</i>
White-tailed Laurel Pigeon	<i>Columba junoniae</i>
Whooper Swan	<i>Cygnus cygnus</i>
Zino's Petrel	<i>Pterodroma madeira</i>

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

Type of intervention co-financing of actions in favour of the environment in the twenty-five Member States of the European Union, in the candidate countries who are associated to LIFE and in certain third countries bordering the Mediterranean and the Baltic Sea.

LIFE is made up of three subject headings: "**LIFE-Nature**", "**LIFE-Environment**" and "**LIFE – Third countries**".

Objectives

- > with a view to sustainable development in the European Union, contribute to the drawing up, implementation and updating of Community policy and legislation in the area of the environment;
- > explore new solutions to environmental problems on a Community scale.

Beneficiaries any natural or legal person, provided that the projects financed meet the following general criteria:

- > they are of Community interest and make a significant contribution to the general objectives;
- > they are carried out by technically and financially sound participants;
- > they are feasible in terms of technical proposals, timetable, budget and value for money.

Types of project

- > Eligible for LIFE-Environment are innovative pilot and demonstration projects which bring environment-related and sustainable development considerations together in land management, which promote sustainable water and waste management or which minimise the environmental impact of economic activities, products and services. LIFE-Environment also finances preparatory projects aiming at the development or updating of Community environmental actions, instruments, legislation or policies.
- > Eligible for LIFE-Nature are nature conservation projects which contribute to maintaining or restoring natural habitats and/or populations of species in a favourable state of conservation within the meaning of the « Birds » (79/409/EEC) and « Habitats » (92/43/EEC) Community Directives and which contribute to the establishment of the European network of protected areas – NATURA 2000. LIFE-Nature also finances "co-op" projects aiming to develop the exchange of experiences between projects.
- > Eligible for LIFE-Third countries are projects which contribute to the establishment of capacities and administrative structures needed in the environmental sector and in the development of environmental policy and action programmes in some countries bordering the Mediterranean and the Baltic Sea.

Implementation National authorities in the Member States or third countries send the Commission the proposals of projects to be co-financed (for LIFE-Environment preparatory projects, the applicants send their proposals directly to the Commission). The Commission sets the date for sending the proposals annually. It monitors the projects financed and supports the dissemination of their results. Accompanying measures enable the projects to be monitored on the ground.

Period of involvement (LIFE III) 2000-2006.

Funds from the Community approximately _638 million for 2000-2004 and _317 million for 2005-2006.

Contact

European Commission – Environment Directorate-General
 LIFE Unit – BU-9 02/1 - 200 rue de la Loi - B-1049 Brussels – Fax: +32 2 296 95 56
 Internet: <http://europa.eu.int/comm/environment/life/home.htm>