LIFE III

NATURE

Protecting Europe's nature:

Learning from LIFE

Nature conservation best practices

nature

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environment

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The contents of the publication "**Learning from LIFE** Nature conservation best practices" do not necessarily reflect the opinions of the institutions of the European Union.

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Head of Unit – LIFE
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Since its launch in 1992, the European Commission's LIFE Programme has generated a significant mass of knowledge concerning many different aspects of environmental activity. This information remains highly relevant as a learning resource for environmental stakeholders throughout the EU and in neighbouring countries.

The LIFE Nature thematic conference "Protecting Europe's Nature: Learning from LIFE" covered a wide range of nature conservation issues during its three day programme from November 17–19 2008 in Brussels. Delegates from all over Europe attended the event which focused on tools and techniques for implementing the EU birds and habitats directives and the Natura 2000 network.

The objective of the event was to discuss and codify the experience and knowledge gained during the life-time of recent projects. The thematic sessions provided a platform for a discussion on, and a dissemination of the results of, some successful projects. This will allow us to find transferable outcomes from projects and to mainstream good practice for the future implementation of LIFE+.

The programme included plenary sessions examining the past, present and future role of LIFE Nature as a tool for implementing EU nature protection/biodiversity policy. A series of workshops allowed participants to discuss 'best practice' approaches to practical and policy based actions targeting forest, marine, river and grassland habitats, as well as focusing on climate change and invasive alien species. Other sessions featured LIFE experience in areas such as international cooperation on biodiversity protection and work addressing challenges linked to ensuring a favourable conservation status for Europe's species.

This publication aims to give a flavour of some of the insights gained at the Conference.

Philip Owen




Photo: LIFE05 NAT/RO/000170

Protecting Europe's nature: **learning from LIFE**

This LIFE Focus publication – "Protecting Europe's Nature: Learning from LIFE" – brings together a series of case studies and recommendations highlighting best practice in nature conservation in Europe.

The contents are largely drawn from the proceedings of the first LIFE Nature thematic conference – also titled "Protecting Europe's Nature: Learning from LIFE" – which took place in Brussels on November 17-19, 2008 and attracted the participation of more than 200 delegates. The aim of the event was to examine the role of the EU LIFE programme's Nature component as an instrument to support the implementation of the EU Birds and Habitats Directives and the Natura 2000 network, and, in a broader sense the Commission Communication on "Halting the loss of biodiversity by 2010 – and beyond".

Day 1 of the conference featured four parallel thematic sessions presenting examples of 'best practice' tools for implementing the Natura 2000 network and the protection of European habitats developed within the LIFE Nature programme. Each session (forest habitats; marine habitats; river habitats; grassland habitats) featured five or six selected LIFE projects. In addition, a poster session enabled some 100 participating LIFE nature projects to show how they are serving to protect national and European biodiversity.

The second day of the event began with a focus on "LIFE projects targeting challenges to biodiversity", reflecting the Biodiversity component of the LIFE+ programme (2007-2013). The four parallel sessions (again featuring five or six selected projects) were on the following topics: responding to climate change; the challenges of invasive alien species; ensuring the favourable conservation status of Europe's species; and international cooperation on biodiversity protection.

A plenary session examined the role of LIFE Nature as a tool for implementing EU nature protection and biodiversity policy. The conference ended with a presentation on the role of LIFE+ in the future implementation of EU nature and biodiversity policies by Ms. Soledad Blanco, Director of International Affairs and LIFE at the European Commission's Environment Directorate.

In addition, post conference excursions on November 19, 2008 gave participants the opportunity to visit one of three Belgian LIFE Nature projects.

THE SCOPE OF THE PUBLICATION

The following pages include an introduction to key EU policies for nature protection and biodiversity, as well as useful background information about the achievements of the LIFE Nature programme to date and its continuation in LIFE+. Each of the eight thematic sections highlights expert recommendations of best practices for LIFE Nature projects. These are summarised in a general conclusion on "LIFE+ as a tool for implementing the EC biodiversity strategy – the way ahead".

The conference was held at the Bedford Hotel in Brussels

Photo: Michelle Lischi

LIFE+ and EU **nature protection** and **biodiversity policy**

The LIFE+ programme plays an important role in the practical implementation of European Union biodiversity policy goals as expressed in the EU Biodiversity Action Plan and the Birds and Habitats Directives.

The European Union and its Member States are contracting parties to the UN Convention on Biological Diversity (CBD). In Gothenburg in 2001, EU Heads of State and Government undertook to halt the decline of biodiversity in the EU by 2010 and to restore habitats and natural systems. In 2002, they also joined some 130 world leaders in Johannesburg in agreeing to significantly reduce the rate of biodiversity loss globally by 2010.

In May 2006, the European Commission adopted a communication on "Halting Biodiversity Loss by 2010 – and Beyond: Sustaining ecosystem services for human well-being". The Communication underlined the importance of biodiversity protection as a prerequisite for sustainable development and set out a detailed EU Biodiversity Action Plan to achieve this.

THE EU BIODIVERSITY ACTION PLAN

The Biodiversity Action Plan calls on the Member States and the Community to:

- Finalise the Natura 2000 Network by ensuring that each Member State (particularly the new Member States) proposes sufficient sites in their territory to safeguard the habitats and species of Community interest across their natural range in the EU;
- Designate, protect and effectively manage terrestrial Natura 2000 sites by 2010 and marine sites by 2012 to ensure that species and habitats are maintained or restored to a favourable conservation status and their long-term conservation management is secured;
- Ensure adequate funding to manage the sites over the long-term, *inter alia*, through EU funds and through greater integration of conservation management needs in other land use activities.

Recognising the value of coordinated action for threatened species and the need to ensure the Natura 2000 Network is both coherent and resilient the Plan also calls on Member States and the Community to:

- Ensure that no priority species are in a worsening conservation state by 2010, and that the majority of species are in, or moving towards, a favourable conservation status by 2013;
- Implement, review and develop further EU-wide species action plans for Europe's most threatened species. The intention is that new plans will be elaborated for additional bird species as well as for other wildlife, such as large carnivores. The LIFE+ Nature programme will also continue to prioritise the funding of conservation projects that help implement the measures identified in the species action plans;
- Apply such tools as flyways, buffer zones, corridors, stepping stones, etc. to strengthen coherence, connectivity and resilience of the protected areas network not only between Natura 2000 sites but also with other nationally or regionally protected areas in the EU by 2010.

The EU is also responsible for a number of outermost regions – Guadeloupe, Martinique, French Guyana and Reunion – that have an exceptionally rich biodiversity. Although not covered by the EU nature Directives, the Action Plan ensures that every effort is made to encourage a similar type of approach for the conservation of their valuable wildlife and natural areas.

The EU Biodiversity Action Plan addresses the challenge of integrating biodiversity concerns into other policy sectors in a unified way. It specifies a comprehensive plan of priority actions and outlines the responsibility of community institutions and Member States in relation to each. It also contains indicators to monitor progress and a timetable for evaluations. The European Commission has undertaken to provide annual reporting on progress in delivery of the Biodiversity Action Plan.

LIFE Nature projects make a major contribution to the implementation of EU biodiversity policy

Photo: LIFE00 NAT/EE/007083

Figure 1: **LIFE Nature projects by habitat type**

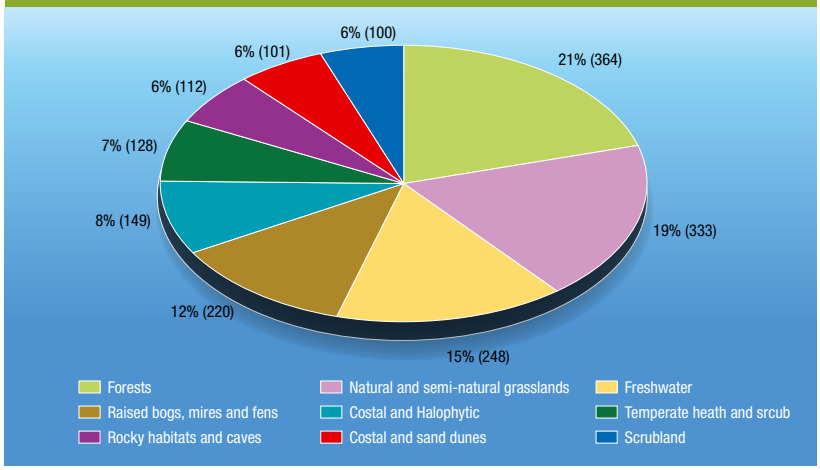
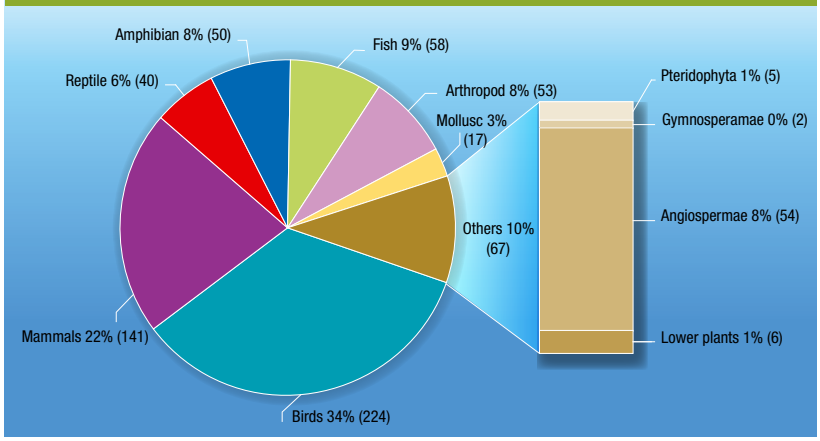


Figure 2: **LIFE Nature projects by species group**



Source: LIFE projects database

While the EU agenda for biodiversity confirms the central importance of existing legislation and in particular the Natura 2000 network, it also sets out a more comprehensive and inclusive vision for biodiversity protection that extends to supporting measures. One of these is to build more effective partnerships, including partnerships with business, both at the level of the EU and in the Member States. The first comprehensive assessment of progress in implementing the Biodiversity Action Plan reported in December 2008 that despite some encouraging results, the EU will fail to meet its target of halting the loss of biodiversity by 2010 unless there is significant additional effort over the next two years.

THE 'HABITATS' AND 'BIRDS' DIRECTIVES

Recognising that nature does not respect national borders, the European Union has adopted strong legislation to conserve its most important habitats and threatened species across its territory.

The Birds Directive and Habitats Directive are central to the EU policy response to halting biodiversity loss by 2010. They set the same high standard for nature conservation across the 27 Member States to enable coordinated conservation efforts that go beyond political or administrative borders.

The process is science-driven, legally enforceable and based on an approach to management that takes account of the ecosystem as a whole. Central to the Directives is the creation of a Europe-wide coherent ecological network of protected sites – the Natura 2000 Network – which is destined to conserve over 1 000 rare, threatened and endemic species and some 220 natural habitats listed in their annexes. Some 25 000 sites have been included in the network so far. Collectively, they cover almost 17% of the European territory. As a result, they not only help conserve rare species but also protect valuable ecosystems and provide a safe haven for countless other wildlife.

With such an important part of the EU covered by the Natura 2000 Network, it is clear that conservation management must move away from merely establishing strict nature reserves and focus instead on working closely with all stakeholders and economic sectors to ensure that the sites are managed in a sustainable manner over the long term.

In this way, Natura 2000 fully supports the principles of sustainable development. Its aim is not to stop economic activities but rather to set the parameters by which these can take place whilst safeguarding Europe's biodiversity.

OBJECTIVES OF THE EU BIODIVERSITY ACTION PLAN

1. **Safeguarding the EU's most important habitats and species.**
2. **Conserving biodiversity in the wider EU countryside.**
3. **Conserving biodiversity in the wider EU marine environment.**
4. **Integrating biodiversity into land-use planning and development.**
5. **Reducing the impact of invasive alien species (IAS).**
6. **Strengthening the EU's role in combating global biodiversity loss (international governance).**
7. **Strengthening the EU's role in combating global biodiversity loss (international trade).**
8. **Strengthening the EU's role in combating global biodiversity loss (external relations and development cooperation).**
9. **Supporting biodiversity adaptation to climate change.**
10. **Improving our knowledge base.**

LIFE: **background and future**

LIFE is the EU's financial instrument supporting environmental and nature conservation projects throughout the EU, as well as in some candidate, acceding and neighbouring countries. Since 1992, LIFE has co-financed some 2 750 projects, contributing approximately €1.35 billion to the protection of the environment.

The LIFE Nature component of the LIFE programme co-funded a total of 970 projects between 1992 and 2006, with a total budget of more than €1.443 million. A further 58 projects are being supported under LIFE+ (2007 call). Figures 1-2 (below) provide a breakdown of where the money has gone.

LIFE Nature projects targeted almost all habitat group types, although more than half of the projects targeted forest, grasslands or freshwater habitat types (Fig 3). In terms of targeted species more than half of the LIFE Nature projects targeted either birds or mammal species (Fig. 4).

ABOUT LIFE+

The new Financial Instrument for the Environment, LIFE+, replaced the LIFE III programme at the end of 2006. With a budget of €2.143 billion (for the period 2007-2013), LIFE+ is a limited but focused funding instrument providing specific support for the development and implementation of Community environmental policy and legislation, in particular the objectives of the 6th EAP (Decision 1600/2002/EC) and resulting thematic strategies. It comprises three components:

- LIFE+ Nature & Biodiversity
- LIFE+ Environment Policy & Governance
- LIFE+ Information & Communication

At least 78% of the LIFE+ budget will be for the co-financing of project action grants, of which at least 50% will be for nature and biodiversity projects.

LIFE+ Nature will co-finance best practice or demonstration projects that contribute to the implementation of the Birds and Habitats Directives. The maximum co-financing rate is 50% but may be 75% for projects focusing on priority species or habitats.

LIFE+ Biodiversity will co-finance innovative or demonstration projects that contribute to the implementation of the objectives of Commission Communication (COM (2006) 216 final), "Halting the loss of biodiversity by 2010 – and beyond". The maximum co-financing rate will be 50%.

Figure 3: **Total budget LIFE Nature projects by country (1992-2006) – not including LIFE+**

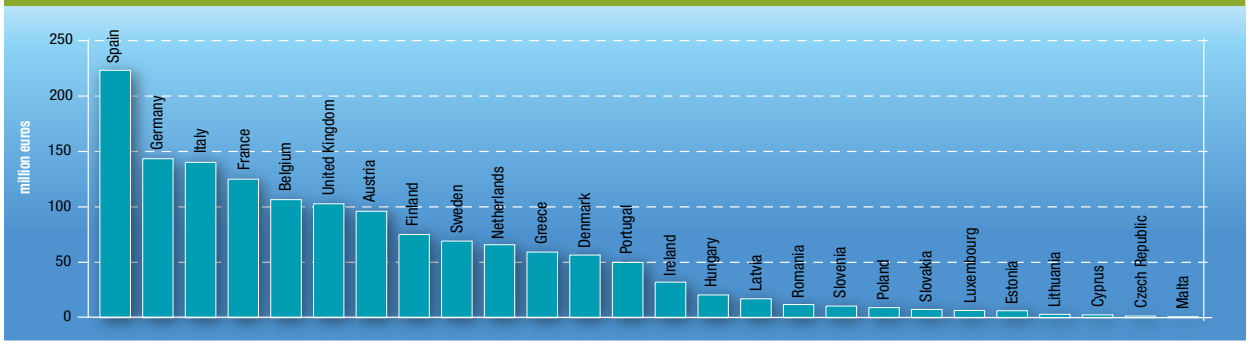
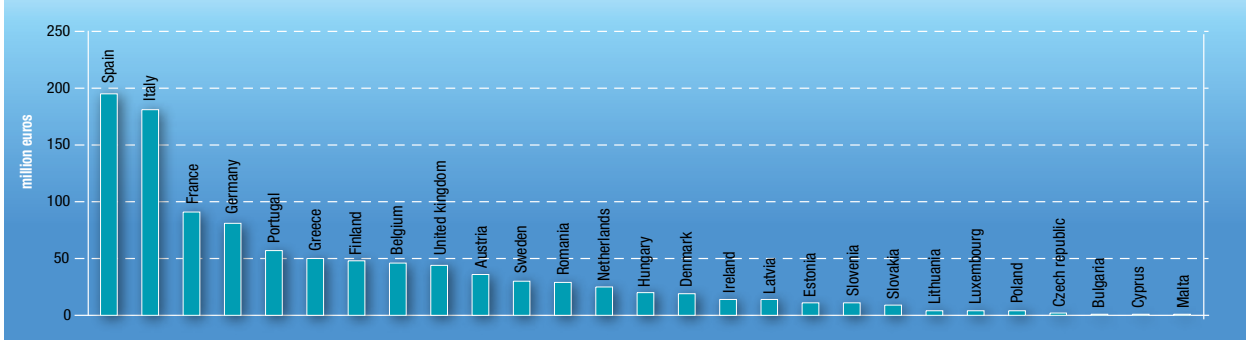


Figure 4: **LIFE Nature projects by country (1992-2007) – Including LIFE+**



Source: LIFE projects database

Photo: StillPictures

Protecting the marine environment through LIFE Nature

Covering more than two-thirds of the world's surface, oceans and seas are an extremely important ecological resource. As a result, many initiatives have been taken at a European and global level to protect marine ecosystems, including protecting them from contamination by toxic substances and the impact of climate change. The main objective of the recently approved Marine Strategy Framework Directive is to achieve good environmental status of European marine waters by 2020.

The European Commission included in the 6th Environment Action Programme a commitment to develop a strategy for the protection and conservation of the marine environment with the overall aim being "to promote sustainable use of the seas and conserve marine ecosystems". In 2005, the Commission launched the "Thematic Strategy on the Protection and Conservation of the Marine Environment", together with a proposal for legislation. The Marine Strategy Framework Directive came into force in 2008. It requires Member States to develop marine strategies for marine waters, with the objective of achieving good environmental status by 2020. Marine strategies include several stages, including an initial assessment of the status of the environment and its socio-economic uses, the development of objectives and indicators, monitoring programmes and a programme of measures. The Marine Strategy Framework Directive was welcomed by the European Council in December 2007 as the environmental pillar of the integrated EU Maritime Policy.

A large number of different organisations contribute to the protection of the marine environment, and EU marine environment policy has been developed in the context of treaty obligations at global and regional levels. At a global level, the United Nations Convention on the Law of the Sea (UNCLOS) and the Convention on Biological Diversity (CBD) are among the most relevant bodies under which the EU has committed itself to protect the marine environment. Agreements and commitments have also been made at a regional level, under the OSPAR Convention for the North-East Atlantic, the Helsinki Convention (HELCOM) for the Baltic

Sea, the Barcelona Convention for the Mediterranean Sea and the Bucharest Convention for the Black sea.

The EU marine strategy can also be seen in the context of the EU Biodiversity Action Plan adopted in 2006, and the implementation of the Convention on Biological Diversity (CBD). The EU Biodiversity Action Plan also aims to improve the marine environment, including through increased efforts of environmental integration in key economic sectors such as fisheries. Its success will require taking additional measures for restoring fish stocks and reducing the impact on non-target species (bycatch) under the Common Fisheries Policy.

The implementation of the Marine Strategy Framework Directive will be supported by action in the framework of the LIFE programme. This programme has already contributed to the conservation of highly endangered marine species and habitats, and has been helping Member States establish the Natura 2000 network in the marine environment. LIFE Nature projects have also helped fulfil the objectives of the Biodiversity Action Plan by building up know-how, advancing expertise and fostering co-operation among businesses, management bodies and conservation groups.

Photo: P.Dendrinos/Mom – LIFE00 NAT/GR/007248

LIFE has played a vital role in the protection of marine species – Monk seal, Greece

Over the past 10 years, LIFE Nature has contributed some €40 million to 50 marine projects across the EU´s Natura 2000 marine sites. Many have focused on the conservation of highly endangered marine species such as the loggerhead sea turtle (*Caretta caretta*), sea mammals such as the harbour porpoise (*Phoconea phocoena*), and rare seabirds such as Audouin's gull (*Larus audouini*). Projects have also focused on the conservation and improvement of marine habitats such as Posidonia beds, reefs and sea caves. Other examples can be found on the LIFE website: **http://ec.europa.eu/environment/life/themes/seas/index.htm**. For a more detailed analysis, access the marine LIFE Focus brochure: **http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/nat.htm#marine**

LIFE Nature is helping to reduce the impact of commercial fishing on threatened marine habitats and species

Photo: ImagDOP@JFontes

A major issue addressed by many LIFE Nature projects is the interaction between fisheries and threatened marine habitats and species. Numerous surveys have shown the extent of the problem and the type of fishing practices that are most damaging in specific marine areas. This knowledge has been used to open a dialogue with the fishermen and authorities concerned.

Despite all the conventions and measures taken at national and international levels, improving the environmental status of our seas is vital and in some areas could be considered critical. But legislation on effluent limits, waste recycling and alternative solutions for dangerous substances should have a beneficial affect. Some legislation is setting best practice standards, and LIFE can contribute substantially to the improvement of the best available techniques and methods.

LIFE shaping **marine policy**

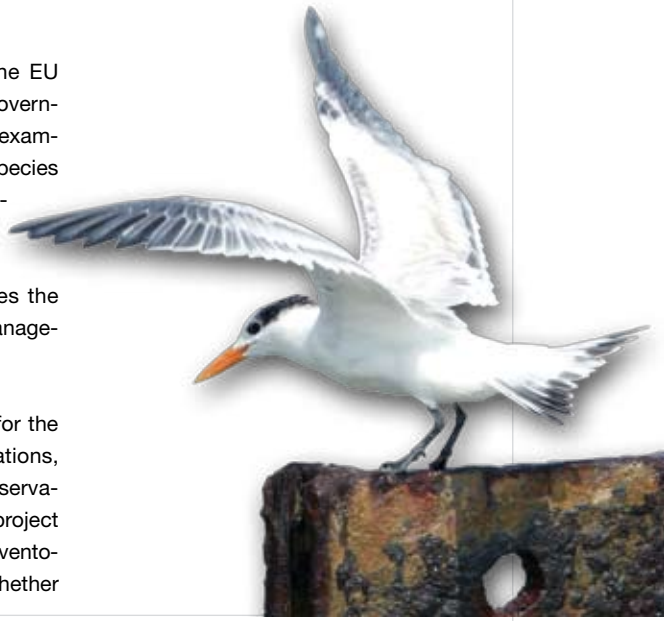
Marine conservation is still very much a developing area. Though initiatives to protect marine ecosystems do not date back as far as many terrestrial projects, a wealth of experience is being built up through the implementation of marine LIFE Nature projects providing valuable data and know-how on which to base policy recommendations. LIFE III Nature (and now LIFE+) funding has also been used to identify and designate Natura 2000 marine areas, an activity no longer permitted for terrestrial environments.

The policy discussion at the marine session of the 'Learning from LIFE' Conference 2008 highlighted the following areas where the experience of LIFE Nature projects can be instrumental in forming strategies for marine conservation: international cooperation; government involvement and policy integration; management and enforcement; and data collection.

INTERNATIONAL COOPERATION

Fish and bird species cross national and continental boundaries frequently. It is therefore necessary to strengthen the mechanisms for cooperation among Member States and between the EU and other regional and national governments and organisations. A good example of a project that shows that species don´t follow borders is the Spanish marine Important Bird Areas (IBAs) project, **LIFE04 NAT/ES/000049**, which illustrates the need for co-operation among management authorities.

IBAs are sites that are essential for the long-term viability of bird populations, particularly those species of conservation concern. This Spanish LIFE project used BirdLife International's IBA inventories, among others, to analyse whether



or not the current Natura 2000 Special Protected Areas (SPAs) for birds are adequate. The inventory included a characterisation of each IBA, with GIS geo-referenced cartography, and a description of the main threats affecting it. Working in co-operation with a similar project in Portugal, IBAMarinha – **LIFE04 NAT/P/000213** – it helped establish a standard methodology for the identification and delimitation of marine IBAs.

Another good example is the follow-up to the SCANS projects to assess the population of small cetaceans in the North Sea and European Atlantic continental shelf waters – **LIFE04 NAT/GB/000245** and **LIFE92 ENV/UK/000065**. International cooperation was required to assess the risk to the cetaceans posed by bycatch and other threats, develop improved methods for monitoring, and establish a robust management framework. The results of the project informed a clear course of action that would allow populations to recover and maintain favourable conservation status.

Further cooperation among EU Member States is required to build on the achievements of the project. A coordinated approach to the monitoring of small cetacean populations needs to be agreed, and the Commission is holding meetings to discuss how the results of the SCANS project can be applied. Central to the success of this initiative is the desire to coordinate efforts and a willingness to pay attention to technical detail so that the best and most cost-effective methods are used.

Photo: Ana Cañadas

LIFE has helped reduce the risk to cetaceans posed by fisheries bycatch

GOVERNMENT INVOLVEMENT AND POLICY INTEGRATION

Marine conservation in many Member States is happening very slowly and governments need to be encouraged to participate in marine conservation planning and implementation. Plans to safeguard a particular species at national level need to be integrated into a wider conservation policy framework. Much marine conservation has focused on charismatic 'megafauna' species (for example, cetaceans) and not on the marine habitats or other species, such as fish. It is vital that an integrated approach is adopted that ensures that measures to conserve one species do not have negative impacts on another.

The bottlenose dolphin, which is threatened by fishing activities, is an example of one such species that has been subject to conservation activities. The LINDA LIFE Nature project – **LIFE03 NAT/F/000104** – was carried out at the marine nature reserves of Bonifacio and Scandola and Agriates, three Natura 2000 sites off the coast of Corsica, which are included in the international marine sanctuary and hold half of the total Corsican population of bottlenose dolphins (est.198 to 242 individuals). The LINDA project has increased knowledge of the ecology of these sites and has led to proposals for a bottlenose dolphin action plan that takes into account the biodiversity of the habitat.

Government involvement was also integral to the long-term success of the Spanish and Portuguese marine IBAs project. The project's proposal for establishing IBAs is being used by the environment ministry in plans for the creation of wind farms at sea.

MANAGEMENT AND ENFORCEMENT

Marine conservation requires a balance between safeguarding protected areas and non-site-specific wide-ranging interventions. Though much marine conservation is currently species oriented, there is a need to adopt an ecosystem approach. Given the nature of marine conservation in terms of scale, scope and mobility, and the predicted impacts of global climate change, adaptive management strategies must be adopted. It would therefore be valuable to reassess the current site-specific focus of the LIFE Nature Programme.

One such project – **LIFE02 NAT/E/008610** – aimed to develop management models for both turtles and cetaceans focused on the Spanish part of the Mediterranean Sea, a substantial feeding and breeding area for the species that also acts as a corridor between the Mediterranean and the Atlantic.

As well as drawing up plans to manage habitats, the project also engaged the support of many sectors of society. It attained a vital consensus with users and managers of the sea and developed activities on the basis of local participation. Many of the planned actions, such as waste removal and reducing the impact of fishing techniques on turtles, serve as examples for the future, thanks to the participation of social groups that depend on the sea

Photo: LIFE03 NAT/E/00061

Project LIFE02 NAT/E/008610 aimed to develop management models for turtles and cetaceans in the Spanish Mediterranean

The stakeholders in marine conservation projects are usually local communities and fisheries with very specific interests, and much work needs to be done to engage these stakeholders in dialogue about the value of marine biodiversity. The LINDA project is also a good example of a project that brought together the main stakeholders – environmental management, socioeconomic representatives, fishermen, local population and tourists. They worked together to introduce sustainable practices for fishing, boating and whale-watching activities in Corsica.

The communication and awareness-raising activities carried out during this project were exceptional and reached a great many people in the various target

LIFE is helping to establish standard methodologies for the identification and delimitation of marine IBAs (Important Bird Areas) that could be proposed as Natura 2000 sites (SPAs)

Photo: Pedro Geraldes/ LIFE04 NAT/P/000213

groups (children, pleasure boaters, fishermen, local people and journalists). Activities included: the publication of an educational pack for schoolchildren and the wider public; an information campaign for pleasure boaters launched during three consecutive summers, with the help of 34 eco-volunteers; and the production of a 26-minute documentary to promote the work done within the framework of the programme and the issues involved in conserving the Bottlenose dolphin. The film was broadcast on SNCM and ferry boats crossing between Corsica and mainland France during the summer, and broadcast on the Planète, Seasons and France 3 Corse channels which co-financed its production.

DATA COLLECTION

The designation and management of Marine Protection Areas and the design and implementation of global conservation measures needs to be based on and informed by robust science and data. The collection of marine data poses unique challenges in terms of time, cost and weather. Better use must be made of existing data from a wide range of sources, and there is a need to identify and fill in gaps in order to establish reliable baselines. For example, the impacts of bycatch on target species cannot be assessed without good baseline data.

Satellite tracking movements of the Cory's Shearwater *in the Canary Islands*

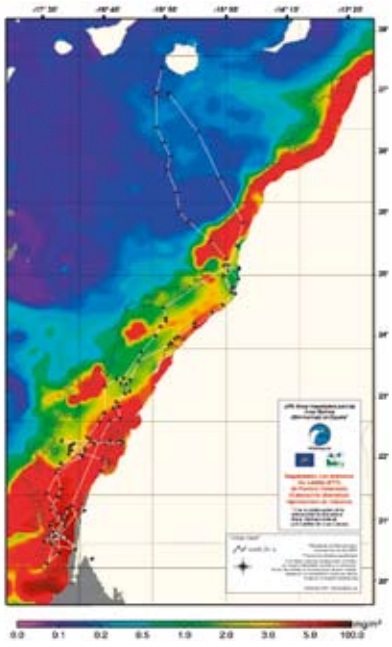


Photo: Arnaud Le Nevé, Bretagne Vivante – SEPNB

Sharing of knowledge is crucial for species conservation: the project LIFE05 NAT/F/137 collected crucial data on the Roseate Tern that was shared among Natura 2000 site managers.

International conferences and the publishing of results are essential for sharing knowledge on target species. The project – **LIFE05 NAT/F/137** – to enhance the breeding rate of Roseate Tern on L'île aux Dames and to re-attract this sea bird to four other neighbouring islands (la Colombière, Trevorc'h, l'île aux Moutons and Petit Veizit) organised an international workshop to inform managers of other Natura 2000 sites of the results of the project's conservation activities, which included measures to reduce the impact of the various threats and disturbances.

Assessing and reducing the impact of fishery bycatch on target bird and mammal species was central to the Eastern Baltic Sea project – **LIFE05 NAT/LV/000100**. This focused on the sustainable use of marine biodiversity and the identification of marine Natura 2000 sites in the territories of Estonia, Latvia and Lithuania. One such target species was the Steller's eider *(Polysticta stelleri)*. Similar to many of the projects mentioned above, the Baltic project promoted cross-border networking. It fostered interaction among the Baltic States, other EU Member States and Russia to build up capacities for collecting data and to facilitate monitoring.

Moreover, the MOFI project – **LIFE05 NAT/GR/000083** – which focused on the monk seal in Greece, drew on international experience in the drawing up of an action plan for the seal's conservation. The seal is another aquatic animal that is threatened by fishing activities, and the project aimed to asses the impact of the seal-fishery interactions at several important locations. Furthermore, by analysing samples collected, the monk seal's feeding preferences were determined for the first time, greatly contributing to the knowledge of the target species.

Data collection is needed to avoid bycatch of birds (long-tailed duck Clangula hyemalis *- top) and sea mammals (grey seal - bottom)*

Photo: LIFE05 NAT/LV/000100

Photo: Pedro Geraldes

Defining an IBA as a future Natura 2000 marine site

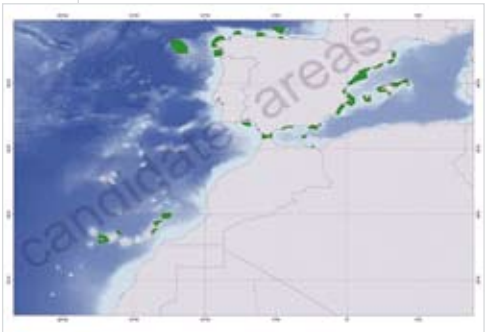
The LIFE Nature project LIFE05 NAT/ES/000049 was designed to improve the level of quantitative data on bird populations, using objective methodological criteria, to determine marine Important Bird Areas (IBAs) for those seabird species listed in Annex I of the Birds Directive that live in Spanish marine waters.

Offshore sites are not as widely known or protected as the terrestrial breeding colonies of marine birds. The level of quantitative data on bird populations and their distribution rapidly decreases the farther they are from shore. As a result, marine SPAs represent a major gap in the Natura 2000 network.

The project tested in the Mediterranean a methodology already applied in the North and Baltic seas. It carried out a detailed inventory, using objective methodological criteria, to determine marine IBAs for those seabird species listed in Annex I of the Birds Directive that live in Spanish marine waters. The inventory included a characterisation of each IBA, with GIS geo-referenced cartography, and a description of the main threats affecting it. Certain species were monitored by satellite and radio tracking. Analysis and mapping of ringed seabirds was carried out in Spain, along with a survey of coastal waters. The data, including observations from fishing vessels, were used to create a database of stranded birds.

For example, GPS and PTT-loggers were used to track the Audouin Gull and the Cory's Shearwater, covering their complete geographic scope. Also, the foraging areas for the colonies of Delta del Ebro were determined and extrapolated to other colonies for the definition of IBA limits. Oceanographic boats conducted 'at-sea' surveys of most of the Spanish waters, and the identification and generic sampling of the most favourable areas was also carried out.

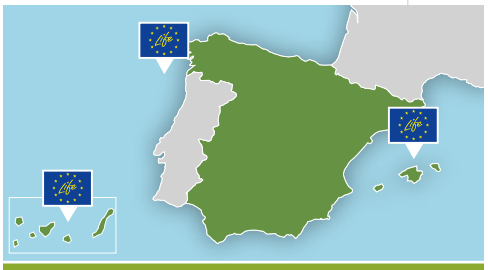
Map of candidate sites to integrate the Natura 2000 network in marine areas based on data collected by the project



DATA GATHERING AND MONITORING PAY DIVIDENDS

The information gathered by the project was used to draw up a marine IBA proposal. The preliminary version of the IBA has already been used by the Spanish environment ministry to plan wind farms at sea.

As well as defining criteria for the definition of marine IBAs, the project beneficiary, BirdLife International, drafted methodologies for the collection of data and analysis of information. These could be used by future LIFE (and other) projects working in this field.



SPAIN

Project number: LIFE05 NAT/ES/000049

Title: Important Bird Areas for seabirds (marine IBAs) in Spain

Beneficiary: SEO/BirdLife

Contact: Alejandro Sanchez Perez

Email: seo@seo.org

Period: Oct-2004 to Feb-2009

Total budget: €1 092 000

LIFE contribution: €780 000

Reducing bycatch through better surveying

The conservation of small cetaceans in northwest European waters is threatened by their incidental capture and killing as a result of fishing activities. Most at risk are the harbour porpoise, *Phocoena phocoena*, in bottom set gillnet fisheries, and the common dolphin, *Delphinus delphis*, in pelagic trawl fisheries. Regular monitoring of species levels is essential to reducing bycatch. For this reason, LIFE supported the SCANS II project – LIFE 04/NAT/GB/000245 – which was a follow-up to the initial SCANS project of the 1990s.

Studies indicate that the current levels of bycatch are unsustainable, but up-to-date estimates of the overall abundance of the most at-risk species are lacking. The first comprehensive survey – Small Cetacean Abundance in the North Sea and adjacent waters (SCANS) **LIFE92-2/UK/027** – was completed in 1994 and the results have been widely used by the international community. It was important to repeat such estimates of overall abundance every 10 years, and EU Member States supported a second survey, SCANS II.

The project achieved the following results:

- A management framework to determine safe limits of bycatch. (The framework should be used to determine the level of bycatch of a particular species in a particular region that, if exceeded, would signal the need for management measures over and above any mitigation already in place)
- Estimates of abundance of the small cetacean populations (harbour porpoise, white-beaked, bottlenose and common dolphin, and minke whale) in the North Sea and European Atlantic
- Recommendations for cost-effective methods of monitoring abundance between major decadal surveys
- Trained personnel and equipment to provide essential information for management in the future.

These results were achieved by developing visual and acoustic methods for collecting and analysing data from surveys. The project also produced fieldwork manuals for data collection and completed shipboard and aerial surveys in the North Sea and European Atlantic. An analysis of different methods to detect population trends and the cost-effectiveness of these methods was also carried out.

While these tools are highly effective for achieving conservation objectives required for the Member States under the Habitats Directive, policymakers need to agree on conservation and management targets in order to make further progress. The project outlined the necessary steps to achieve compliance with the directive in a comprehensive After Life Conservation Plan that recognised the difficulties involved in resolving possible conflicts of interest between fisheries and environmental stakeholders.

HIGH DEMONSTRATION VALUE

Other European regions have taken a keen interest in the SCANS II project, and the potential for application of the project results in other areas is also very high. The Agreement on the Conservation of Cetaceans of the Black and Mediterranean Seas and contiguous Atlantic area (ACCOBAMS) is currently planning to conduct a SCANS-type survey, and SCANS II participants have become part of ACCOBAMS. The planning, organisation, survey data collection and analysis methods and general implementation of this project are being used as a model for the ACCOBAMS survey effort. Additionally, the methodology of the SCANS-II surveys is also being used in the T-NASS surveys in the northern North Atlantic and the CODA surveys in offshore European waters.

SCANS II aimed to reduce bycatch of small cetaceans

UNITED KINGDOM

Project number: LIFE 04/NAT/GB/000245

Title: Small Cetacean Abundance in the North Sea and adjacent waters II (SCANS II)

Beneficiary: The University Court of the University of St. Andrews

Contact: Philip Hammond

Email: psh2@st-andrews.ac.uk

Period: Apr-2004 to Dec-2006

Total budget: €3 113 000

LIFE contribution: €1 538 000

As part of the EU's Water Framework Directive (WFD), the European Commission has set an ambitious target of achieving 'good ecological status' for all Europe's rivers by 2015. While significant progress towards this goal has already been made, the impact of human actions continues to threaten the ecology of river habitats in many areas of Europe.

LIFE restoring **river habitats** in the context of the **EU Water Framework Directive**

Water quality has improved in the European Union over the last 20 years or so – thanks to initiatives to clean up Europe's rivers and reduce the amount of industrial waste and sewage being discharged into rivers. Despite these improvements, diffuse pollution remains a challenge: the widespread use of fertilisers, especially nitrates, in intensive agricultural systems continues to pollute groundwater, causing problems for European rivers, lakes and estuaries through the process of nutrient enrichment and eutrophication.

The management of Europe's freshwater systems has also caused problems. For example, most of the EU's rivers and river basins have undergone modifications over time, to guard against flooding, or for navigation, for agriculture or hydroelectricity. Such changes have resulted in significant loss of biodiversity and have also disrupted rivers' ability to provide vital services such as floodwater retention or water purification.

The EU Biodiversity Action Plan emphasizes the need for sustained efforts to reduce water pollution across Europe. It also calls on Member States to protect fertile soils and to restore valuable rivers and wetlands so that they can help alleviate potential floods.

The Water Framework Directive (WFD) [2000/60/EC] adopted in 2000, is central to meeting these targets. It sets out clear objectives to prevent further deterioration of European aquatic ecosystems and to reach a good ecological status for all types of surface water (rivers, lakes, transitional and coastal waters) by 2015.

RIVER BASIN MANAGEMENT PLANS

The Directive also requires that integrated management plans are prepared for each river basin, the first of which should be published by the end of 2009. For river basins encompassing more than one country, the Directive requires Member States to coordinate their plans. The idea is that the most efficient model for a single system of water management is management by the river basin – the natural geographical and hydrological unit – rather than according to administrative or political boundaries. Each plan will come up with an agreed programme of actions to meet the 2015 target. Measures to maintain, restore and monitor freshwater ecosystems will be included to protect biodiversity and landscape quality and to enhance their ability to retain floodwater and purify polluted water.

LIFE offers an excellent opportunity for drawing up and implementing such river management plans. Projects have helped to implement the directive by testing, validating and demonstrating procedures and approaches that aid the management and sharing of information and the development of guidance on technical issues.

As well as having a long-lasting local legacy, ensuring sustainable management practices, many LIFE projects have also advanced innovative tools and technologies that enable better river management. Other projects have demonstrated how river management plans that involve the local community can boost a sense of ownership and responsibility for river cleanliness among local residents.

LIFE projects have also targeted other issues included in the WFD, such as flood protection and groundwater, or they have focused on issues detailed in other European Directives, such as nitrates, birds, habitats, urban wastewater treatment and drinking water.

More detailed analysis of Europe's rivers, together with many examples of LIFE Nature projects supporting the restoration of river habitats is available in the dedicated LIFE Focus brochure: http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/nat.htm#rivers

The recipe for **successful river restoration**

A need for detailed surveys and research, stakeholder involvement, integration of the various functions of rivers and their floodplains, good communication and monitoring – these key factors emerged from the river habitats session of the 'Learning from LIFE' Conference 2008.

Rivers and their floodplains are highly complex habitats. Detailed surveys and research into hydrological and morphological processes are required in order to understand riverine ecosystems and to develop appropriate restoration measures. This was illustrated by the LIFE projects presented at the river habitats session. There are many examples of successful LIFE projects that used scientific research into hydrology and morphology as a basis for the development of appropriate river restoration measures. Many riverine species and habitats depend on natural hydromorphological dynamics. A good example of this approach is the Austrian project – **LIFE02 NAT/A/008518** – to restore more natural dynamics to the Danube floodplain system. The project was able to restore a section of the Austrian Danube river banks and to reconnect formerly separated side channels. By restoring the river's hydro-dynamics and improving the lateral river-floodplain connectivity new river habitats for a large number of species were created.

STAKEHOLDER INVOLVEMENT

All the projects highlighted that the involvement of stakeholders is crucial to the success of river restoration projects. There were some good examples of LIFE projects where the stakeholder involvement had started, or was already well underway during the preparation of a project application. This early involvement of stakeholders – e.g. farmers, landowners, fishermen and local authorities – was shown to be crucial in the

Beaver- a species that has been benefiting from river restoration LIFE projects

Photo: LIFE02 NAT/A/008518

LIFE02NAT/A/008518 restored more natural dynamics to the Danube floodplain system

acceptance of conservation measures proposed, and to the overall success of the project. For example, in the German project "to restore the Lippe floodplain (pSCI) between Hamm and Hangfort" – **LIFE05 NAT/D/000057** – the aims were actively communicated during the project application and substantial contacts with the landowners and farmers were made well ahead of the launch of the project. Another example is a second Austrian LIFE project for the Upper Drava River – **LIFE06 NAT/A/000127**. An earlier Drava project, which ran until 2003, had already dealt with some tricky confrontations and discussions with the local people. This smoothed the way for the second project, which found the local people better informed and more open to river restoration measures.

INTEGRATING RIVER/ FLOODPLAIN FUNCTIONS

A number of speakers emphasized the importance of integrating the various functions of rivers and their floodplains when planning projects, for example, taking into account a river's importance for flood control, fishery and recreation roles. This integrated approach allows the restoration methods and techniques to be applied on a larger scale, and thus improves the chances of success. Moreover, an important task of (LIFE) river restoration projects is the transfer of the guiding principle for river restoration to relevant institutions (shipping companies, anglers associations etc). However, adopting an integrated approach to river restoration should not mean that the specific objectives in terms of species and habitat conservation (according to the Habitats and Birds directives) are reduced. LIFE funding would not be applicable if they were.

A good example of this approach is the (Conservation of Atlantic Salmon in Scotland – CASS project – **LIFE04 NAT/GB/000250**). This project worked very closely with salmon fishery boards in order to restore freshwater habitats. It is a very good example of the integration of recreational fishery and nature conservation.

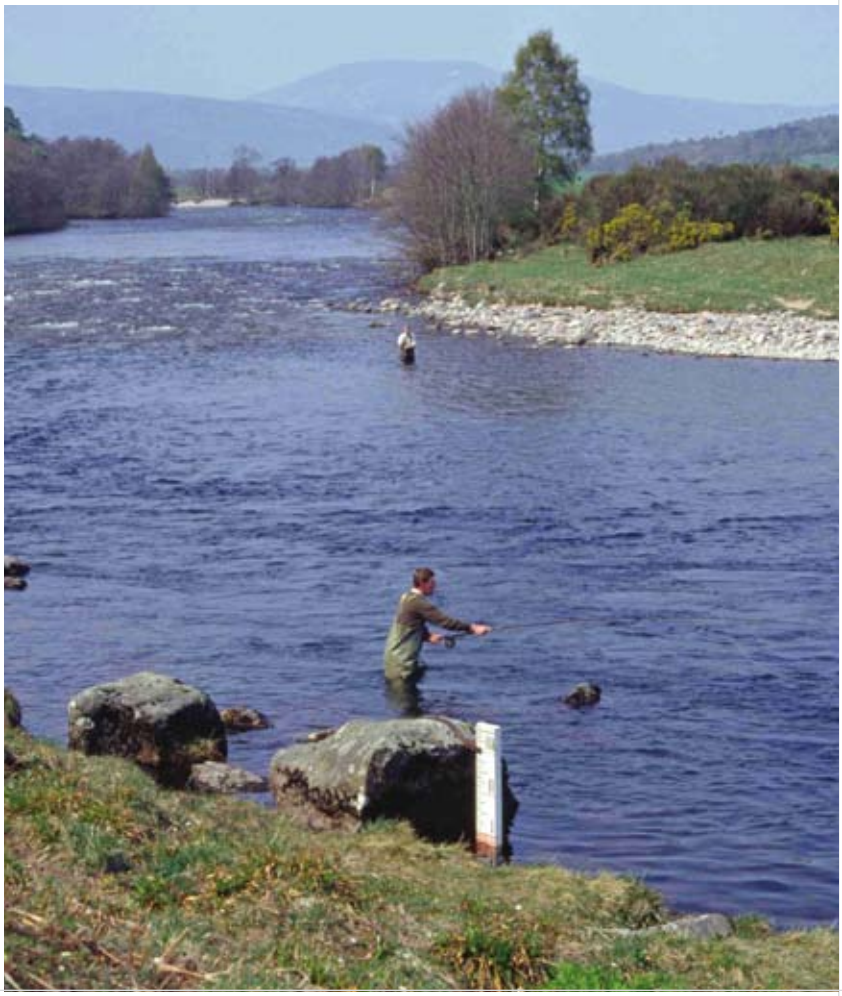
LONG-TERM MONITORING

Long-term monitoring is crucial in order to assess the ecological impacts of new restoration methods. However, due to the limited duration of LIFE projects, it was pointed out that a weakness of the programme is that long-term monitoring results are not always communicated and may remain with the project participants.

RECOMMENDATIONS

A series of general recommendations were made on river policy. Ursula Schmedtje (DG Environment, Water Unit) acknowledged the these projects had made significant contributions to meeting the objectives of the Water Framework Directive, for example through the

The CASS project integrated the needs of recreational anglers and nature conservation



improvement of fish migration via the removal of obstacles impeding the river's natural flow. Indeed, she said some of the measures that were initiated by the LIFE projects went beyond the WFD requirements. Examples include the development of new approaches in integrated river basin management and in the restoration of river habitats and floodplains. Due to the large scale of river restoration measures that are needed, LIFE projects can also provide best-practice examples of river restoration measures.

Obviously the LIFE programme can only play a relatively small role in the implementation of the WFD. Therefore, the funding of large-scale measures for the restoration of rivers and their floodplains is still an open issue. Currently, there are insufficient national schemes to finance large-scale river restoration works or recurring management of floodplain habitats.

Another general conclusion was that the experiences and lessons learnt by the LIFE projects could be disseminated to a much wider audience. For example, dissemination could be focused on key stakeholders at a regional, national and international level in order to have a wider impact on the implementation of river restoration projects and in order to ensure that innovative techniques and methods are applied on a larger scale. Andreas Baumüller (WWF European Policy Office, Brussels) said more opportunities for networking and workshops on project results should be established. He suggested that a part of the LIFE programme budget should be used in order to finance such activities.

GOOD COMMUNICATION

All the speakers at the river restoration session agreed that communicating project results and lessons learnt should be of major importance for all LIFE projects. There are several examples of LIFE projects that have employed successful communications strategies at local, national and international levels, through conferences, workshops and publications. For example, the Upper Drava river II project – LIFE06 NAT/A/000127 – organised a three-day international conference in Maribor, Slovenia, in order to exchange experiences and to promote the river as a model for integrated implementation of EU policies on water and nature protection. An important aspect of the symposium was the establishment of transboundary cooperation between all riparian countries of the Drava river basin to solve problems of the future development and sustainable management of the river.

'ECOSYSTEM SERVICES'

The rivers session also debated the meaning of the term "ecosystem services" in relation to river restoration projects. Bart Fokkens (European Centre for River Restoration) pointed out that many river restoration projects are not only contributing to the conservation of species and habitats but also to human wellbeing, e.g. through the creation of pleasant landscapes for recreation and tourism or through the reduction of flood risk. He said it is useful to highlight to stakeholders such human benefits, to show that projects are not only concerned with nature conservation.

Rivers ecosystems provide multiple services

Photo: LIFE98 NAT/D/005372

This project helped to restore more natural dynamics to the Danube floodplain system to the east of Vienna, aiding the conservation of habitats and species dependent on a more natural river flow.

Restoration of Austrian Danube floodplain and river banks

The Donau-Auen National Park, east of Vienna in Austria, includes one of the last major alluvial floodplain areas in Europe and one of the largest and best-preserved regions of lowland riparian forest in Central Europe. The national park was created in 1996 to conserve the floodplain.

The former flooding regime of the Danube favoured an extreme range of water level conditions, with associated high biodiversity. However, the river's hydro-dynamics were affected by the construction of several kilometres of flood-alleviation embankments and navigation structures, such as weirs, along the course of the river, which resulted in changes in the river's natural course (with meanders and branches straightened and re-directed). This disconnection between the river and its floodplains and consequent alteration of the duration and frequency of flooding had caused the drying up of former wetlands with a severe impact on the ecosystem.

In order to secure and restore riverine habitats and to improve the lateral river-floodplain connectivity, a set of measures was conceived by biologists and river engineers. The aim was to show, through the implementation of pilot projects, that such measures are effective and compatible with the requirements of navigation and the existing flood protection scheme.

In the first LIFE project, two larger cut-off side channels were reconnected to the main river by removing all dams and changing existing weirs to bridges to permit flow out of the main channel into the adjacent forests and former side channels. In the second LIFE project, a 3 km pilot section of "hard" river bank enforcement (i.e. stones and boulders) was removed to allow full lateral bank erosion. This type of action had never before been implemented on a major European navigation route. According to project manager, Carl Manzano, changes in river morphology "were impressive" and endangered species – for example, *Charadrius dubius* and *Actitis hyploeucos* – have reacted promptly and favourably to habitat improvement.

A key aspect of the projects was that they fostered a successful partnership between the National Park Administration and the Danube Waterways Authority who jointly planned, implemented and monitored the works. The experience gained was invaluable in the design of an ambitious new general engineering project for the whole national park area. This project combines improvements to navigation with large-scale reconnection of side channels and the removal of river bank enforcement along the whole 36 km reach of the Danube.

Restoration involved the removal of 3 km of stones from the banks of of the Danube

LEARNING FROM LIFE

The main lessons learnt were as follows:

- Even on a major international navigation route such as the Austrian Danube there is a surprisingly high potential for river revitalisation
- The actual physical implementation of pilot projects in a step-by-step approach is the best way of overcoming the doubts of experts, authorities, stakeholders and the general public
- LIFE programme funding allowed the national park to act on an equal footing with the Waterways Authority and thus establish a lasting partnership.

AUSTRIA

Project number: LIFE98 NAT/A/005422

Title: Restoration and management of the alluvial flood plain of the River Danube

Beneficiary: Nationalpark Donau-Auen GmbH

Period: Jul-1998 to Mar-2004

Total budget: €2 853 000

LIFE contribution: €1 411 000

Project number: LIFE02 NAT/A/008518

Title: Restoration of Danube river banks

Beneficiary: Nationalpark Donau-Auen GmbH

Contact: Carl Manzano

Email: nationalpark@donauauen.at

Website: www.donauauen.at

Period: Jul-2002 to Jun-2006

Total budget: €1 778 000

LIFE contribution: €711 000

Partnerships help Atlantic salmon in Scotland's rivers

The newly-closed LIFE CASS project is the UK's largest and most complex LIFE Nature project: Conducted on eight major Scottish salmon-river-SACs, its overall aim was to safeguard and maintain the abundance and diversity of Atlantic salmon (*Salmo salar*) in Scotland. Actions focused on improving freshwater habitats, developing management guidelines and demonstrating best practice in the removal of key threats.

The population of the Atlantic salmon (*Salmo salar*) – considered a vital indicator species for habitat quality – has declined in many European countries as a result of commercial netting, deteriorating water quality and barriers to migration. The species, listed in Annex II of the EU Habitats Directive, is still present in almost all rivers in Scotland but, even here, where water quality is generally good, there are many problems to be addressed.

Led by the beneficiary, Scottish Natural Heritage, the project was very successful. Its main outputs included: (i) the purchase of netting rights to halt commercial salmon netting on two rivers; (ii) the improvement and restoration of access to rivers through the removal of 25 obstacles to fish passage resulting in 187 km of extra salmon habitat; and (iii) in-stream habitat improvement works over 4 ha to restore spawning and juvenile habitat. The problem of siltation along eroded river banks was also addressed through fencing and stabilising structures. Fish were introduced to newly restored sections in two rivers. A number of (ongoing) communication and awareness-raising activities were also started by the project, to highlight the importance of Natura 2000 and salmon conservation.

LESSONS LEARNT

The project has delivered a number of significant salmon conservation objectives and has enabled its remarkably-wide range of partners – several Scottish District Salmon Fisheries Boards, conservation agencies, hydroelectric companies and the Scottish National Executive – to develop greater expertise in a number of areas.

The project has gained a greater understanding of technical issues and has developed the necessary expertise – for example in fish-passage installation, riparian work, in-stream work etc. The capacity for general awareness-raising of issues affecting salmon has also increased through being able to disseminate a wide range of information at different levels to different recipients. The partners have developed valuable project management skills and the work to help salmon has had a direct positive influence on populations of another Habitats Annex II-listed Natura listed species – the freshwater pearl mussel *(Margaritifera magaritifera).* This is due to the symbiotic relationship between the two species. Furthermore, benefits to the local economies are likely to accrue in the long-term due to the enlargement of salmon stocks.

One of the key project actions was to remove river obstacles (before – left, after right)

UNITED KINGDOM

Project number: LIFE04 NAT/GB/000250

Title: Conservation of Atlantic salmon in Scotland (CASS)

Beneficiary: Scottish Natural Heritage

Contact: Andrew Wallace

Email: a.r.wallace@btinternet.com

Website: www.snh.org.uk/salmonLIFEproject/

Period: Feb-2004 to Jul-2008

Total budget: €5 746 000

LIFE contribution: €2 348 000

LIFE funding is providing practical support to the policy goals of the EU Biodiversity Action Plan. Together with agri-environmental schemes financed by the European Fund for Rural Development, it is helping to restore Europe's grasslands to a favourable conservation status.

LIFE supports an agri-environmental approach to biodiversity

Grassland ecosystems are among the most species-rich habitats in Europe and they support an important part of Europe's biodiversity. Such areas provide good conditions for birds and invertebrates, supplying vital breeding and feeding grounds for a range of important species. Grasslands also provide the genetic material for the major cereal crops: wheat, rice, rye and barley. As well as biodiversity, other useful public goods or services provided by grasslands include: food for farm livestock; carbon storage facilities – representing approximately 34% of the global stock of carbon in terrestrial ecosystems; soil protection against erosion; and a space for tourism and recreational activities.

Despite the immense environmental, social and economic value that EU grasslands hold, according to draft data provided by Member States under Article 17 of the Habitats Directive, more than 75% of total grasslands habitats have an unfavourable conservation status.

This anomaly is acknowledged by the EU Biodiversity Action Plan, which calls on the Member States and the Community to enact a combination of practical and policy measures to help boost biodiversity levels in grasslands and prevent any further decline in their coverage.

The Action Plan recognises that successful grassland conservation management cannot be based on merely establishing strict nature reserves: a more inclusive approach is required that involves working closely with all stakeholders and economic sectors to ensure the sustainable future of EU grasslands.

Photo: LIFE02 NAT/P/008476

LIFE has been demonstrating nature conservation management to farmers

GRASSLAND MANAGEMENT

Most European grasslands have historically been maintained by either livestock grazing or seasonal mowing. However, the modernisation of many EU agricultural practices has led to considerable changes in grazing pressures and shifts in grass cutting patterns. The combination of these two factors is noted as being the main contributor to the decline and disappearance of many EU grasslands.

Links between agriculture and grasslands habitats are well established and different EU policy approaches introduced over the past decade have continued to move closer towards assisting farmers to undertake the necessary work involved in conserving grassland biodiversity.

The EU's LIFE programme has played an important role in demonstrating appropriate conservation techniques and an important source of mainstream grassland policy support is provided by the Common Agricultural Policy (CAP). High environmental standards, including restricted use of herbicides, insecticides and fertilisers, as well as measures to reduce soil erosion and limit grassland pollution are encouraged within the farm subsidy elements of CAP's Pillar I. These are complemented by a portfolio of environmental measures that are available through the Rural Development Programmes (RDPs), funded from Pillar II of the CAP.

AGRI-ENVIRONMENT ASSISTANCE

The core Pillar II tools that are available to combat grassland degradation are the agri-environment schemes financed by the European Fund for Rural Development (EAFRD). These aim to reconcile agriculture with the objectives of EU nature conservation policy, by providing grants for farmers to operate livestock and crop production systems that create specific environmental benefits.

For example, in France, the UK and elsewhere around Europe, agricultural practices are harmonised to meet the needs of priority birds (some of them as result of LIFE project actions), such as the corncrake (*Crex crex*), which requires both humid hay-meadows and grazed grassland-meadows. Similarly, in Spain and Hungary farmers are paid to grow special grains in grassland areas in order to provide essential food sources for the iconic great bustard (*Otis tarda*).

The EU provides a strong steer to Member States that these types of grassland conservation actions are necessary and should be implemented using the EAFRD. The challenge to date has been the practical uptake by Member States of appropriate grassland management schemes.

European grasslands: **supporting a wealth of biodiversity**

Europe's grasslands support an enormous range of flora and fauna in a host of different habitats. LIFE projects targeting grasslands have collated a useful collection of best practices during a mix of local and strategic grassland conservation measures.

More than 370 LIFE projects have been involved in providing direct or indirect support for EU grasslands habitats and their species. Of this number, over 45 projects co-funded by LIFE between 1999 and 2006 provided targeted assistance for grasslands habitats, and between them they encompass almost all EU grasslands habitats. Many of the projects worked with dry and calcareous grasslands habitats.

The latter grassland category attracts a high proportion of LIFE assistance due to its species-rich characteristics, particularly in terms of flora, since calcareous (chalky) grasslands can support high plant diversities of up to 80 plant species/m^2. This extensive mix of plant communities also sustains high levels of valued arthropod diversity, especially butterflies, in addition to grassland-adapted fauna such as souslik and voles, which provide food for raptors and other predators.

LIFE projects' work in these and other EU grasslands can be categorised into a number of different conservation activities, incorporating:

- Development of conservation management plans and definition of management techniques;
- Mapping of grassland habitats and species;
- Protective actions assisting grassland habitat species;
- Re-establishing traditional farmland activities that support grasslands habitats;
- Species monitoring and habitat surveillance to assess long-term impacts and conservation needs; and
- Networking and awareness-raising for grassland stakeholders, principally farmers.

LIFE LESSONS

All participants from the grasslands workshop agreed that Europe's grasslands are extremely valuable areas and this was attributed to various reasons including: their socio-economic productivity; their capacity to support high levels of biodiversity and provide priority habitats for a large number of threatened species; their ability to maintain aesthetic landscapes; and their ability to sustain cultural assets, such as traditional agricultural techniques and rural ways of life.

Farming was highlighted as both a major threat and also as a key opportunity for EU grasslands by participants at the LIFE Nature conference. Threats listed were associated with:

- Intensification of land use management approaches fuelled by sometimes conflicting agricultural policies;
- Lack of management leading to overgrowing and loss of biological values;
- Isolation and fragmentation of habitats caused by the above and producing serious threats to several species that were unable to achieve their colonising potential;

Photo: LIFE03 NAT/SLO/000077

SUPPORTING MOUNTAIN GRASSLANDS IN SWEDEN

Kinnekulle is a plateau mountain in the south-west of Sweden that has hosted large areas of hay meadows and grasslands containing ancient oaks and a rich plant and animal life. The long-term future of these highly valued environmental assets was being threatened by overgrowth of bushes, trees and spruce plantations, caused by shifts in farm practices and reduced grazing pressures.

The mountain supports 17 different Natura 2000 habitats but most were considered to lack adequate protection. LIFE resources were used to improve the conservation status of Kinnekulle's grassland species (**LIFE02 NAT/S/008484**).

Results from the habitat restoration work occurred relatively rapidly and numbers for target species, such as *Lanius collurio*, have already doubled in the restored grasslands. Orchids, sandwort and thyme have also been re-established in just a few years and the landscape impact has been significant.

LIFE project workers credit the immediate reintroduction of grazing after clearing as being the crucial factor that has sustained the open habitats and LIFE investment in livestock infrastructure has helped demonstrate the tangible economic benefits that can be available to farmers from environmental management approaches.

Restored grassland area in Kinnekulle

Photo: Jan Töve

- Insufficient financial resources provided for habitat maintenance and restoration; and
- Nature conservation values not always being properly taken into account during the preparation of national agri-environmental schemes.

Opportunities offered by agriculture for grasslands involved reversing the factors that caused the above threats and also making best use of the resources that are available. Emphasis was placed on targeting agri-environmental measures for the benefit of biodiversity; motivating young farmers to adopt environmentally-friendly approaches; and providing incentives to encourage younger generations to sustain traditional farming methods. Eastern Europe was considered to be an important target for grassland conservation measures since extensive farming methods remain widespread and these should be rewarded for the EU public goods that they create.

RAISING AWARENESS

Changing farmers' attitudes was seen as the central breakthrough of the La Serena LIFE project (see p.24). LIFE has been very active in raising awareness among land users about the relevance of conservation management for EU grasslands.

Delegates at the LIFE Nature conference underlined the importance of disseminating lessons learnt and best practices through face-to-face contacts, publications and networking events. These were considered essential in explaining the mutual benefits that were available to land managers from adopting environmentally sensitive approaches in grassland areas. Benefits to be highlighted

APPLYING AGRI-ENVIRONMENT MEASURES IN SPAIN

La Serena is the largest grassland area of the Iberian Peninsula and Western Europe. These semi-natural dry grasslands and local farming practices have previously supported diverse and valuable populations of steppic birds, but more recent changes in local arable and livestock farming techniques have had a detrimental effect on the pastureland and its wildlife.

An innovative LIFE project (**LIFE00 NAT/E/007327**) has implemented a management model in two pilot estates demonstrating that an alternative sustainable agricultural model is economically feasible and can improve the conservation status of the dry grasslands habitats and species in La Serena.

The LIFE project has been decisive in establishing agreements with landowners and tenants and has directly involved the local population with nature conservation. Moreover, it has helped to promote sustainable practices in the area in direct and indirect ways. The model implemented has motivated other land tenants not involved in the project to continue some of the actions carried out within the project (e.g. sowing of leguminous). The project has demonstrated that with suitable support schemes, farmers can be encouraged to practice sustainable farming.

Agricultural practices were altered to improve nesting and feeding habitats for kestrels and bustards. Agri-environment agreements were piloted with landowners that led to: reductions in commercial cultivation; increases in the growing of feed grains; introduction of crop rotations between legumes and cereal species; reduction of agrichemical use; better targeted grazing regimes; diversification into added value dairy products; and branding of the area as a destination for eco-tourism.

LIFE's integrated pilot package of agri-environmental measures produced significant bio-diversity benefits and also demonstrated both economic and social viability. Efforts are now underway to convert the LIFE project's approach into new mainstream EAFRD farm support schemes, which will improve the compatibility of agriculture and nature conservation in La Serena.

include the employment that can be generated during and after restoration work as well as the socio-economic potential that diversity offers as a source of new added income from nature tourism and branding of products to emphasise local values e.g. meadow meat, meadow honey, local cheese.

Getting these types of messages across was regarded as being often complex but at the same time crucial in ensuring the long- term success of grassland conservation measures, since these require the ownership and involvement of local land-users.

SUCCESS FACTORS

One of the most important success factors noted by delegates at the LIFE Nature conference was the relationship between national authorities, farmers and conservation bodies. Examples were highlighted that demonstrated the importance of all these parties working together in a coordinated manner.

LIFE was seen to provide an excellent means to test effective grassland conservation methods. However, the scaling up of these actions into mainstream EAFRD agri-environment measures requires national authorities to understand the work being piloted by LIFE, or others, and to ensure that sufficient flexibility is provided within rural development programmes to accommodate the full range of conservation approaches.

Delegates expressed disappointment at a lack of access in some Member States to crucial conservation support. The risk of this was noted as being particularly pertinent for essential 'non-productive' activity, namely the clearance of invasive species, since some rural development programmes were focussing their support more towards 'production-oriented' agri-environment activities.

Bottom-up methodologies were endorsed as effective success factors, as were the presence of local advocates who were willing to facilitate cooperation and comprises during the planning and implementation of conservation activities.

All of these factors offer strong demonstration value and further lessons from LIFE are presented in the following grassland conservation case studies from Hungary and Ireland.

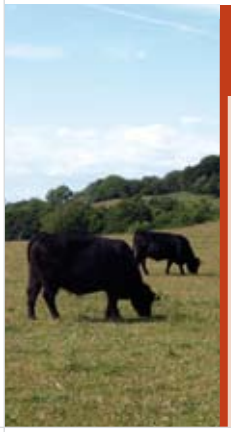


Photo: Justin Toland

INVOLVING FARMERS IN GRASSLAND CONSERVATION

Many good examples of stakeholder involvement in grassland management can be found in the LIFE website's project database. Two of these include: German work on 're-wetting the western Lake Dümmer fen' (**LIFE02 NAT/D/008456**) which has attracted 140 local farmers to maintain wet grasslands after bird breeding seasons finish; and Danish efforts to restore dry grasslands (**LIFE04 NAT/DK/00020**) that have secured the involvement of local livestock producers to carry out appropriate grazing on more than 1 500 ha in 11 Natura 2000 network sites.

Proactive information campaigns and local involvement strategies are stressed as key success factors for both these LIFE Nature projects which will remain relevant for other projects progressing grassland conservation objectives.

Biodiversity levels in Hungary's Hortobágy National Park have been boosted by a successful LIFE project that restored important grassland habitats and demonstrated the economic value of environmental management to local famers.

Hortobágy: **greening of Hungarian pannonic grasslands**

The open grassland plains found in Hungary's National Park host Europe's largest coherent coverage of the priority pannonic salt steppe and marsh habitat (habitat 1530). The Park incorporates some 54 000 ha of this internationally important habitat that supports a valuable variety of flora and fauna within its mosaic of wild grasslands, wetland marshes and semi-natural water courses.

Birds species such as the great bustard *(Otis tarda)*, bittern *(Botaurus stellaris)*, common crane *(Grus grus)*, aquatic warbler *(Acrocephalus paludicola)*, and dotterel *(Charadrius morinellus)* all live on the Hortobágy steppe. Furthermore, otter *(Lutra lutra)* and the European pond turtle *(Emys orbicularis)* are also resident within the marsh habitat, which has benefited from a LIFE Nature project working to restore key environmental features.

Large parts of the Park's pannonic grasslands have been adversely affected by a complex network of dykes and channels that were built as an irrigation system for local rice fields during the communist era. These drainage structures had badly altered the flood plain's natural micro-topography and LIFE funds were used to eliminate these artificial factors in order to ensure the long-term conservation of priority habitats over 10 000 ha in the National Park.

GRASSLAND RESTORATION

Around 360 km of varied irrigation infrastructure was removed during the LIFE project and re-establishment of natural water-flow dynamics created favourable conservation conditions for habitat types covering oligotrophic to mesotrophic standing waters with vegetation of Isoeto-Nanojuncetea (3130).

Parallel grassland conservation actions included introducing intensive cattle grazing in certain areas to improve conditions for competitively-weak plant associations, such as the Puccinellio-Salicornetea (habitat 1310). These require shorter grass environments if they are to spread on suitable solonetz soil areas and the LIFE project's partnership with local farmers provided an effective mechanism to boost this key local biodiversity feature.

Agricultural activities were complemented by a strategy of seeding over 60 ha and mechanically weeding a further 72 ha, to support the re-colonisation of *Festuca pseudovina*, the steppes' main native grass species.

Hortobágy was declared a Natura 2000 site, designated as an SPA and proposed as an SCI during the LIFE project, which has enhanced habitat conditions for 37 species of birds listed in Annex I of the Birds Directive.

Nature conservation benefits gained during grassland habitat work are expected to be sustained in the long term, since the LIFE project removed the constraints on natural water-flows in the marsh areas. Only minor management inputs are required and these low-cost, affordable measures focus mainly on monitoring the effects of different water levels and grazing pressures.

Agri-environmental measures have been funded by Hungary's national Rural Development Plan to maintain the presence of cattle and these subsidies provide local farmers with an ongoing financial incentive for continued participation in the National Park's grassland management programme.

Benefits of the LIFE project include the fact that the beneficiary is now fully aware what is possible and how to access EU assistance to help improve grassland habitats. The farmers are also much more aware about environmental management in general and the prospects that it offers as a viable economic driver for high nature value areas.

HUNGARY

Project number: LIFE02 NAT/H/008634

Title: Restoration of grasslands in Hortobágy National Park examples on pannonic grasslands and marshes, Hungary

Beneficiary: Hortobágy National Park Directorate

Contact: Szilvia Göri

Email: szilvi@www.hnp.hu

Website: http://life2002.hnp.hu

Period: May-2002 to Nov-2005

Total budget: €780 000

LIFE contribution: €546 000

Burren LIFE: **agriculture and nature in step**

An effective mix of farm management methods and conservation agriculture techniques has been successfully applied to boost the high nature value of important limestone grasslands in the west of Ireland.

Located along the southern part of Ireland's west coast, the Burren forms a unique limestone landscape covering more than 60 000 ha of farms, cliffs, caves and terraced upland. The area's grassland species contribute to its designation as a UNESCO World Heritage Site and the distinctive environment supports a variety of habitats listed under Annex I of the EU Habitats Directive, including five priority habitats.

LIFE funds have been harnessed to help sustain a symbiotic relationship between local farming and the Burren grassland's rich biodiversity.

CONSERVATION AGRICULTURE

Previous experiences had highlighted the Burren soil's sensitivity to changes in farm management practices, which reduced grazing pressures and increased degradation of priority habitats. A programme of agri-environment measures had been put in place to help rectify such concerns and LIFE funds were used to build on these measures by piloting a dedicated model for 'conservation agriculture' in the Burren.

LIFE project objectives were based on a premise that the long-term success of conservation agriculture depended on ownership of the concept by local farmers, and so a large amount of effort was invested to involve livestock managers during the LIFE project's design and implementation. Various consultation methods were applied and helped to ensure that some 20 different farmers now understand, appreciate and support the package of conservation agricultural measures that have been demonstrated by LIFE.

Key activities included working with farmers to develop appropriate feeding regimes for the different livestock that were grazing different parts of the Burren's species-rich grasslands. This involved: testing the benefits from extending and adjusting winter grazing practices; piloting new summer grazing techniques, such as switching between cattle, goats and sheep in some areas; and avoiding bulldozer damage to priority habitats by developing low-impact approaches to managing livestock access routes in limestone pastures.

One major innovation has been the development of a tailored 'concentrate' feed ration for out-wintering cattle. This encourages increased foraging by cattle, thereby helping to maintain important habitats, while cutting down on the use of silage (by up to 65%), which also helps to improve water quality.

Many useful lessons were learnt about conservation agriculture techniques during these trials that remain relevant for other EU grassland managers. Upmost among these was the need for effective consultation and flexibility to agree mutually beneficial approaches. A local presence was considered important in helping facilitate such consensus management, as was simplicity in the design of conservation measures, which included designating a set number of 'Grazing Days per field' per season, rather than using fixed calendar dates.

Farmers' willingness to experiment and innovate was also noted as important, alongside the use of integrated methodologies that were applied to help enhance essential supporting infrastructure, such as walls and facilities for watering and feeding livestock.

The project's monitoring programme offers significant demonstration value, since it has been used a crucial tool to explain the cost effectiveness of conservation agriculture techniques for many different stakeholders.

Flexibility in the types of eligible conservation actions was highlighted as a benefit, since LIFE was able to provide support for essential 'non-productive' clearance of alien species.

All of these experiences from the Burren LIFE project offer useful best practice guidance for grassland areas with high nature value, and the LIFE legacies are expected to be sustained within a new blueprint for conservation agriculture policy that is being investigated by the beneficiary.

IRELAND

Project number: LIFE04 NAT/IE/000125

Title: Farming for conservation in the Burren

Beneficiary: National Parks and Wildlife Service, Dept of Environment, Heritage and Local Government

Contact: Ruairí Ó Conchúir

Email: info@burrenlife.com

Website: www.burrenlife.com and www.npws.ie

Period: Sept-2004 to Aug-2009

Total budget: €2 230 000

LIFE contribution: €1 673 000

Europe's forest ecosystems, covering 30% of the continent's land area, have been intensively used for centuries, while elsewhere in the world, forests are under threat of conversion to other land use. The changes that forests have undergone over the past few decades – such as intensified silvicultural practices, the use of exotic species and increased uniformity – have reduced the environmental quality of forests. Just 1-3% of EU forests remain natural and unmanaged.

LIFE and **Europe's forests**

The EU Forestry Strategy introduced in 1998[1] aimed to coordinate Member State forestry policies at an EU level. The strategy addressed biodiversity concerns in three areas: conservation; sustainable use; and the benefits arising from the use of forests' genetic resources. As there are only a few forest areas in Europe that are not used commercially the key action for the protection of biodiversity is to find appropriate forest management systems that take these biodiversity concerns sufficiently into account.

EEA identified the following guidelines for forest managers for the conservation of biodiversity:

- Using appropriate ecological site adaption measures via diverse silvicultural techniques combined with associated measures, for example respect for dead wood (stumps, etc) and for other important micro-habitats present in forests
- Maintaining healthy forest ecosystems by improving their capacity to regenerate, resist and adapt
- Restoring traditional management of those silvo-pastoral systems with high levels of biodiversity that might be lost if these areas were abandoned
- Improving harvesting techniques to try to limit related damage
- Carrying out measures in a way that does not have a negative impact on ecologically interesting or noteworthy sites, ecosystems and habitats.

The forest strategy also called for the establishment of protected forest areas to complement the sustainable management of forests, in particular via the Natura 2000 Network. The objective for these protected areas is to contribute to the enhancement of biodiversity and species protection as well as the social and economic benefits of forests.

EU FOREST ACTIONS

The EU's Forest Action Plan[2] adopted in 2006 provides a framework for forest-related actions at Community and Member State level. Its overall objective is to support and enhance sustainable forest management and the multifunctional role of forests. As such, it pays due attention to helping achieve the EU's biodiversity objectives for 2010 and beyond.

The Action Plan focuses on four main objectives: (1) to improve long-term competitiveness; (2) to improve and protect the environment; (3) to contribute to the quality of life; and (4) to foster coordination and communication. Nineteen key actions are proposed by the Commission to be implemented jointly with the Member States from 2007–2011.

A new legislative package on global forest issues was proposed by the Commission in 2008. It includes a Communication on deforestation and a proposal for a Regulation dealing with the sale of timber and timber products. The Communication proposes a new Global Forest Carbon mechanism, to be funded partly from auctioning of EU ETS allowances.

The proposed Regulation aims to strengthen Member States' powers regarding the legal status of timber products. The proposal will oblige timber traders to identify the source of their products and provide assurances that timber has been harvested according to the relevant laws of the country of origin.

The Fifth Ministerial Conference on the Protection of Forests in Europe (MCPFE) held in Warsaw, Poland in 2007, also highlighted key challenges and decisions to ensure that Europe's forests continue to be managed sustainably and provide benefits to the best of their potential. The MCPFE has developed pan-European 'guidelines for afforestation and reforestation' with a special focus on the provisions of the United Nations Framework Convention on Climate Change.

The LIFE forest case studies highlight best practices in the conservation and management of some of Europe's most valuable forest habitats. Practical and innovative measures to combat forest fires, to control and eliminate invasive plant species, promote natural regeneration and carry out selective tree cutting are also discussed.

Many other examples of LIFE projects supporting European forests are presented in the forest thematic section on the LIFE website http://ec.europa.eu/environment/life/themes/forest/index.htm and more detailed analysis is available in the dedicated forest LIFE Focus brochure.

1 COM (1998) 649 final

2 http://ec.europa.eu/agriculture/fore/action_plan/index_en.htm

Meeting the objectives of the EU Forest Action Plan

The case studies presented at the forest session cover several different forest habitats – some of them of priority interest – and encompass five different biogeographical regions. All the projects are good examples of meeting the main objectives of the EU Forest Action Plan (2007-2011).

THE FOREST SESSION CASE STUDIES

"Restoration of deciduous forest in Söderåsen National Park" (LIFE02 NAT/S/008483)
"Restoration of boreal forests and forest-covered mires" (LIFE03 NAT/FIN/000034)
"Conservation and management of Danube floodplain forests" (LIFE03 NAT/SK/000097)
"Conservation and restoration of Aiako Harria" (LIFE05 NAT/E/000067)
"The forests with *Pinus nigra banatica* part of Natura 2000" (LIFE04 NAT/RO/000225)
"Rehabilitation of Coppice *Quercus frainetto* woods" (LIFE03 NAT/GR/000093)

In particular, the projects were concerned with: (i) the sustainable use of forest products and services e.g. the Greek project; (ii) the maintenance and enhancement of biodiversity, integrity, health and resilience of forest ecosystems e.g. the Scandinavian and Central European projects, the Spanish project; and (iii) the contribution to quality of life by preserving and improving the social and cultural dimensions of forests e.g. the Romanian project.

Furthermore, the Slovak and Romanian projects are good examples of the implementation of the Natura 2000 network through the establishment of new Sites of Community Importance (SCIs) and Special Protection Areas (SPAs) and of conserving and protecting the remaining forests through the enlargement of existing natural reserves, while also managing any conflict with local stakeholders.

Finally, the Spanish project demonstrates ways of meeting the requirements of the EU Water Framework Directive (2000/60/EC) through the planning of the silvicultural actions at watershed levels: the management of the large dead wood 'LDW' of the fluvial forests and the substitution of plantations of fast-growing tree species with the original beech and oak forests.

Other common characteristics of the projects include their efforts to "restore" the natural nature of forests through: (i) normal silvicultural practices, for example coppice conversion, thinning, felling of alien tree plantations, planting etc; or (ii) less common practices such as girdling, ring barking, the use of controlled fire.

All the field interventions carried out are also consistent with the Sustainable Forest Management general guidelines (SFM – Helsinki, 1993), elaborated within the framework of the Pan-European Ministerial Conference on the Protection of Forests in Europe – a political platform for the dialogue on European forest issues involving the European Community and some 46 European countries.

LIFE has helped the implementation of Natura 2000 in the new EU Member States - Slovakia

Photo: LIFE03 NAT/SK/00097

STAKEHOLDER INVOLVEMENT

All the speakers highlighted that the involvement of stakeholders is a crucial factor for successful projects. Good

Photo: LIFE05 NAT/E/000067

Involving several stakeholders that work in the forest sector increases the chances of success of a project

communication is of upmost importance in gaining acceptance and support for a rehabilitation or restoration project, especially in case of unusual methods, for example in the use of controlled fire in the Finnish Boreal forests.

Depending on the specific aims of the project, the types of stakeholders involved varied considerably. For example, the Greek project involved people working in the forest sector (private or public) and in nature conservation organisations; the Spanish project involved forest owners, the local population, schoolchildren, and the managing bodies of similar SCI areas; and the Romanian project addressed representatives of local communities, of civil society (including local NGOs), scientists, local and national authorities, and tourists. The Romanian project also demonstrated that rehabilitation projects can provide an excellent opportunity to bring people into an active and concerned relationship with nature by involving them in the project actions themselves – i.e. planting trees.

The policy discussion led by the expert panellists Tor-Bjorn Larsson, Prof. Gianluca Piovesan and Daniel Vallauri highlighted several areas that it was felt were still not fully addressed or clarified by the projects.

- **A scientific approach** – this is the fundamental basis in order to understand the processes and the dynamics of forest ecosystems and to develop appropriate restoration measures. Although LIFE is not a research programme, the silvicultural actions planned and implemented within the LIFE forest projects should be based on scientific grounds, supported by scientific staff, and produce scientific results published in scientific journals as project deliverables, even after the project's end.
- **Harmonisation** – of the various definitions, of the reference/targeted habitat and the use of common indicators is required. The terminology used to define the overall objectives of the projects is unclear. For example, the Finnish, Swedish and Spanish projects carried out the "restoration" of forest habitats. The Greek project was concerned with the "rehabilitation" of forest habitats, while the Romanian project targeted the "reconstruction" of forest habitats. None of the projects however, provides a clear definition of these terms. In line with this, projects should define the reference/targeted habitats and species (numbers) to be achieved and/or the natural process activated and use common indicators with the aim of comparing results for the same habitat across different biogeographical regions.
- **Long-term monitoring** – this is also of primary importance in order to assess the success/failure of the

All the LIFE forest habitats projects had a science-based approach

Photo: LIFE05 NAT/E/000067

project actions, but also the effects of climatic changes on stand functioning and health. This approach should be adopted as the basis for adaptive management: data collection from monitoring > learn > correct the mistakes > monitoring > new actions. In the planning of interventions, the capacity of the forest ecosystem itself (resilience) to react is scarcely investigated; the role of natural regeneration in achieving the expected results is underestimated. Furthermore the history of the forest and its cultural value should be also considered in a landscape perspective.

Photo: LIFE05 NAT/E/000067

Monitoring of project restoration actions is crucial to assess if they have worked

POLICY CONCLUSIONS

All the participants agreed that LIFE is a powerful tool for addressing forest restoration measures, and suggested the following improvements to the LIFE+ programme:

- **Nature restoration/ rehabilitation** – There is a need for precise definitions for the different kinds of actions (existing sets of definitions might be acknowledged and centralised at EC level). The reference habitat should be clearly defined when planning a restoration or rehabilitation action. Specific indicators should be set, referring to the existing scientific references and including cost efficiency of the innovations promoted.
- **Nursery/propagation techniques** – There is also a need to exchange experiences and to establish consolidated propagation protocols for the reproduction of naturalistic, often non-commercial species (herbs, shrubs and trees). Moreover the propagation material has to be certified in respect to provenance (Directive 105/99/CE) and used with specific micro-environmental conditions borne in mind (e.g. altitude, micro-topography, geomorphology). A careful analysis of the genetic resources must be carried out in order to safeguard the biodiversity conservation with particular regard to species adaptation to disturbances (e.g. climatic change). It was suggested that such Information might be centralised at Commission level, to be shared among applicants and beneficiaries.
- **Long LIFE monitoring** – The effects of forest actions go far beyond the duration of projects. Therefore it is necessary to extend monitoring over a longer period. It was suggested that forest monitoring procedures, aims and indicators could be included in the project application, and monitoring reports might be required as "deliverables" even years after the project's end. Long-term monitoring of forest interventions should be considered as "concrete conservation actions" to allow for longer project duration without co-financing penalties.
- **Fire (management tool, control and prevention)** – In the event of the use of fire as a management tool, the project should ensure its actions comply with the Kyoto protocol (and more generally with the management footprint evaluation) and compensation measures should be implemented. The effects of fire on soil properties and its biological component should also be assessed and monitored. Projects targeting forest fire prevention should be encouraged, especially in the Mediterranean region, as it was noted that only a few projects were submitted or selected in the 2007 round of LIFE+ funding.
- **Interaction between forest and fauna** – Whenever planning, implementing or monitoring forest actions, the fauna component (including species that are not targeted by the Birds and Habitat Directives) should always be taken into account. Threats to fauna and to biodiversity globally should be assessed before intervening and should drive planned actions. The effects on fauna should be included among the monitoring indicators for all forest actions.

Photo: LIFE03 NAT/GR/000093

Restoration of Finnish boreal forests

Best practices in the management of protected areas were developed by this ambitious project for the restoration of boreal forests across almost 6 000 ha in 33 Natura 2000 sites in Finland. In terms of area covered, it is one of the largest LIFE Nature projects. Its success is in part attributed to a very effective media campaign.

The boreal natural forests and mires with forest cover are habitats prioritised by the European Union. They are also classified as nationally threatened habitats in 2008. However, only a small proportion have been protected in southern Finland and few are in their natural state. These habitats are essential nesting environments for one-third of the Finnish Bird Directive species. They are also important for many species listed in the EU Habitats Directive and for nationally identified rare or threatened species, especially insects and fungi.

The aim of the project was to safeguard the favourable conservation status in 33 Natura 2000 areas in southern and western Finland by ecological restoration of priority habitats.

The project was run by the Natural Heritage Services of Metsähallitus (Finnish Forest and Park Service). The project beneficiary implemented restoration measures in boreal forests and drained forest-covered mires, where the structure and functioning of the natural habitats have been changed by human activities; in eskers with a closing canopy; and in deteriorated habitats of the endangered white-backed woodpecker.

A total of 5 939 ha of boreal forests were restored in 33 sites. Controlled burning was used in 356 ha, increasing the amount of dead wood and creating small forest gaps in 2 702 ha. In addition, 410 ha of forest-covered mires, 561 ha of esker forests, and 196 ha of forests harbouring the white-backed woodpecker were restored during the project.

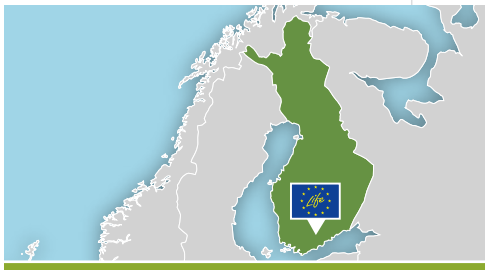
Preliminary monitoring shows: (1) the number of dead wood dependent and red-listed species increased in restored forests; (2) hydrological recovery was initiated in restored mires; (3) restoration strengthened the population of the white-backed woodpecker; and (4) the number of xerothermic species increased on restored eskers.

RESTORATION METHODS

The project improved restoration planning and developed best practices in the management of protected areas. Its wide scale enabled the testing of different restoration methodologies and approaches. Of particular significance were the lessons learnt from the use of fire (controlled burning) in restoration, impact monitoring and the systematic monitoring of planning and implementation costs. Over the course of the project, hundreds of employees and partners were also trained. The project was extensively featured in the Finnish media. According to project manager, Dr. Stig Johansson, this has helped to make restoration a common and widely accepted tool in the management of the country's Natura 2000 areas.

Looking to the future, the project has also provided direction for the high-priority Forest Biodiversity Programme for Southern Finland (METSO), which runs until 2016. Implementation was based on partnership between main actors such as Metsähallitus, the private sector and universities, and a national monitoring network was established. The partnerships and monitoring network are important elements of the on-going METSO-programme.

The restored forests habitats benefited the endangered white-backed woodpecker



FINLAND

Project number: LIFE03 NAT/FIN/000034

Title: Restoration of boreal forests and forest-covered mires

Beneficiary: Natural Heritage Services of Metsähallitus, Southern Finland

Contact: Dr. Stig Johansson

Email: stig.johansson@metsa.fi

Website: www.metsa.fi/metsa-life

Period: Dec-2002 to Dec-2007

Total budget: €3 680 000

LIFE contribution: €1 840 000

Boosting hopes for **Romania's black pine forest**

This Romanian project targeted the long-term conservation of the priority habitat, 'Sub-Mediterranean pine forests with endemic black pines'. It developed a model for site management for the newly-designated Natura 2000 site, and identified best practices of particular value to projects facing similar threats from forest fires and/or uncontrolled tourism.

Sub-Mediterranean pine forests with endemic black pines are listed as a priority habitat type in the EU Habitats Directive. In Romania, this habitat type is represented by an endemic subspecies, *Pinus nigra banatica*, which has its main area in the Domogled-Valea Cernei national park.

The main threats to its conservation stem from tourism and forest fires. Tourism is the main human activity in this area. Tourists and the local population living near the national park cut the trees for firewood. Uncontrolled tourism has also resulted in the degradation of natural habitats. Moreover, the high temperatures reached in recent summers have caused fires that have destroyed some important areas of the targeted habitat. For example, 90 ha were burnt in 2000. Furthermore, there was no management plan for the park and no specific conservation measures for the highly endangered black pine species.

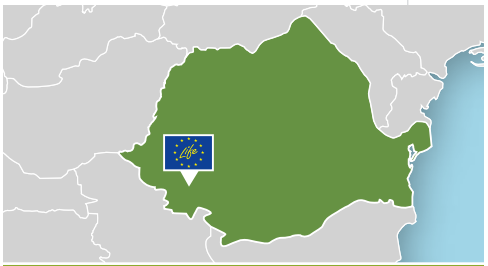
Pine nursery trees used to restore the degraded areas

This recently-closed LIFE project implemented a number of actions to help safeguard the long-term conservation of *Pinus nigra banatica*. These included the assessment of the conservation status of natural habitats and species and the implementation of an integrated monitoring system for the area; the establishment of a management plan for the site; and the improvement of an existing warding system. In order to recover an area that has been highly degraded by forest fires during recent years, the restoration of 25 ha of the pine forest was also carried out.

The project also set up appropriate paths and visitor facilities in order to encourage more sustainable tourism, and established an information centre for visitors to the area. Particularly successful in helping to raise awareness of the value of the project was the launch of the 'Banatica black pine festival' – an annual 'business and biodiversity' event that is celebrating the value of the endemic forest, while promoting local crafts, customs and produce.

LASTING LEGACY

In 2007, the area was declared a Site of Community Importance (SCI), which, says project manager, Ilie Chincea, provides a "good opportunity" for long-term conservation. He adds that the LIFE Nature programme provided vital support in reaching this goal. The project's promotional activities have helped to raise public awareness and support for the Natura 2000 network. The assessment of the site has enriched the scientific knowledge of the area, and the development of an 'ecological reconstruction approach' – promoting best practices for seed harvesting, seedling development and ground preparation (for planting in particular steep and rocky terrain) – has provided an integrated model that can be replicated in other sites. Other replicable actions concern fire prevention – notably the development of 'early warning' strategies for dealing with future forest fire events. Finally, partnerships forged during the course of the project are proving to be lasting ones that are generating networking cooperation for the future.



ROMANIA

Project number: LIFE04 NAT/ RO/000225

Title: The forest with *Pinus nigra banatica* part of Natura 2000

Beneficiary: Environment Protection Agency Caras Severin

Contact: Ilie Chincea

Email: ilie.chincea@apmcs.ro

Website: www.pinusnigrabanatica.ro/eng/index.php

Period: Jan-2004 to Jan-2007

Total budget: €815 000

LIFE contribution: €611 000

Photo: LIFE02 NAT/A/008518

Combating climate change to protect biodiversity

The Intergovernmental Panel on Climate Change (IPCC) found that global warming is "unequivocal". According to the IPCC, it is "now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level". While climatic changes have occurred throughout the Earth's geological history, there is a growing scientific and political consensus that most of the warming observed in the past 50 years is the result of increased release of greenhouse gases – mainly carbon dioxide (CO_2) but also methane (CH_4) and nitrous oxide (N_2O) – largely as a consequence of human activities.

The impact of human activities is also discernible on other climatic indicators such as Arctic temperatures and ice, precipitation levels (rain, snow and hail), ocean salinity, wind patterns and frequency of extreme weather (droughts, floods, heatwaves and cold spells). As a result, climate change is increasingly recognised as a serious threat to biodiversity along with pollution and land-use change. Based on a sample of species distribution models, it has been estimated that 20-30% of species face extinction if temperatures increase by 1.5-2.5°C.

BIODIVERSITY AND CLIMATE CHANGE POLICY

The 1992 United Nations Framework Convention on Climate Change was instrumental in shaping climate change policy in Europe. Policy was further formed by the IPCC reports, which proposed actions for reducing greenhouse gas emissions. In March 2007, EU Member States made a firm independent commitment to achieve at least a 20% reduction of greenhouse gas emissions by 2020 compared with 1990 levels.

This commitment followed the publication of the European Commission's Communication "Limiting Global Climate Change to 2° Celsius: The way ahead for 2020 and beyond", which set out proposals and options for keeping climate change to manageable levels. The Communication, part of a comprehensive package of measures to establish a new energy

policy for Europe, is a major contribution to ongoing discussions on a future global agreement to combat climate change after 2012, when the Kyoto protocol's emissions targets expire. These new targets are significantly higher than the 8% overall target the EU agreed to reach by 2012 under the Kyoto protocol.

The Commission's Communication on Biodiversity [COM(2006) 216] – "Halting the decline of biodiversity in the EU by 2010" – addresses the connection between biodiversity and climate. It is intended to complement the 1998 biodiversity strategy and the 2001 action plans. On climate change, the Communication stresses the need for both mitigation (the necessity of substantial cuts in global greenhouse gas emissions) and adaptation, calling for strategic measures and a task force to help biodiversity adapt to unavoidable climate change. Even with substantial reductions in greenhouse gas emissions, continued climate change is predicted over the coming decades and centuries.

THE NATURA 2000 NETWORK

Strengthening the quality and coherence of the Natura 2000 network will enable it to play a major role in ensuring that future nature management and conservation efforts take into account the likely impact of climate change on Europe's biodiversity. LIFE Nature projects have made a significant contribution to the implementation of the network, identifying new sites and connecting areas of particular conservation importance. The Natura 2000 network provides space for species and habitats to flourish and helps sustain natural adaptation options.

LIFE Nature projects have also enhanced the connectivity and coherence of Natura 2000 by restoring and creating habitats ('re-wilding') and by facilitating the movement and dispersal of species as their 'climate space' moves. The LIFE Nature projects to conserve the Arctic fox (**LIFE03 NAT/S/000073** and **LIFE98 NAT/S/005371**), which is found in the mountain and tundra areas of the northern hemisphere, responded to the diminishing habitat of the target species as a result of climate change, among other factors. It aimed to create 'corridors' between habitats and to identify possible habitats for the fox. Policy initiatives and projects to improve resilience, connectivity and promote 'ecological coherence' of the network are especially vital. Such conservation efforts should strengthen the adaptive capacity of Europe's ecosystems to climate change.

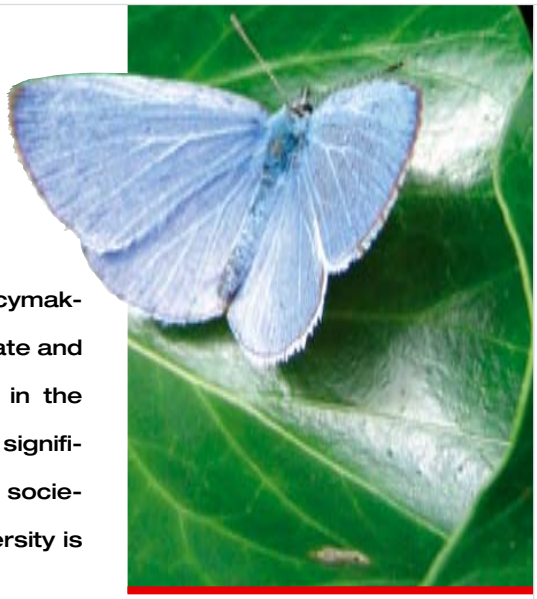
Facilitating nature's adaptation to climate change also involves reducing other pressures on biodiversity, such as intensification of land-use, fragmentation of habitats, overexploitation, invasive alien species and pollution. Failure to take action will result in great loss to Europe's rich biodiversity. If ecosystems are kept healthy, species will become more resilient to climate change and more able to adapt.

Photo: LIFE00 NAT/E/007340

The impact of climate change is already visible, especially on Mediterranean mountains.

The impact of climate change on Europe's biodiversity is observable. Long-term monitoring of species or ecosystems and projections of future impacts using modelling show that climate change is affecting the distributions of species, flowering times and bird migrations. Protection of biodiversity, however, can help limit atmospheric greenhouse gas concentrations because forests, peat lands and other man-made ecosystems and habitats store carbon. LIFE Nature projects have focused on restoring and protecting these important areas. For example, a project was set up to improve the condition of the blanket bog of the Berwyn and South Clwyd Mountains in Wales (**LIFE06/NAT/UK/000134**).

Responding to **climate change**



Climate change is a major challenge for policymakers, industry and the public. Changes in climate and global temperatures are likely to continue in the future. Climate change has already had a significant economic impact and has destabilised societies around the world. The impact on biodiversity is also evident.

The policy discussion at the climate change session of the 'Learning from LIFE' Conference 2008 started off with the following premises:

- Europe's mountain regions, coastal zones, wetlands and the Mediterranean region are particularly vulnerable to climate change. Although there could be some positive effects in the short term, most impacts are likely to be adverse. Conservation strategies have taken little account so far of the expected impacts of climate change.
- The EU has a clear vision for leadership on international action to address climate change. To this end, a far-reaching package of proposals has been put forward to achieve ambitious emission reductions. The EU is aware that decisive action is needed on adaptation strategies.
- Few LIFE Nature projects have focused on climate change and none have directly addressed climate change as an objective. Most LIFE Nature projects, however, are effectively dealing with climate change through adaptation and mitigation processes.

RECOMMENDATIONS

As a result of the discussion, a series of recommendations were made. By identifying possible future impacts of climate change, as well as current ones, and undertaking appropriate measures, conservation efforts will become more effective. With LIFE projects, a vast amount of data are available to accurately determine the status of habitats and species. At present this information is not being used effectively because this is not an objective of LIFE projects. Since such data are critical for planning strategies it has been proposed that LIFE could help set up a LIFE meta-database for the exchange of data. Guidelines could be established to this end.

As well as direct conservation gains, LIFE projects can achieve other favourable results, such as increased resilience of habitats and species to predicted climate change scenarios and the provision of greater opportunity for adaptation.

A robust Natura 2000 network is an essential foundation for climate change adaptation. But climate change predictions on habitats and species highlight the need for greater flexibility with regards to Natura 2000 sites and the connectivity between them. The conservation of the Arctic fox demonstrates that LIFE Nature must focus on this need. For its survival, the fox should be allowed to move North or even to Siberia. Such migration was a feature of species survival in previous warming and cooling periods.

In addition to boosting biodiversity, projects can be beneficial to other ecosystem services (for example, peat-

LIFE project actions can increase the resilience and connectivity between habitats

Photo: LIFE03 NAT/S/000073

Photo: LIFE98 NAT/D/005081

LIFE has contributed to climate change mitigation by restoring carbon sink habitats, for example bogs

land restoration). Trade-offs may also be involved: draining blanket bog and agricultural practices run contrary to peatland conservation. As a result, there is a need for an additional focus on ecosystem services and their relationship with biodiversity and climate change. This is a chance to put biodiversity and climate change issues at the top of the agenda and in a language comprehensible to other policy sectors and to the general public. For instance, the blanket bogs project in Wales (p. 38) will determine the economic value of this type of project by analysing data collected during the project in an ecosystem services model. It was also stressed, however, that the sole use of ecosystem services as a means of valuing nature would leave behind those species that do not have a specific significance in this regard. Other strategies are needed for these species. One idea put forward was to consider future service value if a population was returned to optimum levels.

LIFE Nature projects have also contributed to mitigation through the storing of carbon and the sustainable use of biomass for energy production. Carbon storage has taken both the form of conservation of habitats (mainly wetlands and bogs) and re-wilding (carbon sequestration). Multiple benefits of climate change measures (adaptation and mitigation) are possible through appropriate design, implementation and management, as illustrated by the project "Managed Realignment moving towards Water Framework Objectives" (**LIFE06/ENV/UK/000401)**. As sea levels rise, the provision of flood plains will become increasingly important. But in many cases the impact of climate change is not adequately monitored.

Many LIFE projects are enhancing cooperation at local and regional levels, creating channels of communication that might have not been opened up otherwise. Some structures for cooperation have continued in the long term, while some have been and will be lost as post-LIFE funding is not ensured. Safeguarding the know-how and networking gained through LIFE projects is essential. For instance, a key conclusion of the peat bog projects in Belgium was the need to demonstrate the synergies between Natura 2000 sites and rural development, hunting, fishing, farming, forestry, sustainable tourism, etc. Realising the potential of these synergies – that is, how protecting areas of conservational importance can have a positive effect on the local economy – requires cooperation with local authorities, agencies and other public and private bodies and NGOs.

Methodologies and models helping to predict and anticipate future adverse effects (such as those established with EC4MACS) or trends for habitats/species are essential tools for preventing loss of biodiversity and identifying priorities for adaptation measures. Sharing of information helps formulate sustainable policy responses in different sectors. The conference participants proposed the establishment of standardised indicators that show what nature conservation projects provide and need. These indicators should be shared within existing networks and in cooperation with regional and national authorities. This information might be used to formulate policies for different sectors and promote better understanding and management. LIFE+ proposals that account for climate changes might help to this end. Relevant information can also be extracted from ongoing LIFE projects, which could be a good source of information, if common indicators are agreed.

The discussion also highlighted several gaps in knowledge. There is a vital need to identity current trends/threats; priority habitats for carbon management; cost-effectiveness of nature conservation actions (is restoring a peat bog or building a wind farm more cost-effective?); changes in agricultural practices and disease vectors. Such information is important for taking prompt action on adaptation.

Making decisions about adaptation policy involves assessments of risks and of costs and benefits. Comprehensive and integrated methodologies, as well as suitable monitoring to measure the success of responses, should be put in place.

The debate highlighted the great potential for LIFE Nature projects to address climate change adaptation and mitigation measures at a regional and local level. They can also contribute to the gathering of much-needed high quality data on habitats and species. A wider scope, however, is needed, which is better addressed by other instruments or initiatives. LIFE Nature should ensure that results are effectively publicised and made available to the scientific community and policy-makers at every level. It is also a tool for demonstrating effective actions that can be replicated elsewhere. LIFE projects are a great way to raise awareness of conservation and environmental issues, and they usually have a greater local impact.

Monitoring and predicting species trends could prevent them becoming extinct

Photo: Arge Naturschutz LIFE00 NAT/A/007055

Saving **the Arctic fox**

A LIFE Nature project in northern Sweden and Finland has helped boost the population of this endangered species and suggested a novel response to climate change.

The Arctic fox *(Alopex lagopus)* occurs in mountain (fjeld) and tundra areas in the northern hemisphere. It feeds to a large extent on small rodents and the population size fluctuates greatly, depending on the availability of food. As well as ptarmigans, carrion from reindeer and other animals killed by large carnivores form another important component of the diet. Competition and predation pressure from red fox *(Vulpes vulpes)*, which has increased in numbers in the mountain areas, has added to the Arctic fox's problems, as has the fact that there are now so few animals left. Young foxes have difficulty in finding a non-related partner.

In the EU, the Arctic fox is found only in the northern parts of Sweden and Finland. The population size declined dramatically during the 20th century. In 1997, the adult population was estimated to be around 100 animals. There is a considerable risk that the fox will become extinct in the EU due to random fluctuations in demographic parameters. A similar situation exists in adjacent parts of Norway and the Kola Peninsula in Russia.

In response to this threat, a first LIFE Nature project was implemented between 1998 and 2002. The main actions included supplementary feeding and control of red fox to reduce competition for food and breeding dens from an expanding population of red fox. Although the population did not decline further during this period, the Arctic fox population did not respond until 2001, when there was a peak of northern lemmings.

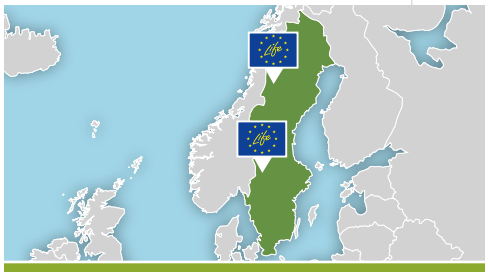
At the end of the first project, the species remained endangered and a second project was necessary to consolidate the achievements of the first. In order to maximise the project activities, an individual-oriented approach rather than a spatial approach was taken to supplementary feeding and red fox control. In addition, the project investigated the different diseases affecting Arctic foxes and making captive breeding difficult. The project protected sites with breeding dens from hunting with dogs in early autumn.

The project actions aimed to increase reproductive output and decrease mortality of the Arctic fox, and thereby significantly increase population viability. From 2004-2007 its population doubled. Organisers attribute the success of the project in equal part to its feeding actions, the control of red fox and the natural increase in the lemming population.

CLIMATE CORRIDORS

The fox's natural habitat is also under threat from climate change. The distribution areas of the Arctic fox and its genetic variants have expanded and moved in the past as climate has changed – the modern foxes in the target areas are believed to have migrated from Siberia. As a result, a key outcome of the project was the suggestion to explore constructing corridors that will allow the Arctic fox to migrate to more climate appropriate areas. Actions could focus on the migration further north to cooler regions or to Siberia.

Finally, through information made available via a website and local tourist operators, the project promoted cooperation and understanding from the public for the actions needed to support the fox population.



SWEDEN

Project number: LIFE03/NAT/S/073

Title: Saving the endangered Fennoscandian Alopex Lagopus (SEFALO+)

Beneficiary: Stockholm University

Contact: Anders Angerbjörn

Email: angerbj@zoologi.su.se

Website: www.zoologi.su.se/research/alopex

Period: Jun-2003 to Jun-2008

Total budget: €2 511 000

LIFE contribution: €1 253 000

Restoring active blanket bog in Wales

Climate change is a potential threat to the conservation of blanket bog habitats. Wetter winters could result in increased erosion problems and drier summers might be detrimental to some bog plants. This LIFE Nature project in Wales is highlighting the need for better data to analyse the impact of climate changes.

The project is taking place on the Berwyn and South Clwyd Mountains and the Migneint, Arenig and Ddualllt Special Areas of Conservation (SACs), which are two of the most important SACs for blanket bog in the UK. Most of the former site and all the latter one are also designated as SPAs for their breeding upland bird populations.

Some of the blanket bog within the project is managed within the RSPB's Lake Vyrnwy Reserve but most is managed by private farmers, who employ methods that are detrimental to its conservation status. As a result, much of the blanket bog within the SACs is in unfavourable condition. The SACs have been particularly affected by the digging of numerous drainage ditches in and around the blanket bog in the 1920s and 1930s to improve the agricultural value of the land. Extensive areas of blanket bog and other habitats in the Berwyn and Migneint uplands were also planted with Sitka spruce *(Picea sitchensis)* in the 1970s and substantial areas have been invaded by rhododendron *(Rhododendron ponticum)* and Sitka spruce seedlings. On the remaining areas of blanket bog, heather *(Calluna vulgaris)* has been lost due to over-grazing and/or inappropriate burning management and uncontrolled fires.

The purpose of the project is to bring about a significant and sustained improvement in the condition of blanket bog in key parts of the two SACs and to facilitate complementary actions taking place elsewhere in these SACs. The project is implementing restoration and conservation actions over some 5 000 ha of the Berwyn and South Clwyd Mountains SAC, benefiting nearly 3 000 ha of blanket bog within the SAC. Practical restoration and conservation actions are being carried out at the Ddualllt SAC, benefiting 274 ha out of 440 ha of the Migneint blanket bog within this SAC.

Blocking ditches restored the bog water level

Finally, the project is also undertaking extensive advocacy and advisory work aimed at local land managers, local communities in general, and groups involved in the conservation of blanket bog elsewhere the UK and the rest of Europe.

UNITED KINGDOM

Project number: LIFE06 NAT/UK/000134

Title: Restoring active blanket bog in the Berwyn and Migneint SACs in Wales

Beneficiary: Royal Society for the Protection of Birds

Contact: Jared Wilson

Email: gogorscymru@rspb.org.uk

Website: www.blanketbogswales.org

Period: Aug-2006 to Mar-2011

Total budget: €3 765 000

LIFE contribution: €2 348 000

Photo: Riccardo Scalera

Tackling IAS in Europe

Invasive alien species (IAS) can have damaging consequences both environmentally and economically. The toxic green algae *Caulerpa taxifolia* and *Caulerpa Recemosa* have caused widespread harm in the Mediterranean Sea. Zebra mussels *(Dreissena polymorpha)*, which clog power plant intakes and compete with native freshwater mussel populations, have caused serious environmental and economic damage across much of Western Europe. The Asian topmouth gudgeon *(Pseudorasbora parva)* has spread rapidly throughout Europe since being introduced into Romanian ponds close to the Danube in the 1960s, carrying parasites that bring serious consequences for native species.

According to a recent report[1], the damage and control cost of IAS amounts to around €12.7 billion each year in Europe. And, these are conservative estimates, based on available documented costs. The real costs are likely to be much higher, as many countries have only recently started to document costs in relation to IAS.

Because IAS are a global problem, cooperation at international, regional and local levels is required to develop compatible approaches. A number of international conventions, agreements and treaties already deal with IAS issues. For example, the UN Convention on Biological Diversity (CBD, 1992) establishes that Parties, including the EU, should introduce measures to control and eradicate existing harmful alien species, as well as preventing further introductions. In 2002, the CBD adopted specific 'Guiding Principles'[2] (more below) to help Parties to prioritise the development of their IAS strategies. The Bern Convention (1979) also requires strict control of the introduction of non-native species. A European Strategy under the Bern Convention aims to facilitate implementation of international commitments and best practice and to support development of IAS policies .

Despite these and other efforts, Europe still lacks a coherent strategy to tackle IAS, and the fragmented measures that are in place are unlikely to make a substantial contribution to lowering the risks posed by IAS to European ecosystems. However, this is set to change with the development of a new comprehensive EU strategy for invasive species.

1 Assessment of the impacts of IAS in Europe and the EU (June 2008) M. Kettunen, P. Genovesi, S. Gollasch, S. Pagad, U. Starfinger, ten Brink, P. & Shine, C.

2 Decision VI/23 on 'Alien Species that threaten ecosystems, habitats and species' (COPVI, The Hague, April 2002)

EU STRATEGY

The EU's Sixth Environmental Action Programme and the Communication from the Commission on "Halting the Loss of Biodiversity by 2010 and Beyond" and its associated Biodiversity Action Plan, highlight action on IAS as a key priority objective.

The Biodiversity Action Plan calls for an EU-wide strategy to address IAS and supports the development of a Europe-wide early warning and information system to report on new and emerging invasive species. This would mirror international ambitions to tackle the problem through prevention, early detection and eradication, as well as control and containment.

It also calls on countries to develop their own national strategies for dealing with IAS, and to implement the International Convention for the Control and Management of Ships' Ballast Water and Sediments under the International Maritime Organisation.

The Commission is now preparing, in two stages, a framework on invasive species. This builds on existing activities and research already carried out under a number of EU-funded projects, such as DAISIE (Delivering Alien Invasive Species Inventories for Europe) and ALARM (Integrated Assessing LArge-scale Risks for biodiversity with tested Methods), and networks including NOBANIS (Network on Invasive Alien Species) and ERNAIS (European Research Network on Aquatic Invasive Species). It is also in line with the CBD Guiding Principles[3], as well as a pan-European strategy on IAS, adopted by the Bern Convention.

Photo: Vibe Kjaedegaard

The giant hogweed – an invasive plant species

The first stage of the process is a Commission Communication "Towards an EU Strategy on Invasive Species" published in December 2008. This describes the issues at stake and explores a range of policy options, including actions to address specific gaps highlighted in recent European studies[4]. It also examines broader strategies and operational issues. This Communication aims to stimulate an in-depth consultation with stakeholders and other EU Institutions which should enable us to select the best options and way forward for the EU Strategy on Invasive Species, planned for 2010.

There will also be opportunities for public and stakeholder involvement. The aim is to build a sense of responsibility and awareness among Europeans of issues concerning imports and exports of potential IAS both within and outside the Community, and also concerning the need for eradication, or control programmes – where public support is crucial.

The problem of invasive alien species is, however, being tackled on-site throughout Europe, in particular by nature managers working within the Natura 2000 network. Since 1992, the EU has spent over €44 million through the LIFE programme, supporting a total of 187 projects dealing with the problem of invasive species. More projects, both within and outside the network (in the latter case, to limit or prevent damage within an area neighbouring a Natura 2000 site) are also earmarked under the LIFE+ Nature component of the LIFE+ programme.

The following case studies highlight the practical problems of dealing with the issue and provide valuable best practice tips and lessons for other projects facing similar problems. Many other examples of LIFE projects supporting actions to combat invasive and alien species are presented in the LIFE Focus publication "Alien species and nature conservation in the EU: the role of the LIFE programme" and in Issue Number 25 of the Natura 2000 newsletter (December 2008): **http://ec.europa.eu/environment/nature/info/pubs/natura2000nl_en.htm**

Photo: Riccardo Scalera

3 Decision COPVI/23

4 http://ec.europa.eu/environment/nature/invasivealien/docs/2006_06_ias_scope_options.pdf

Where feasible, eradication is often the best course of action to deal with already established invasive species and the best opportunity for this is in the early stages of invasion, when populations are small and localised. Several remarkable examples of complete eradication were among the main highlights of the IAS session of the 'Learning from LIFE' Conference 2008.

IAS eradication 'best' at early stage of invasion

Complete eradication is possible in areas that are well bounded, such as islands. For example, on Menorca, the eradication of the highly-invasive plant species, *Carpobrotus edulis* from almost the entire Natura 2000 network on the island was achieved by the Spanish LIFE project to conserve the island's threatened flora (**LIFE02 NAT/E/007355**). Eradication also works well in other relatively isolated ecosystems, and/or at an early stage of invasion, as is illustrated by a very ambitious project launched to halt the spread of the American mink *(Mustela vison)* on the Uist isles in Western Scotland (**LIFE00 NAT/UK/007073**). When the project was launched in 2001, people told project manager, David Maclennan, eradication of the mink "couldn't be done". The project showed that it could.

Projects targeting the elimination of 'larger' IAS plants or animals can also be successful in relatively isolated ecosystems. For example, in the Czech Republic chemical eradication of the invasive plant giant knotweed (*Reynoutria* spp) is proving very effective in targeted areas (**LIFE06 NAT/CZ/000121**). Similarly, the LIFE CANNA seabird recovery project (**LIFE05 NAT/UK/000141**) has successfully dealt with the invasion of brown rat *(Rattus norvegicus)* on the Canna and Sanday isles.

RESEARCH AND PREPARATION

Projects addressing eradication or control of invasive and alien species require sound prior research and preparation. Adequate resources and commitment are vital in supporting this key objective. A number of projects presented the importance of carrying out thorough assessments and research. There are many examples: A survey of the spread

Several LIFE projects targeted the elimination of IAS plants such as Rhododendron

Photo: Riccardo Scalera

of American mink in the LIFE Hebridean project (**LIFE00 NAT/UK/007073**) showed the area to be tackled was a third larger than originally anticipated i.e. 90 000 ha compared with 60 000 ha. Extensive research into different rodenticides was required before the CANNA project (**LIFE05 NAT/UK/00014**) located a first-generation rat poison, diphacinone, delivered in wax blocks. This ensured no instances of secondary poisoning, in particular of the island's three pairs of eagles *Haliaeetus albicilla* and *Aquilla chrysaetos*. However the poison is no longer available, highlighting the need for further research in this area. A LIFE co-op project in the Spanish and Portuguese islands (**LIFE02 NAT/CP/E/000014**) developed guidelines for the management of IAS, which could be used by other islands dealing with similar problems. The reference manual is already being used by the IUCN as an international IAS reference document.

Volunteer work is also an important aspect of many restoration projects. The Menorca project, for example, made extensive use of teams of volunteers to help with the labour-intensive work of pulling up the invasive succulent, *Carpobrotus edulis*.

LIFE projects have targeted species threatened by introduced species such as Procambus clarkii

The project was able to use (free-of-charge) the island's fire-surveillance helicopter and recruited young volunteer mountaineers to assist with plant removal from more inaccessible areas of the island. However, not all trials with volunteers were successful. The Hebridean mink project encountered problems using volunteers to set the mink traps and concluded this task was better suited to experienced (paid) trappers.

STRICT CONTROL AND PLANNING

Since eradicating IAS in a given area may pave the way for the establishment of other invasive species, strict control and planning of the following restoration works is needed. This was highlighted by the Danish project (**LIFE02 NAT/DK/008584**) tackling the threat to rare dune heath habitats by invasion by non-native conifers. Since this project closed in 2005, the continued monitoring work has revealed the invasive species *Rosa rugosa* poses a new challenge.

The IAS plant Rosa rugosa *poses a new challenge in some areas*

Photo: LIFE02 NAT/DK/008584

CHALLENGES AND OBSTACLES

A number of challenges and obstacles to project implementation were raised during the IAS session. These included:

- **Potential opposition** by animal welfare groups and/or other stakeholders. Responding to a question on the issue of opposition by animal welfare groups, David Maclennan of the LIFE Hebridean project said it had not encountered problems, although he was aware that other IAS 'control' or eradication projects have encountered problems. Other projects emphasized the importance of communication and awareness-raising activities to overcome any potential opposition.
- **Access to land** – public versus private. Legal ownership of the land where an eradication or control action is to take place can hinder total eradication if there is no will to collaborate. The Menorca project was asked why, given the evidence of the devastating impact of *Carpobrotus* on native flora, it was not possible to ban its growth and sale on the island. Pere Fraga i Arguimbau said this issue was under discussion. However, the government

Photo: LIFE06 NAT/CZ/000121

Chemical eradication of the invasive plant giant knotweed is proving very effective in areas targeted by this Czech project

is reluctant to legislate against private as well as public landowners.

- **Protected area status** – actions may take place to eliminate a species within a protected area, while outside the boundaries the same species may be introduced on purpose for hunting, commerce or even restoration. This was a recurrent challenge for a number of LIFE projects. For example, the restoration of dune habitats along the Danish West Coast (**LIFE02 NAT/DK/008584**) targeted the invasion of non-native conifers in Natura 2000 areas. However, the conifers were also originally introduced as a restoration measure – planted in the 19th century to control sand drift. Similarly, American mink were deliberately introduced to the Scottish islands of Lewis and Harris for commercial purposes, and then subsequently escaped or were released from fur farms.
- **Regional and transboundary issues** – projects should address neighbouring countries where pathway and/or impacts of invasive species are transboundary. At present, there is no mandatory transboundary cooperation. This was one of the main reasons for the launch in 2002 of a cooperative LIFE project to share knowledge and best practices gained through 12 LIFE projects fighting invasive alien vertebrate species on the islands of Spain and Portugal.

PUBLIC AWARENESS / DISSEMINATION / CAPACITY BUILDING

Awareness-raising measures should be carried out before, during and after the project. All the projects highlighted the importance of effective communication and awareness-raising activities. Relevant administrations, businesses and the general public should be targeted. This is a must to avoid obstacles in project implementation; win support for potentially controversial project actions and possible future restrictions; and to reduce human dissemination of IAS.

Dissemination of methodologies and know-how as well as enhanced cooperation is also needed to address threats from IAS across regions. For example, the LIFE project for the Spanish and Portuguese islands published a reference manual for the management of IAS. This has been adopted as an international reference document by the IUCN. Following on from the LIFE project work on a database of the "100 worst alien species in Macaronesia" is being funded under the Interreg III-B "Bionatura" programme.

RECOMMENDATIONS

As a result of the policy discussion, a series of general recommendations were made on IAS:

'Prevention is better than cure' – When it comes to dealing with IAS, prevention at source i.e. at the place of origin or export, and on arrival (via effective border control and quarantine measures) is the best means of halting the spread of IAS. However, this remains the exception (particularly in LIFE projects linked to IAS, which have consisted mostly of control and eradication measures).

Early detection – A key priority at EU level is to develop efficient prevention policies and surveillance systems to support early detection of new potential IAS and enable rapid and cost-effective responses. Practical guidance for shared problem species should be developed and maintained (for example as identified through the DAISIE programme, which is supported by the 6th Research Framework programme) to promote consistency and avoid 'reinventing the wheel' in different Member States and/or regions.

Profile raising – It is essential to raise the profile of the IAS threat and costs, both locally (most invasive vertebrates and plants are deliberately released) and within the public administration and among other decision makers. Greater awareness will undoubtedly result in greater support for policy measures and for more financial resources to combat IAS.

Funding – There is a need to identify existing funding sources: LIFE is an obvious choice, but there are other EC funds (Agriculture, Research, Interreg, etc.) that have been used, as well as national funding opportunities. Also, there are more funds available to combat IAS when seeking to counteract their economic and health impacts (for example for preventing agricultural losses or concerning public health). LIFE co-finances actions aimed at preventing the ecological impact of IAS.

Transferable experience – The expert panel highlighted that LIFE-co-financed projects have gathered "useful, transferable experience". However, LIFE is not designed for quick intervention, which is the most effective course of action while the IAS is still limited in area or numbers. Also, IAS control and eradication projects usually need to go on "forever", as regards both concrete actions and monitoring. LIFE (and its successor LIFE+) is not an adequate instrument for such long-term efforts.

Volunteers help **combat the spread of *Carpobrotus* on Menorca**

Carpobrotus edulis, a creeping succulent plant originating in South Africa, has been almost completely eradicated on Menorca thanks to the sterling efforts of a Spanish LIFE project launched to conserve the island's threatened flora. The bulk of the labour-intensive work has been carried out by teams of volunteers led by experts. Partnerships, especially the support of the local population and authorities, will be crucial in ensuring continued control of this highly invasive species.

Menorca, one of the Balearic Islands of Spain, boasts an impressive number of endemic plant species unique to the island. However, many of these species have become endangered as a result of the invasion of *'Carpobrotus'* (introduced to the island from South Africa in the 1950s) as well as tourism.

In 2001, a wide-reaching campaign was launched under the framework of LIFE to completely eradicate *Carpobrotus* from Menorca. This eradication work was successful in removing *Carpobrotus* from most of the island, and according to project manager, Pere Fraga i Arguimbau, the island's rich biodiversity is already benefitting from the removal efforts.

Before beginning the eradication initiative, it was first necessary to find out more about the spread of the invasive species on the island. Obtaining good maps of the plant populations have made it easier to coordinate the eradication work. In shale areas mainly found in the northerly and easterly parts of the island, the plant tends to grow more

Carpobrotus *taking over the endemic plant species* Dorycnium fulgurans

flowers but fewer branches than in limestone areas. As a result, in those areas, monitoring following removal is more frequent – every six months as compared with every two years in limestone areas. The project beneficiary is also checking on the effects of the removal on endemic species. In fact, it has drawn up management plans for all of the island's endangered species, several of which have now been approved.

Carpobrotus *was spreading in important costal habitats*

REMOVAL MEASURES

Local communities were very involved in the removal of the plant. In addition to ecological volunteers, the task was also assigned to unemployed people by the social services. *Carpobrotus* thrives on rocky headlands, and young volunteer mountain climbers assisted in its removal from these areas and in some places a helicopter, normally used for fighting forest fires, was used, at no cost to the project.

While some areas have been free of *Carpobrotus* for several years now, the eradication work is ongoing as the seeds of plants in private gardens can easily be transported by the wind or ingested by rabbits and deposited up to a kilometre away. Ideally, more strict control and planning measures are required to ensure the invasive species does not return. Thanks to successful awareness-raising actions, most islanders have been won over to the project's aims. However, there has been some resistance among private landowners. For this reason, the beneficiary has requested that the government officially declares *Carpobrotus* as a pest. Discussions are ongoing, but the government is reluctant to discriminate against private gardeners and growers.

Among the main lessons learnt from this project is that the eradication of an invasive plant species is possible providing all the work is well planned and coordinated, from the preparation (cartography, organisation, contracts) to the direct eradication. But even more important is an ability to raise people's awareness about the threat of invasive species. This objective is not only dependent on regulatory measures, but can also be achieved through active communication and information strategies with adequate stakeholder support (professional and amateur gardeners, growers, garden centres, etc.).

Some of the best practices and methodologies developed in this project are already being applied to actions to control IAS in another LIFE co-funded initiative on the island – the 'BASSES' project (**LIFE05 NAT/E/000058**), tackling the threat from non-native species to the conservation of Mediterranean temporary ponds (www.cime.es/lifebasses).

Some remains of the eliminated plant had to be removed by helicopter because of the almost inaccessible location

SPAIN

Project number: LIFE00 NAT/E/007355

Title: Conservation of areas with threatened flora on the island of Menorca

Beneficiary: Consell Insular de Menorca

Contact: Pere Fraga i Arguimbau

Email: pfa.life@cime.es

Website: http://lifeflora.cime.es/

Period: Jan-2001 to Dec-2004

Total budget: €654 000

LIFE contribution: €392 000

Halting the spread of American mink in the Western Isles

Complete eradication of invasive species is more likely to be successful in areas that are well bounded, such as islands, and/or at an early stage of invasion, as is illustrated by this project to halt the spread of American mink (*Mustela vison*) on the Uist islands in Scotland's Western Isles.

Most invasive vertebrates and plants are deliberately released, as is the case of the presence of American mink in the Outer Hebrides, Western Isles of Scotland. When mink fur farms were closed in the 1950s, some American mink escaped or were released into the wild spreading down the chain of islands. The invasion of this highly-aggressive species has not only had an adverse affect on the native mink (*Mustela lutreola*) populations, but has also damaged bird populations, aquaculture and tourism.

The Hebridean Mink project was launched in 2001, in response to American mink being discovered on the island of North Uist, which is linked by bridges to the islands of Benbecula and South Uist. A number of actions were put in place in order to counter the threat of mink populations becoming established in the Uists and in turn protecting the internationally important ground nesting bird populations in the islands' SPAs.

At the start of the project, it was thought the area covered by the mink was approximately 60 000 ha. However, surveys showed the spread was much larger – 90 000 ha and therefore planned eradication works (using trained dogs and innovative trapping techniques) had to be revised over the course of the project. This was a highly ambitious project, says project manager, David Maclennan: "A lot of people said it couldn't be done."

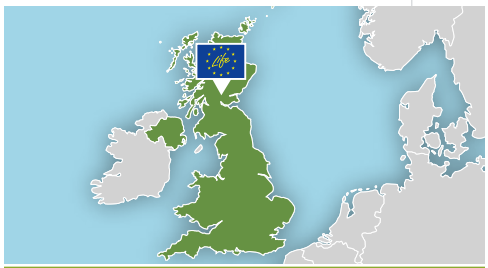
OVERCOMING SCEPTICISM

Fortunately the doubters were proved wrong. The four-year Hebridean mink project showed the successful eradication of American mink from large areas is possible through a "strategic and adaptive approach". In 2006, its final year, no mink were caught in the Uists, and this continues to be the case in after-LIFE monitoring.

The American mink damages local bird populations and aquaculture farms

Employing teams of experienced trappers and dogs, an average 10 trappers were used to check approximately 35 traps per person per day – trapped American mink were killed humanely). In total some 4 500 traps were used over the course of the project. These were located at strategic points favoured by the American mink, i.e near coastal areas, rivers and lochs. Some of the techniques used by the project were particularly innovative, for example 'lure' (from the mink sex gland) was found to be far more effective than using fish bait, and the team has developed substantial knowledge of mink behaviour that can be used to help deliver mink control programmes, both elsewhere in the EU and globally.

Looking ahead, the team is now turning its experiences to a more ambitious second phase of the project, which aims to eradicate the mink from the entire Western Isles archipelago by 2011. This will eliminate the threat of mink predation on breeding birds in SPAs in the Western Isles – making a valuable contribution towards ensuring the favourable conservation status of targeted species.



UNITED KINGDOM

Project number: LIFE00 NAT/UK/007073

Title: Mink control to protect important birds in the SPAs in the Western Isles

Beneficiary: Scottish Natural Heritage

Contact: David Maclennan

Email: david.maclennan@snh.gov.uk

Website: www.snh.gov.uk/scottish/wisles/intro.asp

Period: Apr-2001 to Jun-2006

Total budget: €2 763 000

LIFE contribution: €1 381 000

An introduction to **species conservation**

The European Union recognises the importance of safeguarding its most threatened species. In 1979, the Birds Directive was adopted, its aim to protect all wild birds in the EU, and in 1992, the Habitats Directive was adopted, extending the protection to some 1000 threatened plant and animal species and to 220 habitat types. More recently, in 2006, a new EU Biodiversity Action Plan was designed to halt the loss of biodiversity, in particular species loss.

There are a wide range of political commitments within the European Union aiming to protect nature and biodiversity, with species conservation at the forefront. The Natura 2000 network of protected sites and the species protection provisions under the Birds and Habitats Directives are the key tools for ensuring species protection. The Birds and Habitats Directives are at the heart of the EU's policy response to halting biodiversity loss by 2010.

The species protection provisions included in both Directives apply to the whole of a Member State's territory and concern the physical protection of specimens as well as their breeding sites and resting places. The Directives allow for derogations under certain conditions. Both instruments are complementary and jointly aim at ensuring a favourable conservation status for all species of Community interest.

Under the Birds Directive, all wild birds occurring in the European Union are protected. The different annexes of the Habitats Directive determine which instruments are available for other animal and plant species. Most species are covered by more than one annex and therefore are subject to a combination of instruments, i.e. a combination of conservation approaches and measures. Wild birds and species listed in Annexes II and IV benefit from complementary, twofold protection within Natura 2000 sites.

For the habitats of 192 threatened birds, listed in the Birds Directive - Annex 1, as well as for migratory birds, special conservation measures shall be taken, including the designation of the most suitable territories in number and size as special protection areas for the conservation of these species. For some of the globally threatened bird species regularly occurring in the European Union action plans have been developed (see box).

Within the concept of sustainable hunting, the Birds Directive allows for certain species, listed in Annex II, to be hunted. Management plans have been established for some 20 hunted bird species that are considered to be in an unfavourable conservation status.

Species conservation discussion panel at the Brussels conference

Photo: Eric Evrard

OTHER SPECIES

Strict protection measures adopted under Article 12 of the Habitats Directive must contribute to maintaining or restoring to favourable conservation status animal species listed in Annex IV (a). Article 12 of the directive foresees similar measures for plant species listed in Annex IV (b).

In February 2007, the European Commission published a guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EC.

Good knowledge of a species (range/distribution, occurrence, biology, ecology, threats and sensitivity, conservation needs, etc.) and regular monitoring of its conservation status over time (as required in Article 11 of the Habitats Directive) are essential preconditions for any meaningful conservation strategy. Cooperation at EU level and transboundary cooperation are essential for certain species. An EU framework for assessing conservation status was agreed by Member States in April 2005. Member States have submitted extensive reports to the Commission on the conservation status of the species of Community interest, according to Article 17 of the Habitats Directive. A composite report on the results of this exercise will be published by the Commission in 2009.

EU BIODIVERSITY ACTION PLAN

The EU Biodiversity Action Plan calls on the Member States and the Community to:

- Finalise the Natura 2000 Network by ensuring that every country (particularly the new Member States) proposes sufficient sites in their territory to safeguard the listed species across their natural range in the EU;
- Designate, protect and effectively manage terrestrial Natura 2000 sites by 2010, and marine sites by 2012 to ensure that the species and habitats are maintained or restored to a favourable conservation status and their long-term conservation management is secured;
- Ensure adequate funding to manage the sites over the long-term, *inter alia*, through EU funds and through greater integration of conservation management needs in other land use activities.

Recognising the value of coordinated action for threatened species and the need to ensure the Natura 2000 Network is both coherent and resilient, the Plan also calls on Member States and the Community to:

- Ensure that no priority species are in a worsening conservation state by 2010, and that the majority of species are in, or moving towards, a favourable conservation status by 2013;
- Implement, review and develop further EU-wide species action plans for Europe's most threatened species. The intention is that new plans will be elaborated for additional bird species as well as for other wildlife, such as large carnivores. The EU LIFE Nature programme will also continue to prioritise the funding of conservation projects that help implement the measures identified in the species action plans;
- Apply such tools as flyways, buffer zones, corridors, stepping stones etc. to strengthen coherence, connectivity and resilience of the protected areas network not only between Natura 2000 sites but also with other nationally- or regionally-protected areas in the EU by 2010.

The EU is also responsible for a number of outermost regions – Guadeloupe, Martinique, French Guyana and Reunion – that have an exceptionally rich biodiversity. Although not covered by the EU nature Directives, the Action Plan foresees that every effort is made to encourage a similar type of approach for biodiversity conservation in these regions.

To safeguard listed species across their natural range Member States have to designate and manage Natura 2000 sites

Photo: ArturVOliveira

EUROPEAN ACTION PLANS FOR BIRDS

Since 1993, the European Commission has supported the development and implementation of EU-wide Action Plans for 46 of the most threatened bird species in Annex I of the Birds Directive. Prepared by BirdLife International, every plan goes through an extensive consultation process amongst scientific experts, government agencies and civil society in order to establish European priorities for the conservation of the target species. The plans provide a valuable tool to help Member States focus limited resources on ensuring that actions taken for endangered species are based on sound science and are targeted at the most critical measures aimed at recovery of these species. As each of the species covered by the plans is considered a priority for funding under the LIFE programme, this helps ensure that potential applicants for funding focus on actions that are recognised as the most important and urgent for these species.

A recent BirdLife study on the impact of these plans after 10 years found that they are indeed very effective. The report concluded that significant progress had been made in implementing 18 of the 23 plans and that the long- and medium-term targets had already been met for 11 of them. It also found that the majority of the species had increased in number or expanded in range during that time. Amongst the most successful were the Dalmatian pelican, Imperial eagle and Zino's Petrel whose populations increased by 20% or more. In view of the success, the Commission now also intends to start developing EU-wide action plans for threatened species other than birds.

LIFE has helped finance many successful projects for species conservation. Here we outline some of the conclusions drawn by the expert panel at the best practices conference in Brussels about lessons that can be learned by future projects and key success factors.

Lessons from LIFE: species conservation

The conclusions cover several areas, namely: general approaches to species conservation; project planning; good management practice; and the role of stakeholders. Some policy recommendations were also made.

SPECIES CONSERVATION IN GENERAL

The conservation paradigm needs to be changed: the current focus is on threatened species, but more attention needs to be paid to species that are not rare, not threatened, but have important functions in ecosystems (e.g. pollinators). The flagship species concept in species conservation is useful (especially when communicating with the public) but should be incorporated into a more complex approach to species conservation. The Iberian lynx project – **LIFE06 NAT/E/000209** – is a good example of this more complex approach, since the conservation of the lynx is so closely tied up with the status of its main prey, the rabbit.

The target of project actions should be to ensure long-term viability of species populations. This target must be reflected in a long-term approach to practical conservation. Conservation actions should not end when the project ends.

Species conservation should be also spatially more complex. The current focus on protected sites creates protected islands. More attention should be paid to the wider countryside and issues such as connectivity and fragmentation need to be addressed. The plant micro-reserves (PMR) concept, as successfully implemented in Crete and Valencia, among other locations (see pp. 55-56), offers a good example of how the need to protect specific sites can be reconciled with wider demands.

For meta-population species, a landscape-scale approach is crucial to delivering favourable results.

The principles of adaptive management need to be applied to species conservation. Adaptive management should be based on monitoring of target populations and results of management measures. The feedback mechanism needs to be used to deliver monitoring results for informed and wise decision-making.

PLANNING PROJECTS

A detailed knowledge of the target species, its lifecycle, reproduction and habitat requirements are crucial to the success of any project. Projects should be based on sound science, using diagnosis and modelling tools where appropriate. Early identification of knowledge gaps should be a priority. The Fennoscandian project to arrest the decline of the lesser white-fronted goose (**LIFE05 NAT/FIN/000105**) is a good illustration of the value of this approach.

It is useful to plan projects with a long–term perspective in mind and to design a project cycle that includes setting of priorities, project design, project operation, implementation and monitoring of results. The results of monitoring should be used to modify projects.

All relevant stakeholders should be involved in the project from the planning phase. The project planning should

Project actions must ensure the long-term viability of species populations

Photo: J. Botanico da Madeira

include an exit strategy – what will occur after the project end, how will activities continue, etc.

GOOD MANAGEMENT PRACTICE

Support of reproduction/regeneration is key for species of small population size. If *in situ* measures are not sufficient to ensure the viability of the population, they should be supported by *ex situ* measures such as reproduction in botanical gardens, building of seed banks, captive breeding and rescue centres. When appropriate, the reintroduction measures can be included into this process.

The micro-reserves concept represents a good tool for plant species protection that has potential for broader application in Europe. PMRs are more popular with local people than big reserves that may restrict their activities. The usefulness of the micro-reserves concept for animal species of low mobility should be considered.

Satellite tracking of birds not only has a scientific and conservation value, it can also provide an attractive story to the media and public. The naming of individual birds is likely to lead to much better media coverage. Raising the profile of a project also helps with the delivery of project outputs and with directing the exit strategy.

Large infrastructure projects can also represent an opportunity for species conservation. Beneficiaries should look to capitalise on them to deliver nature conservation outcomes.

POLICY RECOMMENDATIONS

The general approach to species conservation

- Measures for integrated species conservation should be included in conservation strategies and their implementation documents. These measures should include the adoption of principles of long-term conservation and adaptive management, as well as addressing more specifically the protection of species in the wider countryside and species playing an important role in the functioning of ecosystems.
- Establish programmes for the implementation of integrated species conservation.
- Develop mechanisms for avoiding species population decline to the critical population size, including early warning mechanisms for identification of species threatened by such decline and for quick reaction ensuring an efficient population recovery.
- Develop a mechanism for a quick response at EU level if a Member State does not fulfil its conservation duties.

Funding

- There is a need for much higher funding than currently exists to cover the whole spectrum of nature conservation issues.
- Any new financial mechanism developed should include special funding for long-term species conservation and funding for research targeted at nature/biodiversity protection.
- Steps should be taken to better coordinate existing EU financial tools for the support of species conservation – this is particularly valid for the harmonisation of the financial tools of DG Environment with the Water Framework Directive and Rural Development Programmes (especially Agro-Environmental Programmes).

International cooperation

- It is necessary to make better use of synergies between international legal instruments and to identify and address inconsistencies in national policies.
- More effective means must also be found of protecting migratory species, especially outside EU territory.

The LIFE programme

- Project contracts should incorporate the principle of using information gleaned by previous LIFE projects in new projects.
- Ways must be found to build flexibility into projects that will make eventual project modifications easier and will allow the results of monitoring programmes to impact the delivery of outputs as the project develops.
- Dissemination methods should be further developed using best practices: examples include books, thematic seminars and training sessions.
- More attention to the language issue in LIFE. Application forms should be available in any official EU language, not just English.
- The project coordinator is the central fount of knowledge and best practices relating to any LIFE project. He or she also has a crucial role to play in continuing the work instigated by a project after LIFE. Since the coordinator often moves on to another job once the project ends, leading to the loss of know-how, it would be very good if he or she could continue to be employed after the project end to help implement an after-LIFE programme. At the end of the Belgian freshwater pearl mussel project, the regional authority paid for the coordinator to stay on for one year, greatly benefitting the continuity of species conservation actions (see box page 51).

Photo: LIFE04 NAT/HU/000116

The little-known and highly-endangered Hungarian meadow viper was targeted by a LIFE project

One example of good cooperation with an infrastructure agency is provided by the mid Cornwall Moors project (**LIFE03 NAT/UK/000042**). "Involvement of the Highways Agency was absolutely critical," says project manager Wesley Smyth.

THE ROLE OF STAKEHOLDERS

The involvement of local stakeholders in conservation and management activities is crucial for the success of projects and the long-term viability of results. If the local population is made proud of its local heritage, it is more likely to support the project actions. The best course of action is to offer several different means of involvement in the project for each stakeholder group: this allows individuals to select the most suitable option.

The LIFE TCY project "Conservation and management of wolves in Croatia" (**LIFE02 TCY/CRO/000014**) successfully established communication between all interest groups, as concretely demonstrated through the development of a Wolf Management Plan. This plan, prepared through the joint efforts of many different interest groups and adopted by the competent ministry, included a set of measures for the reduction of existing conflicts in a way that all stakeholder groups would find acceptable.

Collaborative agreements with hunters, such as those used by the Iberian lynx and lesser white-fronted goose projects, represent a useful tool for resolving the problem of the killing of endangered species.

LIFE HELPING LESSER-KNOWN SPECIES

While projects focusing on apex predators such as the Iberian lynx and the wolf often attract the most attention, LIFE has supported a range of projects concerned with the conservation of a number of lesser-known species and the less glamorous invertebrates, reptiles, amphibians and fish.

Conservation of habitats of Pearl Mussels in Belgium (LIFE02 NAT/BE/008590) – The project aimed to lead to the long-term conservation of the last Freshwater Pearl Mussel (FWPM) populations and their associated habitats in Belgium (Wallonia). *Margaritifera margaritifera* is a demanding species that is protected under the Habitats Directive and the Bern Convention and is listed as Endangered (IUCN).

Declining water quality, changes to host fish populations, clogging of riverbeds and crushing of the mussels all threaten the species' survival.

Precise mussel population mapping allowed the project to propose specific measures for Natura 2000 and for Water Framework Directive implementation.

Habitat restoration catalyzed complementary actions not funded by LIFE, such as land acquisition outside Natura 2000 sites, the creation of large nature reserves, the management of private land through contractual agreement, clear cutting spruces and enabling fish to circulate freely.

Using complementary tools such as the Agri-Environmental Scheme, other LIFE/Interreg projects allowed the beneficiary to complete and connect the area restored. There is still a lot of work to do to reach the project objectives, but comparisons between the situation before and after the LIFE project showed that it can be done. The implementation of after-LIFE actions will be key to reaching the long-term objectives of the project.

Restoration of the mid Cornwall Moors for *Euphydras aurinia* (LIFE03 NAT/UK/000042) – The Mid Cornwall Moors LIFE Project has secured an internationally significant metapopulation of *Euphydryas aurinia*. Working at a landscape scale the project aimed to restore habitat condition and connectivity across nine sites, covering a total project site area of 1 048 ha.

Following completion of the planned activities, the project has delivered an increase in breeding habitat in favourable condition from 15 ha to 130 ha. There is also improved connectivity between and within project sites. As a direct result of the project, the SAC boundary may be extended.

The project included a significant outcome monitoring component. The data gathered has been used to explore the relationship between population trends, habitat condition and habitat management. The results will be valuable in informing the future management of the project sites as well as other *E. aurinia* projects and management strategies.

Other relevant projects:

- **Protection of Triturus cristatus in Eastern Baltic Region (LIFE04 NAT/EE/000070)**
- **Establishing the background of saving the Hungarian meadow viper from extinction (LIFE04 NAT/HU/000116).**

LIFE helping Europe's birds

LIFE has co-funded many projects that are helping to conserve endangered bird species as listed in the Birds Directive. The issue of flyway conservation in general and the threat from hunting and poaching in particular are themes that recur across a number of LIFE projects, such as that dedicated to *Anser erythropus*.

The lesser white-fronted goose (*Anser erythropus,* hereafter LWfG) is the most endangered bird species in Fennoscandia. The short term objective of the LIFE Nature project **LIFE05 NAT/FIN/000105** is to stop the decline of the population before it gets too small to survive. The major threat to the species comes from hunting and poaching. The LWfG very closely resembles the white-fronted goose (*A. albifrons*), which is an important quarry species in most countries where *A. erythropus* is found. Thus, in practice, the only effective way to protect LWfG is to ban hunting of all white-fronted geese for the periods when the lesser white-fronted geese are present at certain key sites.

The project has taken a transnational approach to conservation, aiming to identify key sites all along the species' migratory route, and implement actions in several countries.

The main activities of the project have been satellite tracking and colour ringing of LWfG to map the most important sites along the flyway; preparing national Action Plans for the species; habitat restoration and management to keep the geese in safe and favourable sites; and public awareness campaigns, most of all for hunters and farmers in key areas, in order to reduce the risk of this rare species being shot.

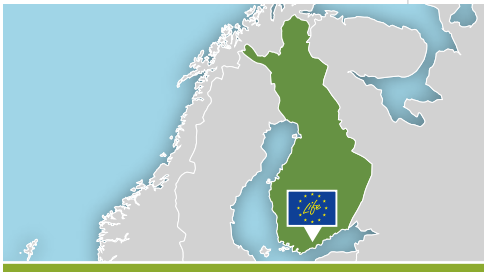
Anser erythropus

Photo: Ingar Jostein Ølen

INTERNATIONAL APPROACH ACHIEVING GOALS

Based on monitoring results, the project seems to have achieved its short term goal: the LWfG population has not declined during the project period. The geese have also started to use sites restored and managed by the project in Hungary and Estonia. Satellite tracking has revealed a whole new migration route and several formerly unknown important sites. National Action Plans for the species are ready for adoption by the national authorities in Norway, Finland and Estonia. In Norway, conservation actions proposed in the national plan have already been started: hunting of geese is banned in the autumn staging area, and control of the Red Fox population in the core breeding area has started. It is too early to assess the effect of the public awareness campaigns, but in Estonia and Hungary cooperation with hunters' associations has been good both at national and regional levels, while in Greece this was the case only at the regional level. The fact that a bird colour-ringed by the project was later found to have been shot dead inside the hunting-free zone of a strictly protected Natura 2000 site in Greece shows that much more needs to be done urgently to protect the LWfG from hunting.

The project has been a timely boost for the conservation work at a critical phase when the Fennoscandian population was on the verge of extinction.



FINLAND

Project number: LIFE05 NAT/FIN/000105

Title: Conservation of Lesser White-fronted Goose on European migration route

Beneficiary: WWF Finland

Contact: Mr. Petteri Tolvanen

Email: petterii.tolvanen@wwf.fi

Website: www.wwf.fi

Period: Apr-2005 to Mar-2009

Total budget: €1 098 000

LIFE contribution: €749 000

The project has shown that the international flyway approach is inevitable for protecting such a critically endangered migratory species. Although the declining trend of the Fennoscandian LWfG population may be stopped, it is still at immediate risk of being wiped out if effective and prompt conservation measures along the whole flyway are not carried out.

The project also shows the value of EU-wide species Action Plans (see p. 4).

COORDINATION FOR CONSERVATION

According to the conservation manager of BirdLife International, Boris Barov, a key issue for LIFE projects such as this one is how to coordinate conservation measures on multiple sites and contexts. The fact that a lesser white-fronted goose was shot on a Natura 2000 site in Greece indicates the importance of ensuring that coordinated efforts take place in multiple locations; developing synergies between international legal instruments; identifying and addressing inconsistencies in legislation and policies; and understanding the full lifecycle of target species and the threats they face along the flyways.

THE PERSONAL TOUCH PAYS DIVIDENDS

One other useful lesson for other LIFE Nature projects is the fact that satellite tracking of birds not only has a scientific and conservation value, it can also provide an attractive story to the media and public. The naming of individual birds is likely to lead to much better media coverage, concluded the expert panel at the Best Practices conference.

Hunting of the similar-looking white-fronted goose threatens the survival of A. erythropus

Photo: Petteri Tolvanen

LIFE AND BIRDS

• **LIFE00 NAT/F/007269 (Programme for the restoration and management of the habitats used by the Bittern in France") –** As a result of the degradation and disappearance of wetlands and, in particular, reed beds, nesting bittern (*Botaurus stellaris*) populations have dramatically decreased all over Europe in the last 30 years. This project successfully restored 210 ha of degraded reed beds and implemented management plans for some 6 500 ha of wetlands in seven Natura 2000 sites located in several different parts of France.

• **LIFE02 NAT/GR/008494 ("Conservation of priority bird species in Lake Mikri Prespa, Greece") –** This project has improved the conservation status of the Dalmatian Pelican and the Pygmy Cormorant to the extent that their populations have now stabilised at a high level over the last five years. Populations of more than 20 other waterbird species have also benefited from restoration activities instigated by the LIFE project.

• **LIFE02 NAT/H/008627 ("Conservation of Aquila heliaca in the Carpathian basin") –** The first LIFE Nature project devoted to the Imperial Eagle developed a management plan that helped lead to an increased acceleration of population numbers – from 55 breeding pairs in 2001 to 73 in 2005. A proposal to designate core breeding areas of the species as 'Special Protection Areas' (SPAs) under the Birds Directive was prepared and sent to the Hungarian Ministry of the Environment.

• **LIFE00 NAT/P/007097 ("Conservation of Zino's Petrel through restoration of its habitat") –** This project on Madeira drew up a management plan and implemented measures that have seen the population of Zino's Petrel increase from 30-40 to 65-80 breeding pairs. The increase in individuals improved the species' status from 'critically endangered' to 'endangered'.

• **LIFE03 NAT/SLO/000077 ("Establishing long-term protection of *Crex crex* in Slovenia") –** Key achievements of this project included the elaboration of a 10-year (2005-2015) action plan for the corncrake, as well as a national monitoring scheme for the species.

• **LIFE 03 NAT/E/000050 ("Conservation of the Spanish Imperial Eagle, Black Vulture, Black Stork") –** The imperial eagle (*Aquila adalberti*), the black vulture (*Aegypius monachus*) and the black stork (*Ciconia nigra*) are three EU-priority listed species that breed mainly in Spain's Mediterranean forests. Since many of the best-preserved Mediterranean landscapes are located on private land, the project aimed to involve private landowners in the conservation of threatened species present on their land, drawing up and implementing management plans on 22 private estates.

Saving the Iberian lynx

The Iberian lynx (*Lynx pardinus*) has been harder hit by habitat change, loss of prey and poaching than any other large carnivore species. Already extinct in Portugal, current estimates put the total population at between 200 and 220 specimens, found in two main locations in southwest Spain: the Doñana area and in the Sierra Morena mountains.

The Iberian lynx is smaller than the Eurasian lynx and has long legs and a short tail. A medium-sized feline weighs between 8 and 14 kg. It is a heavily-spotted solitary animal, whose young are born in March, usually with two cubs in a litter. The home range of the lynx is comparatively small, between 4 and 20km^2. Its preferred habitat is scrubland and dense woodland interspersed with open land.

Though the species occasionally feeds on birds, rodents and young deer, it mostly preys on rabbits. The massive depletion of the numbers of rabbits in the Iberian Peninsula due to disease – the myxomatosis epidemic and, more recently, Rabbit Haemorrhagic Disease (RHD) – and habitat change has reduced the rabbit population in many areas today to just 5% of its size in the 1950s, a fact that has contributed to the plight of the lynx.

Iberian lynx

Photo: J. Andalucía/ M. Medio Ambiente

Since 1994, several LIFE Nature projects have taken steps to reverse the decline of the big cat in Portugal and Spain. One more recent project – **LIFE02 NAT/E/008609** ("Population recovery of Iberian Lynx in Andalusia") – attempted to connect isolated groups of lynx and to increase the availability of prey by leasing the rights to hunt rabbits and through effective restocking, among other methods.

The problem of animals being accidentally snared or run over was also addressed. Measures were carried out through management agreements with private landowners.

The follow-up project – **LIFE06 NAT/E/000209** – ("Conservation and reintroduction of the Iberian Lynx (*Lynx pardinus*) in Andalucía") is currently developing a comprehensive strategy for lynx conservation in Andalusia, and will soon conduct the first trial reintroduction in the wild of captive-bred individuals.

One key project action, illustrating the importance of taking an ecosystem approach, has been the Recovery Unit Territories (RUT) programme. An RUT is an area of some 500 ha next to the territory of a breeding female. These areas are fenced and restocked with rabbits (which are provided with shelter and water). The aim is to increase the area of reproductive territory available to the female lynxes. Results have been good: The geographical spread of the creature has also grown. In 2002, *Lynx pardinus* occupied some 125 km^2 of land in the project area; by 2008, the figure had increased to 235 km^2.

Lynx habitat in Sierra Morena

REVERSING THE TREND

The downward trend in lynx numbers in Doñana and Sierra Morena observed until 2000 has stopped. The number of lynxes in the Doñana population has stabilised, whilst numbers have been increasing at Sierra Morena since 2002.

Actions to prevent lynx deaths on roads in Doñana – e.g. the construction of fences and an underpass – have seen the mortality rate reduced from three individuals per year (2001-2006) to none in 2007 and one in 2008.

In order to make the project work, the beneficiary has also sought to involve stakeholders from an early stage and has signed collaboration agreements with all the hunting organisations in Doñana. Awareness-raising activities have sought to increase local pride in the region's "noble cat". More research is needed on the species. The LIFE project in Andalusia is monitoring the lynx and patrolling important conservation areas. "The RUT and monitoring methods are transferable experiences," believes the former technical coordinator, Rafael Canedas.

Plant micro-reserves in Western Crete

A LIFE-funded project on the Greek island of Crete has established plant micro-reserves (PMRs) as a conservation measure for seven rare plant species. Modelled on PMRs in Spain, the success of the project demonstrates how this methodology can be transferred to other plant-rich Natura 2000 sites in Europe.

Plant Micro-reserve (PMR) for the palm Phoenix theophrasti *in Western Crete*

Crete is considered to have one of the richest diversities of plants in Europe, with an especially high concentration of endemic plant species. The island has 14 plant species included in Annex II of the Habitats Directive, with eight of these having priority conservation status. The main threats to these plants stem from human activities.

Within the framework of the LIFE project, the University of Athens, in collaboration with the Mediterranean Agronomic Institute of Chania (MAICh) and the Region of Crete-Forest Directorate of Chania, proposed the establishment of a pilot network of PMRs in western Crete (the prefecture of Chania) to support the conservation of seven endemic priority plant species – *Androcymbium rechingeri; Anthemis glaberrima; Bupleurum kakiskalae; Cephalanthera cucullata; Hypericum aciferum; Nepeta sphaciotica*; and *Phoenix theophrasti* – found in three Natura 2000 sites.

The PMR was considered to be the most appropriate conservation and management tool because of the narrow distribution range of the target species. The project proposed establishing a network of PMRs in small land parcels (less than 20 ha).

A detailed inventory and mapping was carried out for each PMR, including the location and densities of the seven target species. This information was then used to develop management plans for the micro-reserves.

All the PMRs were delimited and marked with signs and posts to discourage trespassing and to raise awareness of the presence of the threatened species. The *B. kakiskalae* and *C. cucullata* PMRs were also fenced off in order to avoid damage from grazing. A vehicle barrier was erected at the P. theophrasti PMR, since the area was being used to park vehicles. *Ex-situ* actions included the creation of a seed bank and seedling plantations for the target species.

LONG-TERM MONITORING

In line with best practice, long-term monitoring plans were prepared for each species in order to determine the factors that affect their conservation. Some of the parameters monitored included: climate conditions; soil characteristics; interaction with other plants; the presence of animals; and human activities. The project established permanent monitoring plots, with meteorological and environmental sensors. The beneficiary and partners have continued to monitor and survey the PMRs after the completion of the LIFE project.

A very rare plant (Androcymbium rechingeri) *as defined by a PMR*

Protecting the highly endangered orchid Cephalanthera cucullata *against grazing in a PMR*

INVOLVEMENT OF LOCAL STAKEHOLDERS

To involve local stakeholders, the Cretan project developed an information campaign (local events, posters, leaflets and t-shirts) targeting the general public, in particular children, and local authorities. The campaign highlighted the importance of the PMRs in conserving the flora of Crete. Key actions included the LIFE-funded Visitor Centre at the Botanical Garden of MAICh and the Alpine Botanical Garden created at Omalos.

POSITIVE RESULTS

Although the conservation actions implemented by the project were based on 'mild' actions (fencing, wardening, installing signs and boards) and did not involve heavy restoration measures, the project achieved good results in terms of guaranteeing the long term conservation of the target species. Along with the implementation of management plans and continuous monitoring of the plant populations, the project defined the legal status of PMRs in Greek law, along with the Natura 2000 sites.

Two species: *B. kakiskalae* and *C. cucullata*, which were particularly threatened by grazing, benefited significantly from the fencing actions. In 2006, the entire population amounted to 69 *B. kakiskalae* individuals while in 2007, within the fenced area, an additional 100 seedlings were recorded. In relation to *P. theophrasti*, the population increased from 49 to 55 individuals thanks to the planting of offshoots and the barrier that now blocks vehicle access to the PMR and reduces the risk of fire.

TRANSFERABILITY

This was the first experience of PMRs in Greece, and the success of the project indicates that the PMR approach can be more widely applied in other parts of Crete or the Greek mainland.

GREECE

Project number: LIFE04 NAT/GR/000104

Title: A pilot network of plant micro-reserves in western Crete

Beneficiary: National and Kapodistrian University of Athens

Contact: Prof. Costas Thanos

Email: cthanos@biol.uoa.gr

Website: http://cretaplant.biol.uoa.gr

Period: Sep-2004 to Dec-2007

Total budget: €932 000

LIFE contribution: €699 000

International cooperation: **managing cross border nature conservation**

Cooperation, partnership building and communication are all crucial tools for nature conservation. A variety of LIFE projects have demonstrated the effectiveness of such cooperation during conservation work with habitats and species that cross transnational boundaries.

European nature knows no boundaries and a significant proportion of species regularly cross external and internal EU borders using transnational habitats and international wildlife corridors. EU nature conservation policy recognises this fact and acknowledges the key role that international cooperation plays in sustaining and strengthening EU biodiversity levels.

Cross-border collaboration between environmental managers is actively encouraged by the EU Biodiversity Action Plan and remains particularly relevant for nature conservation work in transnational situations, such as river basins which flow through a number of different countries, or with specific species that migrate, live, feed and breed in different international locations.

These relatively common environmental circumstances require coordinated transboundary management approaches.

EU ACTION

One of the EU's main instruments for promoting international cooperation between Member States is the Natura 2000 Network. This operates irrespective of political or administrative borders and sets common standards that take account of species and habitats in their whole natural distribution range

Another useful environment management instrument that reflects the importance of international cooperation is the set of EU-wide Action Plans for threatened species. These were originally established to provide protection for priority bird species and their success has led to the European Commission introducing new proposals for EU-wide action plans that protect other valuable wildlife.

A variety of different EU policy approaches also incorporate transnational considerations and these include: the greening of agriculture and forestry policies; conserving biodiversity in the wider countryside; reducing pollution and restoring freshwater ecosystems; protecting soils; and making space for nature using territorial planning techniques. All of these approaches are actively applied within or between Member States and a considerable amount of effort is being invested in encouraging neighbouring countries to adopt coordinated nature conservation approaches.

The EU's neighbouring areas all have major influences on the quantity and quality of EU biodiversity. Helping to reduce pollution risks from external sources and to ensure adequate feeding and breeding areas for wildlife in these areas therefore remain important aspects of EU nature conservation policy.

The Third Country (TCY) component of the EU's LIFE programme has been heavily involved in providing this outreach role. LIFE TCY draws on experience from the cooperation approaches to mainstream nature conservation work noted above and promotes best practices to a wide audience of EU neighbours.

Delegates at the recent LIFE Nature Best Practices conference discussed the beneficial role that LIFE TCY and LIFE Nature support has played in supporting international cooperation and identified a set of operational issues that remain relevant for new and ongoing EU transnational collaboration initiatives in neighbouring areas.

Success factors for transboundary cooperation initiatives

A host of important lessons have been learnt from the different international LIFE projects presented at the conference in Brussels. Delegates highlighted a helpful selection of success factors for transboundary cooperation initiatives.

A consistent message that emerged relates to the broad scale of benefits that LIFE has been able to achieve through its multinational cooperation work. All of the activities in neighbouring areas can be seen to have generated mutually constructive outcomes for biodiversity in both the EU and the target country.

The introduction of new methodologies has also created various unexpected and additional results from LIFE projects, as the case studies in this section illustrate.

In addition to these added-value benefits from international LIFE investments, the project work undertaken within LIFE Nature and LIFE TCY has clearly shown that sustainable development approaches can be achieved in practice and are not simply conceptual policy goals.

SUSTAINING EU SEABIRD POPULATIONS

Portugal's 'IBAs Marinhas' LIFE Nature project (**LIFE04 NAT /P/000 213**) set out to establish the necessary conservation requirements for seabirds in the Atlantic. Initial efforts concentrated on Portuguese waters, which extend far out into the ocean from the mainland Iberian coast to seas surrounding the Azores and Madeira.

Only limited information had previously been available about how pelagic seabird species behaved at sea and how Important Bird Areas (IBAs) at sea could be identified or protected. The LIFE Nature project team made major advances in these topics and developed a fully functional methodology to identify and analyse seabird distribution and behaviour patterns. Special attention was paid to species listed in Annex I of the Birds Directive that had very dispersed distributions and that do not form easily identifiable concentrations at sea.

Results from the LIFE actions have been significant and led to the publication of a full new list of IBAs. Development of management arrangements for the IBAs has involved considerable consultation and teamwork with other countries where the birds feed or breed. This cooperation stretches from West Africa to South America and also includes partnership actions with conservation bodies in Malta, Greece and Italy. The Portuguese project is sharing data and methodology with a parallel project with similar aims, carried out by SEO in Spain.

Outcomes from the project demonstrate the practical measures that are possible to study and conserve important EU biodiversity, but equally the LIFE project has underlined the important role that international agreements can play in successful nature conservation policies for widespread ecosystems.

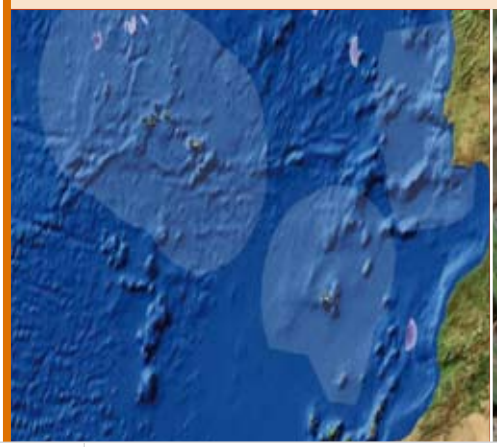


Photo: Pedro Geraldes

Environmental conservation and socio-economic development have been proven to be entirely compatible by project work that promotes sustainable land use practices. Good practice examples of this harmony include the certification scheme for sardines developed from Portugal's IBAs Marinhas LIFE Nature project and the Sava River basin management plan's reintroduction of natural grazing patterns by local livestock (see p.64).

The Sava River project signifies the valuable role that nature cooperation can play in peace building and environmental management has been confirmed as an effective and popular entry point for cross-border or transboundary partnerships. Focusing on flagship species helps encourage diverse groups to work together and step-by-step approaches can make major contributions to supporting socio-political stability.

LIFE TCY

The Sava River project is one of many LIFE TCY activities promoting environmental action in the western Balkans as well as countries bordering the Baltic and Mediterranean Seas.

Promoting best practice has been a key objective for LIFE TCY projects, which tend to operate in challenging circumstances. Projects are often established in areas that lack a strong history of nature conservation approaches and where pressing socio-economic considerations commonly receive higher political priority than environmental concerns.

These challenges are exacerbated by weak or non-existent legal frameworks for environmental protection and low levels of general awareness about environmental issues or nature conservation approaches. Concepts such as stakeholder participation and techniques such as habitat management planning can also be new and complex for the LIFE TCY beneficiaries.

Accepting and accommodating these issues is an essential first step for the LIFE TCY projects. This involves

CONSERVATION MANAGEMENT CAPACITY BUILDING IN THE RUSSIAN FEDERATION

Nature conservation in the St. Petersburg area received a useful boost with assistance from a LIFE TCY project (**LIFE04 TCY/ROS/000050**) that established cooperation arrangements to help the Russian authorities test and adopt European approaches to the development of an integrated protected area network. This aimed to support local wildlife and also help protect species in the wider Baltic and Scandinavian region.

A number of St. Petersburg's protected areas and sites lacked functional on-site management or operational capacities to deliver the necessary nature conservation measures. LIFE support was provided to fill these gaps and build capacities via a series of coordinated actions that included: improving local cooperation between public authorities, NGOs, land users, communities and other stakeholders involved in managing the protected areas; advising on new legislative requirements for protected areas, such as environmentally friendly socio-economic planning; and modernising the Russian authorities' conservation toolkit and providing essential ICT equipment to allow effective recording and monitoring of species in the protected areas.

Best practice approaches to awareness-raising formed another important aspect of the project, resulting in a mix of different conservation management benefits. These include the ability of environmental managers to make well-informed decisions about conservation measures and development controls in the region. GIS techniques are now mainstreamed and an electronic Red Book is in place to protect priority species.

Competence and confidence have been greatly improved by the LIFE TCY project, which has catalysed similar projects in other Russian regions where environmental bodies are keen to learn from the EU best practices in nature conservation methods.

Such relatively small beginnings can therefore be shown to offer much larger-scale long-term impacts in a country the size of Russia and this is an important lesson for many other international LIFE projects to learn.

investing a considerable amount of time helping international authorities to prepare the ground for practical conservation work.

More information about other LIFE TCY projects is available from the Life Focus: Third Countries brochure, which is available online at: http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/tcy.htm

INCREASING AWARENESS

Communication plays a crucial part in the cooperation process and many LIFE examples attribute their success to effective awareness-raising or advocacy actions that increased understanding and built shared ownership of nature conservation actions.

SUSTAINING COOPERATION

Sustainability is a core objective for all LIFE projects and participants at the conference raised the question of how international cooperation might continue to be maintained using the new LIFE + programme.

Various examples exist to demonstrate that LIFE Nature provides opportunities and options, but the discontinuation of LIFE TCY assistance was considered a brake on the environmental management momentum that had been gained in neighbouring countries.

Existing transnational cooperation funds, available via the structural fund schemes and rural development programmes, were thought to provide potential avenues but these were not dedicated to biodiversity or nature conservation and participants agreed that the issue was sufficiently important to warrant its own support mechanism.

Other influential issues concerning international cooperation included the benefits that would accrue from more standardisation and harmonisation of legislation and policies between Member States. Collaboration in this area was thought to present substantial savings for cross-boundary habitat work and species conservation support.

Common definitions and interpretation for management terms such as 'good conservation status' were thought to be essential in this standardisation approach, which would greatly enhance Member States abilities to work with each other.

All of the above points remain valid considerations for the future of international cooperation in EU conservation policy, which will continue to evolve and adapt to address the basic premise that nature sets its own boundaries and these rarely reflect those drawn on European maps.

REGENERATION OF THE BALTIC COASTAL LAGOON HABITAT COMPLEX

The effectiveness of environmental management methods for coastal lagoons and adjacent habitats along the Baltic Sea coast has been improved by a joined-up and cooperative LIFE project approach that creates essential conservation information and transfers this knowledge between the international partners.

Led by Denmark, the LIFE Nature project (**LIFE05 NAT/D/000152**) provides a conservation communication platform for partners from Germany, Lithuania, Sweden and Estonia. Together, NGOs and public authorities from these Member States are working to identify and implement actions that support the conservation status of Natura 2000 sites and boost the biodiversity value in these unique lagoon habitats.

Collaboration has created synergies and also acted as an important motivating factor, by demonstrating that similar problems exist in similar areas and joint actions can help overcome these issues in a more efficient and productive manner.

Other notable conservation outcomes from the LIFE-funded communication actions include: improved grazing regimes resulting in higher quality habitats and reduced impacts from invasive alien species; new integrated approaches to supporting amphibians; and better understanding about the use of fences to control predators.

EU networking: **catalysing conservation measures for black vultures**

LIFE Nature support has triggered international cooperation to boost the conservation status of black vultures, resulting in the establishment of a dedicated protection network for the birds and a new critical mass of habitat management techniques.

The black vulture (*Aegypius monachus*) is listed as a priority species in the Birds Directive Annexes and has its largest EU populations in south-western Iberia. There are also other, smaller, populations on the island of Majorca, in Greece and around France's Massif Central. The long-term future of all these populations is considered at risk and the main threats are attributed to indiscriminate use of poison as a non-selective method of predator control. Destruction of vulture habitats and the overall reduction in food supply sources have further contributed to the birds' decline.

LIFE SUPPORT

The Black Vulture Conservation Foundation (BVCF) was created in 1986 with the aims of boosting the species' dwindling population and of re-establishing its historical distribution range in Europe, which extended from Portugal to the Balkans. BVCF was founded by experts in different fields and from different European countries, with the aim of developing international cooperation for the protection of the black vulture.

Two LIFE projects have helped to strengthen such international cooperation. The first one (**LIFE97 NAT/NL/004210**) ran for three years from 1997 and helped to develop vulture conservation activities for several colonies in Spain. This work included: improving vulture habitats; monitoring species to decipher key behavioural patterns and external influences; developing management plans for private landowners in vulture habitats; and undertaking management requirements linked to some of the sites' Natura 2000 status.

This experience was disseminated to other countries where the BVCF set up projects (without EC-funding), such as the reintroduction of black vultures in France, and the creation of the right conditions for the species in the Balkan region. LIFE's catalytic role in this process demonstrates the added value that can be gained on an international scale from national investments in LIFE Nature activities.

REINFORCING CONSERVATION CAPACITY

Benefits from the first project were recognised and contributed to a second LIFE project (**LIFE00 NAT/E/007340**) that was launched in 2000 with the aim of implementing "Black Vulture Conservation in a European Network". This project built on and reinforced the gains made during the previous project. More specifically, it aimed to strengthen the capacity of organisations involved in vulture conservation, such as the BVCF, NGOs and governmental agencies, in order to tackle the illegal use of poisoning.

Much of the LIFE project work took place in the Spanish vulture habitats and the lessons learnt were disseminated to other European countries. Various conservation tools were deployed during the projects such as: training environmental rangers in habitat management techniques; increasing food supplies; expanding surveillance of breeding areas; and controlling feral cats.

Communication formed a crucial part of the project's overall strategy and significant efforts were devoted to raising awareness among hunters, farmers and the public about the harmful effects of poison on non-target animals, and the possibility of using alternative methods. This was backed up by a number of high profile and successful legal actions against people caught carrying out illegal poisoning in vulture habitats.

Black vulture

EUROPEAN NETWORK

The experience gained with both LIFE projects is now being applied to other projects across Europe covering Portugal, France, Bulgaria, Greece, Serbia, Albania, Bosnia and Herzegovina, Macedonia and Croatia. Techniques tested by LIFE for black vultures are also being extended to the bearded vulture, the Egyptian vulture and the griffon vulture.

Such uptake of the LIFE knowledge has been welcomed by the BVCF, which appreciates the enhanced efficiencies that are now possible after using international cooperation to develop a critical mass in vulture conservation methods.

Sava River cooperation: **nature conservation benefits from capacity building**

Agreement on trans-boundary nature conservation designations and development of the Sava River basin management plan is supported by LIFE TCY.

The Sava River is the Danube's second largest tributary and it flows from Slovenia, through Croatia, Bosnia and Herzegovina and into Serbia. Hosting the largest complex of alluvial floodplain wetlands in the Danube basin, it is characterized by a mosaic of natural floodplains and cultural landscapes. These provide important environmental functions, supporting a rich mix of biodiversity and acting as natural defences against flood waters.

No coordinated management approach had ever been developed for the Sava River before 2005, when the Sava Basin Commission was established to elaborate an integrated river basin management plan, in accordance with the EU Water Framework Directive principles. LIFE support was awarded to assist this process, which focused on securing a sustainable balance between the region's essential economic development needs and the wise use of natural resources in the Sava River basin.

COOPERATION CHALLENGES

Working on such an international scale, in a region where environmental priorities were relatively low, posed a particular set of challenges for the LIFE project team. Major obstacles identified from the outset included:

- A lack of consistent capacity among local, regional and national authorities that would be responsible for developing and implementing the river basin management plan
- Significant socio-political constraints caused by lack of awareness about the benefits and importance of environmental management activity
- Differences between local, regional and national authorities' legal frameworks, fixing the types of actions allowed on the ground and at policy level
- A lack of formal communication channels between the main stakeholders and a recent history of mistrust between them.

Acknowledging these constraints was necessary for the LIFE project to work, The first major breakthrough came with the signing of a transborder cooperation agreement between the Sava countries. This provided the foundation for an integrated set of capacity-building measures that resulted in the designation and management of a coherent coverage for habitat types and species of European importance.

Four working groups, addressing biodiversity, land use, GIS and awareness-raising were involved in implementing the LIFE project. Their combined multinational actions led to the creation of a transboundary network of core ecological areas, buffer zones and corridors. Wildlife conservation measures and sustainable land use management requirements were also agreed for these sites. More than 200 stakeholders participated in the process to set the agreements; huge communication efforts were made by the LIFE project team to increase understanding about the range of socio-economic benefits associated with the various environmental management proposals.

POSITIVE LEGACIES

Members of the Sava Basin Commission welcome the LIFE project outcomes, which are developing synergies and shared know-how between policy and decision makers, experts and other stakeholders.

Sava River

Step-by-step approaches to demand-based capacity building are making important contributions to the LIFE project's sustainability, as is the appreciation that expertise at local-level is as important as at Ministry-level.

One further noteworthy and transferable lesson from this ongoing international cooperation project is the fact that fostering shared understanding takes time and resources, but these are justifiable since the Natura 2000 network and other EU initiatives provide effective tools to secure nature conservation designations and gain public participation.

Project number: LIFE06 TCY/INT/000246

Title: Protection of Biodiversity of the Sava River Basin Floodplains

Beneficiary: IUCN - The World Conservation Union

Contact: Boris Erg

Email: boris.erg@iucn.org

Website: www.savariver.com

Period: Jan-2007 to Dec-2009

Total budget: €864 000

LIFE contribution: €601 000

More than 200 delegates attended the European Commission's LIFE Nature thematic conference in November 2008 to discuss and disseminate the wealth of know-how that exists in LIFE Nature projects. The meeting provided a successful platform for transferring experience in EU nature conservation skills.

The way forward: **Lessons learned for the LIFE programme**

European Commission organisers of the conference were particularly pleased with the participants' contributions and the extensive exchange of good practice is anticipated to create long term benefits for EU nature conservation. Closing the conference, Mrs Soledad Blanco, Director of International Affairs and LIFE (DG Environment, European Commission), highlighted some of the key conclusions of the conference, including the need for long-term monitoring of nature conservation projects, the need to better disseminate the lessons of knowledge acquired during LIFE Nature projects and, more generally, the challenge of reconciling the potential of short-term projects with long-term conservation challenges.

"The positive contribution of LIFE Nature has been clearly demonstrated," said Mrs. Blanco. "In different types of habitat, with different environmental problems, dedicated project managers (and beneficiaries in general) have shown best practices can be applied in other European regions with similar problems."

Among the examples Mrs Blanco highlighted in her speech: "Marine projects that find solutions to the well-known conflicts between fishing and conservation actions. Also grassland projects that develop ways to involve a variety of stakeholders or demonstration projects that expand into national or regional agri-environmental schemes. Furthermore methods for combating invasive alien species: rats or invasive plants. Or conservation measures for large mammals: the wolf or the Iberian lynx. River projects have given us valuable experience on restoration methods, responding to flood risks at the same time as improving the conditions for plants and animals. We have heard about work on specific habitats, such as blanket bogs, a habitat widely present outside Natura 2000. We have also seen examples of international cooperation – vultures, seabirds, or of international river catchment areas, for example, the Sava River running through Croatia, Serbia and Slovenia."

Soledad Blanco, Director of International Affairs and LIFE, DG Environment

Photo: Michelle Lischi

Many EU funding programmes have environmental strands: the difference with LIFE is that is the only one devoted entirely to supporting and developing EU environmental policy throughout the Community. It therefore has a very important role to play in contributing to the implementation, updating and development of Community environmental policy and legislation, in particular regarding the integration of the environment into other policies, and in contributing to sustainable development in the European Community. To develop policies that can be successfully applied across the EU it is critically important to be able to test and demonstrate approaches in different contexts.

DEVELOPING LIFE TO MEET NEW CHALLENGES

Between 1992 and 2006 the LIFE programme has carried out actions supporting the implementation of the Birds and Habitats Directives. The overriding objective during this period has been to support the implementation of the European network of protected nature areas, Natura 2000. This remains an important pillar of the LIFE+ programme.

But at the same time it has become increasingly clear that we need to work to protect Europe's wider biodiversity. "We realise that the protection of biodiversity calls for measures to improve the situation of plants and animals in the wider countryside," said Mrs. Blanco. "We need to acknowledge that nature does not know borders – of protected areas or nations. Therefore the successful conservation of biodiversity must be based on the population of species and habitats present both in protected areas, and wherever they are found."

"This is certainly a very demanding job but the positive side of this demanding task is that we may use the experience from the many successful projects that have taken place within Natura 2000 areas to protect and enhance the condition of the same habitat or species outside protected areas, or in other countries. In responding to this new challenge, LIFE+ biodiversity can support innovative initiatives in this field," she explained.

CLIMATE CHANGE AND MARINE HABITATS

"We are only now beginning to learn how to detect the effects of climate change on Europe's natural habitats and species," noted Mrs. Blanco. "The examples presented during this conference show that LIFE Nature projects offer valuable experience on how to detect changes, and how best to respond to them. In order to overcome the impact of climate change, species should be able to move between key habitats, and our effort should be directed at ensuring that stepping stones are available to guarantee connectivity between those key habitats. "Our hope is that many future LIFE projects will contribute to the solution of these challenges, building on the excellent results obtained to date."

Marine areas will remain a focus of the LIFE programme. "We are only now beginning to understand the intrinsic mechanisms operating in the sea, LIFE projects have contributed to this," stated Mrs. Blanco. "Marine projects have already provided examples on how to establish better cooperation and stakeholder acceptance. These matters are paramount in ensuring a sustainable use of the seas that are one of the main areas for the conservation of biodiversity and, at the same time, a crucial basis for human livelihood."

MAKING A DIFFERENCE

To conclude, said Mrs. Blanco: "We must find new ways to ensure that the achievements of projects are sustainable. We must make sure that good practice is demonstrated and transferred to other regions with similar problems. We must find innovative ways of applying best practices to the challenge of maintaining biodiversity.... As we now go forward with LIFE+ I hope that we can count on the commitment and ideas of the project managers and applicants so that together we can make a difference."

Featured projects in the conference poster session

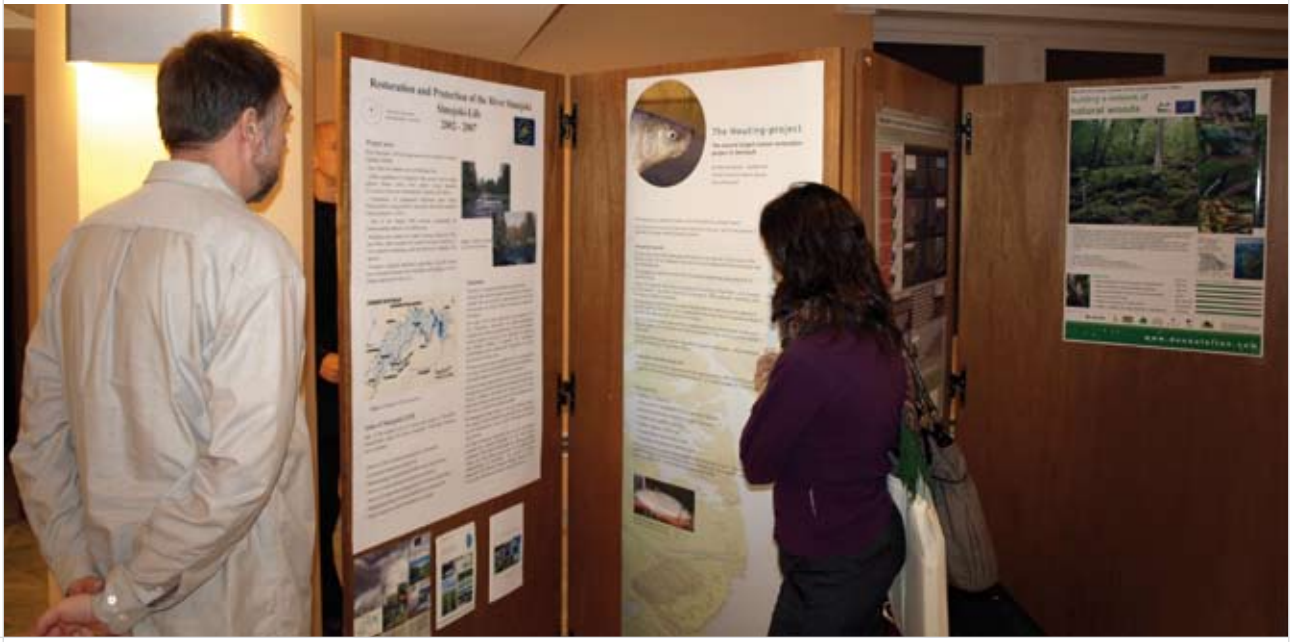


Photo: Eric Evrard

Available LIFE Nature publications

LIFE Focus Nature brochures

A number of LIFE publications are available on the LIFE website:

LIFE and Europe's grasslands: Restoring a forgotten habitat (2008 - 54 pp. - ISBN 978-92-79-10159-5)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/grassland.pdf

LIFE and endangered plants: Conserving Europe's threatened flora (2007 - 52 pp. - ISBN 978-92-79-08815-5)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/plants.pdf

LIFE and Europe's wetlands: Restoring a vital ecosystem (2007 - 68 pp. - ISBN 978-92-79-07617-6)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/wetlands.pdf

LIFE and Europe's rivers: Protecting and improving our water resources (2007 – 52pp. ISBN 978-92-79-05543-0 - ISSN 1725-5619)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/rivers.pdf

LIFE and the marine environment (2006 – 54pp. ISBN 92-79-03447-2- ISSN 1725-5619)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/marine_lr.pdf

LIFE and European forests (2006 - 68pp. ISBN 92-79-02255-5 - ISSN 1725-5619)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/forest_lr.pdf

Integrated management of Natura 2000 sites (2005 - 48 pp. – ISBN 92-79-00388-7)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/managingnatura_lr.pdf

LIFE, Natura 2000 and the military (2005 - 86 pp. – ISBN 92-894-9213-9 – ISSN 1725-5619)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/military_en.pdf

LIFE for birds: 25 years of the Birds Directive: the contribution of LIFE-Nature projects (2004 - 48 pp. – ISBN 92-894-7452-1 – ISSN 1725-5619)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/birds_en.pdf

LIFE-Nature: communicating with stakeholders and the general public – Best practice examples for Natura 2000 (2004 - 72 pp. – ISBN 92-894-7898-5 – ISSN 1725-5619)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/natcommunicat_lr.pdf

LIFE and agri-environment supporting Natura 2000: Experience from the LIFE programme (2003 - 72 pp. – ISBN 92-894-6023-7 – ISSN N° 1725-5619)
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/agrienvironment_en.pdf

LIFE-Nature Projects 2006 compilation (2006, 67 pp. – ISBN 92-79-02788-3)
http://ec.europa.eu/environment/life/publications/lifepublications/compilations/documents/natcompilation06.pdf

A number of printed copies of certain LIFE publications are available and can be ordered free-of-charge at: *http://ec.europa.eu/environment/life/publications/order.htm*

The programme

LIFE "**L**'**I**nstrument **F**inancier pour l'**E**nvironnement" / The financial instrument for the environment

Period covered (LIFE III) 2000-2006.

EU funding available approximately EUR 945 million.

Type of intervention co-financing actions in favour of the environment (LIFE projects) in the Member States of the European Union, in associated candidate countries and in certain third countries bordering the Mediterranean and the Baltic Sea.

LIFE projects

> **LIFE Nature projects** improve the conservation status of endangered species and natural habitats. They support the implementation of the Birds and Habitats Directives and the Natura 2000 network.
> **LIFE Environment projects** contribute to the development of innovative and integrated techniques or methods to support environmental progress.
> **LIFE Third Countries projects** support environmental capacity building and initiatives in non-EU countries bordering the Mediterranean and the Baltic Sea.

LIFE+ "**L**'**I**nstrument **F**inancier pour l'**E**nvironnement" / The financial instrument for the environment

Period covered (LIFE+) 2007-2013.

EU funding available approximately EUR 2,143 million

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

LIFE+ projects

> **LIFE Nature projects** improve the conservation status of endangered species and natural habitats. They support the implementation of the Birds and Habitats Directives and the Natura 2000 network.
> **LIFE+ Biodiversity projects** improve biodiversity in the EU. They contribute to the implementation of the objectives of the Commission Communication, "*Halting the loss of Biodiversity by 2010 – and beyond*" (COM (2006) 216 final).
> **LIFE+ Environment Policy and Governance projects** contribute to the development and demonstration of innovative policy approaches, technologies, methods and instruments in support of European environmental policy and legislation.
> **LIFE+ Information and Communication projects** are communication and awareness raising campaigns related to the implementation, updating and development of European environmental policy and legislation, including the prevention of forest fires and training for forest fire agents.

Further information further information on LIFE and LIFE+ is available at http://ec.europa.eu/life.

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

Contact

European Commission – Directorate-General for the Environment
LIFE Unit – BU-9 02/1 – B-1049 Brussels – Internet: http://ec.europa.eu/life

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