Conservation of Cypripedium calceolus and Saxifraga hirculus in Northern Finland

LIFE00NAT/FIN/7059

Final report

covering period

1.December 2000 – 30. May 2005

Report compiled by
Arja Vasama

Metsähallitus, Perä-Pohjolan luontopalvelut
PL 8016
FIN-96101 Rovaniemi

20.8.2005

1. Introduction

1.1 Background of the project

The lady's slipper orchid Cypripedium calceolus, hereinafter Cypripedium, and the yellow marsh saxifrage Saxifraga hirculus, hereinafter Saxifraga, are species of particular importance included in Appendix IV of the EU's Habitat Directive. Both species have declined in recent decades and even disappeared completely in several European countries. Finland has been allocated special international responsibility for the conservation of the Saxifraga, as a large proportion of the plant's European population grows there. Major threats to the species and their habitats in Finland include unawareness of the existence of these species and their ecological requirements, forestry, drainage and clearing of forests for arable land. Several of the colonies, even in the Natura 2000 areas, are located at sites that have undergone changes, due for example to drainage, and thus require active restoration or management measures.

At the end of 1990s, Metsähallitus started to assess the feasibility of bringing together various actors in a joint project aimed at determining a favourable level of protection for the Saxifraga and the Cypripedium and to promote the protection of these species and their habitats in Natura 2000 areas and also elsewhere, by providing information and training. Both Regional Environment Centres and forestry organisations regarded the project beneficial, and LIFE Natura funding was applied for in 2000. The EU funding made it possible to carry out a multi-goal project entailing wide-scale cooperation. The LIFE-Nature project "Conservation of Cypripedium calceolus and Saxifraga hirculus in Northern Finland" started out on 1 December 2000 and was completed on 30 May 2005. The approved budget for the project amounted to 1.9 million euros, a half of which was funded by the EU.

The beneficiary of the project was Metsähallitus (MH), Natural Heritage Service, Northern Finland. The partners included MH Natural Heritage Services for Ostrobothnia–Kainuu, MH Forestry, MH Laatumaa, Regional Environment Centres of Lapland, North Ostrobothnia and Kainuu, Regional Forestry Centres of Lapland, North Ostrobothnia and Kainuu, Regional Forest Owners' Unions of Northern Finland and Kainuu as well as Oulanka Biological Station, University of Oulu.

1.2 General objective of the project

The purpose of the project is to survey the Cypripedium and Saxifraga growing sites and to restore, manage and monitor these sites in order to determine and safeguard a favourable level of protection for the species in Northern Finland (regions of Ostrobothnia, Kainuu and Southern and Central Lapland). The project supports Finland's Natura 2000 programme and the aims of sustainable forestry and forest certification, and helps to improve landowners' attitudes towards conservation as well as cooperation and interaction between the various authorities and the landowners. The project focuses to a major extent on the conservation of prioritised biotopes (aapa mires, mires with trees, boreal natural forests), and its accomplishment will ensure that the natural values associated with Finland's regional Natura 2000 network will be preserved.

1.3 The anticipated results according to the project plan

- Colonies within the Natura areas have been inventoried and up-to-date information on these has been stored in the information systems of the actors/parties involved in the project
- Hydrological restoration measures influencing an area of no less than 200 hectares have been completed in the Natura areas
- A study has been completed to determine which colonies in the Natura areas require active management, mowing or removal of overshadowing trees. Based on this study, the sites of at least 20 colonies, covering a total area of 5 hectares, have been moved or cleared.
- Guidelines on the management of growing sites of the species and on silvicultural measures in Cypripedium colonies have been drawn up.
- Five to ten training sessions for forest professionals have been arranged. A set of transparencies has been produced for training purposes.
- A four-colour leaflet has been prepared about the species and their ecology and distributed to those landowners on whose land there are known colonies of these plants.
- Information boards have been set up along a nature trail and at growing sites, providing information about silvicultural measures and restoration and management measures suitable for Cypripedium colonies. The trail and the information boards will be used for training forest professionals and landowners.
- Information about the species and the threats to their survival has been distributed to the general public during the course of the project through for example newspaper articles and Internet websites.

- The State of Finland has either acquired plots for conservation purposes or the sites have been conserved under protection agreements. There are 120 such plots, covering a total of 2236.4 hectares.
- A seed bank study has been carried out.
- A report has been compiled on the status of the species in the Natura areas of the project area.

2. Summary of project results

2.1 Project measures, aims and realisation of results

No	Measures	Aim	Realisation	Notes
A.1	Hiring of a coordinator and two full-time biologists	To facilitate coordination of the project, reporting and supervising the works	Realised as planned	
A.2	Establishment of a project steering group	To guarantee flow of information and adequate progress of the project	Two meetings a year arranged	Several changes in the membership
A.3	Inventory and documentation of known Saxifraga and Cypripedium populations	To obtain up-to-date information on most of the populations in the Natura areas	465 Saxifraga growing sites and 632 Cypripedium growing sites inventoried. All colonies were documented for the Database of Threatened Species of the Finnish Environment Institute (SYKE).	208 new Saxifraga and 252 new Cypripedium colonies found during the compilation of the project's inventories
A.4	Report on the status of Cypripedium and Saxifraga in the inventoried Natura areas drawn up	To obtain a report on the status of the species	A separate report on each species published in the MH publication series. "Lettorikon tila Suomessa" (The status of the yellow marsh saxifrage in Finland) was published in May 2005.	A manuscript has been completed for the Cypripedium report, to be published in autumn 2005
A.5	Survey of habitat management and restoration needs for the Saxifraga and Cypripedium colonies, drawing up of the related plans	To create site-specific management and restoration plans for Saxifraga (200 ha, approx. 20 sites) and Cypripedium colonies (20 ha, approx. 10 sites)	The management and restoration needs of the colonies were assessed when they were inventoried. 18 new restoration plans were drawn up for the Natura areas, covering a total of 181 ha; the plan for the Kusiaiskorpi area (NAT), which was previously for the Aapasuo-LIFE, was supplemented. A management plan was drawn up for 10 sites containing both Cypripedium and Saxifraga.	In the framework of training cooperation, two Cypripedium and one Saxifraga restoration plans were additionally drawn up for commercially managed forests for a total area of 48 ha
A.6	Drawing up of a plan to test the impact of various forestry measures on Cypripedium colonies	To create an experiment plan	Forestry experiment plans completed for ten test sites in 2001.	
A.7	Seed bank study	To complete a master's-thesis on Saxifraga and Cypripedium seed banks	Experiments carried out for both species by burying experiments and germination tests. A report submitted for the seed bank.	Manuscript of the thesis completed (the theme comprises Saxifraga seed banks and the impact of mowing on Saxifraga populations). Due to the slow development of Cypripedium individuals and methodical problems, it was not possible to obtain results for this species during the project.

No	Measures	Aim	Realisation	Notes
A.8	Preparations for land purchases and conservation measures	Land areas to be purchased and protected (120 plots) assessed. Negotiations with landowners on land purchases and swaps and conservation agreements successfully completed.	The necessary work has been carried out in four organisations: the Regional Environment Centres of Kainuu, Northern Ostrobothnia and Lapland and in the Laatumaa Business Unit of Metsähallitus	95 purchases and swaps were completed and 24 conservation agreements were made, expropriations were necessary only at two sites. The negotiations on purchasing of two plots are still underway.
A.9	Input of the data on the colonies into each organisation's geographical information system (GIS)	Up-to-date geographic data available for forestry planning and administration of protected areas. Accidental destruction of the colonies prevented.	Colonies documented during the project were recorded to various GISs: the Finnish Environment Institute's Hertta Eliölajit, Metsähallitus' SutiGis (managed forests owned by MH) and the Forestry Centres' LuotsiGis (private lands)	Problems in communications were addressed and a pilot project was started to test the applicability of the data in the Eliölajit GIS in the operations of Forestry Centres
B.1	Land acquisition and funding for private lands	2236 hectares of private lands protected	2172 ha of private lands were protected by purchases, swaps and conservation agreements	The land area data of the plots were specified during the project. Implementation still underway for approx. 10 ha. Protection not implemented for approx. 10 ha.
C.1	Hydrological restoration of Saxifraga and Cypripedium growing sites as planned	A minimum of 200 ha of mire biotopes restored, the growing site of no less than 20 colonies secured	167 ha (84% of the goal) of land was restored in 15 different Natura areas. One Cypripedium site (14 ha) in private land was also restored by the help of the project.	At sites where measures were postponed due to objection by the landowner, delays in land purchases or other reasons, the restoration will be carried out after the obstacles are removed
C.2	Silvicultural experiments carried out as planned	Guidelines drawn up on the basis of the experiments for forestry professionals on silvicultural measures in Cypripedium colonies	Ten experimental sites in managed forests were logged. An analysis was performed on the follow-up data from the sites.	.
C.3	Management measures on Cypripedium colonies as planned	The viability and even expansion of ten colonies can be secured in the future	Shadowing spruce trees were removed at ten Cypripedium colonies in the Natura areas	Data on the success of the measures will not be obtained until after ten years
C.4	Transplantations carried out	To replant the species at sites from which they have disappeared	At the Vuorisuo site, a part of the Cypripedium population was removed so as to protect it from restoration works, otherwise no transplantation were deemed necessary	Some growing sites were detected where transplantations may be considered in the future
D.1	Management measures on Saxifraga colonies as planned	No less than five Saxifraga colonies protected from overgrowth by mowing or by other measures	5.5 hectares of Saxifraga sites were mowed and cleared at ten sites	Approx. two hectares were mowed twice
E.1	Drawing up of detailed forest management guidelines for forestry professionals	The guidelines will be taken into account when drawing up forestry plans and other decisions on land use.	Forestry guidelines were created and distributed to partner organisations. The guidelines were published during a forestry event in Lapland on 11 Feb 2005.	It was not possible to assess all the effects of forest management during the project due to the slow development of Cypripedium individuals. The aim is to include the guidelines to the national forestry guidelines.

No	Measures	Aim	Realisation	Notes
E.2	Production of a full-colour leaflet on Cypripedium and Saxifraga, mainly for landowners	Landowners become more aware of the species and the basic issues in their protection and are able to better take them into account in their own action	Printed in 2002, in all 30,000 copies. Distributed to forestry associations and landowners, at training events etc.	
E.3	Informing landowners of the existence of colonies in their lands	Information will help landowners to understand the importance of species protection and to take the colonies into account in their own actions	Landowners were informed of the colonies found during the project by personal letters	Because the inventories focused on the Natura areas, (only a) few new colonies were found in private lands
E.4	Establishment of a nature trail and a training site	The nature trail is seen with training material, 6–10 info boards in the terrain and a leaflet for photocopying. Four A3-sized info boards are in use at the Kuusamo training site.	The training sites were built in cooperation with the Forestry Centres. Six information boards at the Kätkävaara (NAT) nature trail in Tervola and a total of four information boards at Kumpu-vaara, Kotioja and Kaivossuo in Kuusamo. The leaflet and driving instructions are available on the project's web site.	The nature trail is located in a different Natura area than originally planned
E.5	Creation of a web site	A webpage about the project has been opened and is maintained both in Finnish and English on Metsähallitus' web site	The site was created and has been updated since 2002	Updating of the site has been hindered by the revamp of Metsähallitus' web site
E.6	Training events for landowners and forestry professionals	To make the information gathered during the project available for those who need it. A full-colour set of transparencies is created for the events.	11 training events have been arranged, and the project staff has participated in training events related to Metsähallitus' envi-ronmental guidelines for forestry in Western Lapland. Approx. 350 persons have participated in the training events. The transparen-cies are available in an electronic format (CD-ROM).	It has been recognised that it will be important to continue the training events even after the project
E.7	Creation of a leaflet and information posters about the project	An A4-sized colour leaflet particularly for the starting phase of project. An A3-sized poster about the project.	The posters were created and posted in the premises of project partners. The project leaflet was distributed during info events and press conferences related to the project.	An A0-sized poster (Eng. and Fin.) about the Cypripedium and forestry measures in particular was also created for our partners' use
E.8	Effective communications during the project in mass medias	At least six articles in various newspaper and periodicals. At least four press conferences and two excursions in the terrain for journalists.	The biologists working in the project wrote six articles. 9 press conferences were held, and journalists participated in five ex-cursions. Overall, dozens of newspaper stories, six radio inter-views and one news report in Northern Finland's local TV, and one report in the nationwide news for the MTV3 channel.	A mowing bee was arranged as an event open to the general public
F.1	Co-ordination, organisation and administration of the project	Report on the activities Intermediate report Report on the activities	28 Feb 2002 28 Feb 2003 28 Feb 2004	
F.2	Monitoring of the management measures of the colonies	Monitoring sites and a monitoring plan for the next ten years	50 Cypripedium and Saxifraga monitoring sites were established. A large amount of monitoring material was collected during the project. A post-project monitoring plan was drawn up.	The chosen monitoring method turned out to be very work-intensive, monitoring will be continued using a streamlined method

No	Measures	Aim	Realisation	Notes
F.3	Networking with other projects internationally and nationally	The project teams get a chance to learn from each other. Protection of Cypripedium and Saxifraga will be more efficient throughout Scandinavia.	Only few contacts with European LIFE projects. Continuous cooperation with Finnish projects, particularly with those in Northern Finland. The poster appeared at the Planta Europa and Europarc conferences in Spain in autumn 2004.	
F.4	Standard administrative procedures required	Adherence to the LIFE guidelines	An outside auditor audited the project	

2.2 Assessment of the project

The project reached its goals very well. The wide-scale inventories produced a lot of new information on the occurrence of the two species listed in the Annexes II and IV of the Habitats Directive, Cypripedium calceolus and Saxifraga hirculus, and on the status of the colonies. The inventories also provided information about other species listed in the Directive. The species-specific reports created on the basis of the inventories and other information are the first Finnish examples of the assessment of the favourable level of protection of specific species as instructed by the EU. The value of the reports is increased by the fact that they assess all the available information on the occurrence of these species, i.e. also outside protected areas.

A great amount of additional information on the Natura areas was also gained during the project – this information may now be used as a basis for planning the management and use of these areas. The inventory data provides a good framework for assessing the importance of sites included in the Natura network as regards the protection of Directive-listed species. Land procured during the project provides protection for habitats important for these species and Natura habitats and safeguards unity of the Natura areas. Land acquisition was successful and carried out almost entirely by voluntary solutions; the publicity that the LIFE project attracted also had a positive impact on its implementation.

A large amount of excellent restoration and management plans were drawn up in connection with the project. All the stages of project-related work were carefully documented, and thus the experience can easily be of use in any similar project. Restoration works related to the project were completed successfully. As a result of some sites remaining unrestored for various reasons, it was not possible to meet the exact surface area goals. Planning of restoration and the related work methods were developed during the project. Know-how was also shared with the partner organisations, promoting the planning of management and restoration of plant communities outside the Natura areas. Management of the Saxifraga mires and Cypripedium colonies were successful, and both the quantitative and qualitative goals were met. The management work was performed in Natura habitats and it improved the status of these habitats. The restored sites will, as the restoration process proceeds, gradually become Natura habitats.

The partners representing forestry regarded the recommendations for forestry measures at Cypripedium growing sites, drawn up on the basis of the forestry experiments, very important. Because the development of Cypripedium individuals is very slow it was not possible to obtain complete results on the population-level changes. It also turned out that

the approach to the experimented forestry operations was too timid; more radical methods should have been used.

The cooperation network created during the project is an important step towards an improved conservation status of the Directive-listed species also outside Natura areas. The training events organised in connection with the project received very positive feedback. It would not have been possible to arrange the training events without the EU funding, and the cooperation efforts in general could also not have been as intensive.

Communications about the project were very successful. The conservation of Cypripedium and Saxifraga received a great deal of public attention. Improved awareness among landowners also promotes the survival of these plants outside Natura areas. One goal of the project was to promote systematic inventories of the Cypripedium and Saxifraga colonies in commercially managed forests, but such an inventory was carried out only in Kuusamo.

The operations of the project provided the participants with a good chance for further training in for example nature management and restoration works. Work-intensive nature conservation projects are a positive phenomenon otherwise, too, in areas most affected by unemployment. Public opinion of the project was very positive throughout its duration.

The extensiveness of the project area and understaffing in terms of biologists represented a major challenge for the project, but the team was nonetheless able to provide excellent results. This is also testified to by the very positive overall feedback from the project partners: the parties involved found that the goals of the project were met very well and many positive steps were taken in the conservation of the Cypripedium and Saxifraga. When planning similar projects, the amount of work and travelling expenses should be assessed more realistically; the project provides valuable information on the unit cost of various operations and on the workforce requirements.

2.3 The future

During the LIFE project, modes of cooperation were created that will continue to be used in the future. Training cooperation started as early as in summer 2005, and the exchange of information between the partners will continue. The restoration plans that remained unimplemented will be regarded as a priority in Metsähallitus' operations and implemented as soon as possible, when the obstacles no longer exist. Marketing of the training sites will be continued, and the project web site will stay available for five years. Follow-ups of the project will be continued according to the monitoring plan drawn up. The aim is to include the Forestry guidelines for Cypripedium in the national forestry guidelines and to draw attention to the conservation, inventory and management needs of the species when drawing up regional forestry plans. The aim is to implement measures proposed in the species-specific reports. During the project, Metsähallitus has assumed a position of particular responsibility in the monitoring of Saxifraga and Cypripedium and in the promotion of their management, which also entails considerable responsibility in the implementation of the according measures.

4. Assessment of the project

A. Realisation of goals

The purpose of the project was to survey the growing sites of the Cypripedium calceolus and Saxifraga hirculus, plant species included in Appendix IV of the EU's Habitat Directive, which have strongly declined in Europe, and to restore, manage and monitor these sites in order to determine and safeguard a favourable level of protection for the species in Northern Finland (regions of Ostrobothnia, Kainuu and Southern and Central Lapland). The project supports Finland's Natura 2000 programme and the aims of sustainable forestry and forest certification, and it helps to improve landowners' attitudes towards conservation as well as cooperation and interaction between the various authorities. The project focuses to a major extent on the conservation of prioritised biotopes (aapa mires, mires with trees, boreal natural forests), and its accomplishment will ensure that the natural values associated with Finland's regional Natura 2000 network will be preserved.

The main goals of the project were successfully realised. As a result of this project, the amount of information available on the Cypripedium and Saxifraga is now paralleled only by that available for a handful of Directive-listed plant species. The inventories yielded a lot of new information on the ecology and growing sites of these species as well as on the status of the growing sites and the size of the colonies. The completed inventories were very successful and also provided a great deal of information on other threatened and Directive-listed species. The estimations of the work input required for the inventories were fairly accurate: even though more new colonies were detected than was expected, the project team succeeded in inventorying nearly all of them. Without the additional resources provided by the project, the acquisition of a corresponding amount of data would have required perhaps 20 years, if it had been possible at all. The Cypripedium and Saxifraga are the first species in Finland for which the EU's reporting guidelines have been tested and the according assessments on the favourable level of protection for these species have been completed.

In terms of financing, land procurement was a major aspect of the project. The acquisition of land substantially promoted the conservation both of the species listed in the Habitats Directive and of the habitats required by these species and referred to in the Directive. It also served to safeguard the ecological unity of the Natura areas and made sure that comprehensive management and land use and management plans can be drawn up for the areas. It was also possible to speed up the establishment of private nature reserves, benefiting the landowners as they were received a compensation for their land. The heated debates on the Natura areas in Finland have died down since the 1990s, and there were much less problems in land procurement than in the previous decade. Expropriation had to be resorted to at only two plots, and the negotiations on another two plots did not lead to a result before the completion of the project.

Repeated nature management measures went by and large according to plan. The targeted surface area and number of sites were reached. Inaccuracies occurred in the estimated amounts of work. The speed of mowing, for example, is totally dependent on the mowers' skills, and at some sites mowing with scythes required much more time than expected.

Contrary to the original plan, a mowing machine was used in the project, and it turned out to be an effective tool. Mowing with a scythe seems to be a disappearing skill, and the use of a mowing machine or a brush saw will become increasingly necessary. There is no longer use for the crude wetland hay, and the handling of the mowed biomass should have been planned more carefully in this project.

The silvicultural experiments were carried out according to the project plan, but in hindsight, inadequacies can be noticed in their planning, which should be taken into account when planning similar projects. The approach applied when carrying out the experiments was too timid. It would have been preferable to experiment clear cutting at some sites, for example, but at the initial stage of the project this seemed too radical. The number of the Cypripedium colonies in managed forests which were at all usable as experimental sites as regards their tree stand was lower than expected. Furthermore, most of the sites which were usable for the silvicultural experiments also supported other endangered species in terms of their habitat requirements (e.g. the Calypso), and this also had to be taken into account. More time should have been available for searching suitable sites or, even better, the sites should have been sorted out earlier during the planning phase of the project.

The goals for the management of the Cypripedium growing sites were met. It was observed that the growing sites in Lapland and Northern Ostrobothnia very rarely require any management whereas in the region of Kainuu, many colonies are located in biotopes formed by historical farming practices, and decline caused by the closing up of the forest threatens some of these colonies. This is why most of the managed sites are located in Kainuu.

Restoration measures were on the whole very successful. The restoration plans drawn up during the project have received very positive comments. Some problems were encountered during the restoration, however. To stay on the safe side, restoration plans were made for more than 200 hectares, but the hectare goal was eventually not realised. The owners of private Natura areas did not always give permission for the measures even though they had had positive views during the planning phase. The last autumn of the project suffered from exceptionally wet weather. The fact that the most urgent restoration needs are now inventoried may be seen as a good thing. The restoration plans that were completed but remained unimplemented during the project will be realised in the coming years. Many of the restoration sites were challenging due for example to poor accessibility, difficult ground water conditions and valuable species that were present at the site. The completed restoration work turned out to be highly successful, however. During follow-up calls it has been observed that the desired changes have been accomplished at all restoration sites and that the hydrological conditions have started to regain the status of a natural mire.

The extensiveness of the project area caused minor problems in realising the goals of the project. It was not possible to maintain sufficiently close contacts with all partners and to motivate them as well as it might have been possible in a geographically smaller area. Travelling expenses expanded to large sums and required a request for modification in the budget of the project, which was approved by the Commission. In similar projects, travelling expenses should be estimated more realistically. Travelling takes a lot of time, which should be taken into account also when estimating the requirements for personnel resources.

Major success stories of the project include the commencement of and increase in cooperation between the partners. Thanks to this project, the Regional Forestry Centres,

Environment Centres and Metsähallitus' Natural Heritage Services worked together in tangible cooperation to promote species protection. Metsähallitus' Natural Heritage Services, Northern Finland, for example, had not previously had any contact with the Lapland Forestry Centre, the central institution for the promotion of nature conservation in managed forests. The Natural Heritage Services also cooperated for the first time with forest management associations and Forest Owners' Unions. According to the feedback from the partners representing the forestry sector, making contacts and building a cooperation network was one of the most valuable results of the project. The training provided by the project was appreciated, and the number of training events exceeded the original goal. The philosophy behind Natura 2000 and the Habitat Directive was made more understandable to the forestry organisations. This should be reflected in the future, for example, in the land use close to the borders of Natura areas, in exchanging information concerning Directive-listed species and in general attitudes towards the nature conservation policies of the EU.

Resource requirements are often estimated over-optimistically and thus too low. The estimated amounts of work should be realistic; delays caused by weather, computer problems and changes in the operational environment should be anticipated. The project area was very extensive and during the field work period, much of the time was taken up by travelling. Luckily, there were not any changes in the long-term staff nor long sickness leaves in this project, except for the co-ordinator's three-week rehabilitation period in 2001. However, the work was marred by haste particularly during the field work periods, and the days became long. In the early stages, the permanent staff should be able to use more of their working time for the project than was allowed for this time. The permanent staff would have been able to assess, for example, the work intensiveness of the monitoring methods and to make changes in them.

B. Conservational benefits of the project

The biggest conservational benefit of the project was obviously achieved in the protection of the Saxifraga and Cypripedium. The central conservational goal of the project was to gain a complete overall view of the current status of and threats to the Cypripedium and Saxifraga. The goal was reached fairly well: the number of new colonies of these species found in the project area was higher than expected, and the understanding of the status of the species came much closer to the reality. On the other hand, it also became clear during the project that the habitats are declining both quantitatively and qualitatively, particularly as regards the Saxifraga. On the basis of the data collected during the project, it was possible to assess the level of conservation of the species in Finland, which will be of great help when planning future protection measures. The species-specific reports outline the significance of the Natura 2000 network in terms of the conservation of the Saxifraga and Cypripedium. The core areas of the species, the status of their populations and inadequacies in their protection are now known.

Numerous new growing sites of Directive-listed species were found during the project, and the knowledge about them was substantially increased.

The restoration and management measures were mainly carried out in Natura habitats. All the managed Cypripedium sites represent the Natura habitat type Fennoscandian herb-rich forests with Picea abies (code 9050), either dry, fresh or moist. The management measures

will increase the viability of the Directive species (Cypripedium), which also improves the representativeness of the habitat.

The managed Saxifraga sites are alkaline fens (7230). In addition to the Saxifrage, the slender green feather-moss (Hamatocaulis vernicosus, a Directive-listed species) also grows at several managed sites. As the overgrowing of fens is one of the biggest threats to this species, mowing improves its living conditions and thus also the representativeness of the habitat.

Hydrological restoration served both to improve the living conditions of the Saxifraga and Cypripedium in drained areas and to increase the surface area of the biotope suitable to them in the long term. In terms of Natura habitat types, the restoration sites were mainly alkaline fens (7230), aapa mires* (7310) and bog woodlands* (91D0). Some of the sites have deteriorated to various degrees in terms of their representativeness, and some have changed to such an extent that they can no longer be seen to represent the Natura habitat types. The restoration measures of the project were successful, and even if changes in the vegetation after the restoration are slow it can be assumed that the flora will change towards that of a mire in the natural state. This way, the representativeness of the Natura habitats is increasing, and the habitats that have changed to the widest extent will, as the restoration process progresses, be restored as Natura habitats. The slender green feather-moss also grew at four restoration sites. The living conditions of this species will also improve and the suitable biotope will increase thanks to the restoration.

The land procurements secured the conservation of habitats important to the Saxifraga and Cypripedium.

C. Incentive effects

The LIFE project contributed significantly towards the start-up of the nature management project "Tikankontti ja lettorikko" (Lady's slipper orchid and yellow marsh saxifrage) of the Regional Forestry Centre of North Ostrobothnia. It is particularly encouraging that, thanks to the contribution of the LIFE project, the planning and implementation of restoration and management schemes in private lands by nature management funds has progressed a great deal especially in the areas of the Regional Forestry Centres of Lapland and North Ostrobothnia. During the project, discussions were also started about exchanging information about threatened species among various authorities to safeguard their populations in commercially managed forests. Since approximately one third of the Cypripedium colonies (a half in Lapland) are located outside protected areas, it is particularly important that this project has made it possible to make a positive contribution to the development of the forest sector.

Restoration work was planned at two sites in private lands in cooperation with the Regional Forestry Centres during the project, and at one site the Lapland Centre already carried out the work. This is a new activity for the Forestry Centres, and the LIFE project had a great impact on it. During the restoration work at the Vuorisuo site in Kainuu, the forestry company UPM restored a hectare of land adjacent to the Natura area, also a novel activity for the forest industry company.

Training activities will continue after the project; the Regional Forestry Centre of North Ostrobothnia arranged a field day for forest owners in Kuusamo on 28 June 2005 which Tiina Laitinen participated in as a trainer. In the feedback given for the project, continued training and communications activities were regarded as important.

There was a great deal of cooperation with amateur botanists during the project; their participation in the conservation of plants also generates significant added value for the protection of Directive-listed species. The communications related to the LIFE project have increased the interest in Cypripedium in particular in various circles. More and more land-owners are also likely to be interested in the Cypripedium populations in their lands.

During the project, the Ministry of the Environment made a clear agreement with Metsähallitus on the monitoring responsibilities regarding the Cypripedium and Saxifraga, which further improves the monitoring of the conservation level. Metsähallitus is nationally responsible for monitoring the Saxifraga, and in Northern Finland, also for monitoring the Cypripedium.

D. The demonstrative and innovative value of the project

Awareness of the species increased during the LIFE project, and the communications efforts should be continued. Information was also conveyed through the project to media in which the Nature Heritage Services or the Environment Centres have hardly any visibility, namely the Regional Forestry Centres' magazines. These reach all forest owners – the parties most important for the protection of threatened species.

The LIFE project brought together parties that did not know each other previously, and it was recognized that this created significant added value. In the future, too, it will be advisable to look as widely as possible for partners for various projects.

The EU flag no longer seems to annoy people; at least in Northern Finland it is actually associated in a positive manner with support funds. As we anticipated when selecting the species for the project, the Cypripedium turned out to have a highly positive image. People were interested in it, and we were surprised to hear how many people told us that they go and admire the blossoming colonies in summer. Many a fan of the lady's slipper even had a site they visited regularly. People do not collect the plants, but rather see how the colony is doing and take photos. On the other hand, it was often found out that people had replanted the orchids in their gardens, and this even took place during the project.

Experiences from the project's monitoring activities will help to arrange national monitoring schemes for other Directive-listed species as well. The instructions for the monitoring of the Saxifraga has already turned out to be useful for the Siberian primrose (Primula nutans, a Directive-listed species), and will probably be used for other species too. The reports of the project were the first examples in Finland for species-specific assessments of the favourable level of protection and, as such, provide a kind of template for other species.

Networking with non-Finnish projects did not gain momentum due, for example, to language problems. The appearances at two international conferences were, however, important.

E. Socioeconomic effects

The Cypripedium and Saxifraga conservation project was very labour-intensive, which was very significant, as the employment opportunities were provided in areas most affected by unemployment. During five years, the employment opportunities provided by the project equalled 26 person-years. Both of the project's long-term biologists will continue to work for Metsähallitus; Tiina Laitinen, however, currently works as a substitute for maternity leave, while Kulmala has a permanent position. Both of them have through this project gained valuable know-how, significant both on the labour market in general and for this organisation in particular.

The specialised skills of the maintenance employees and forest workers who participated in the restoration and nature management work were increased, which is significant since the need for active nature management is increasing in Finland, and the duties of maintenance staff and forest workers will gradually change towards nature management. The experiences from the planning, monitoring and inventorying tasks of the project are also important.

The land procurement related to the project particularly provided work for the Regional Environment Centre of Lapland, in the area of which most of the procured plots are located. The quick progress of the land procurement was highly positive for the landowners. Land sale profits constitute a significant source of additional income in areas worst affected by unemployment.

Positive employment effects may also be generated later on through the Regional Forestry Centres if they, inspired by the project, start restoration work on a larger scale. The Forestry Centres' staff also received valuable further training.

Many of the men who participated in mowing and the removal of trees from restored sites, for example, had not even heard of the species previously, i.e. their awareness of these species increased and many were quite interested in seeing 'where this saxifrage stuff actually grows'. Since these people were local inhabitants, awareness of the species and their protection was also passed on further via the workers.

The mowing bee arranged at the Oravisuo site in Kuusamo promoted positive attitudes towards nature management and LIFE funding. Unfortunately, the personnel resources of this project did not allow the arrangement of more similar events, but Metsähallitus could try to arrange similar events in another context.

The media coverage on the project was almost completely positive. The Cypripedium received sympathy and this helped to promote positive attitudes towards nature conservation in general.

F. The Future: threats and necessary measures

It was realised during the project that occurrences of a given species are not always safe even in Natura areas. Usable information on the threats to the areas was acquired during the pro-

ject, providing a basis for the planning. The information, which has been documented in the species-specific reports, includes any requirements for restoration or management. The completed restoration plans will be realised over the next few years.

The thorough work now completed for two species helps to assess the favourability of the protection levels for other species. The monitoring network of the project will be used in the monitoring of Directive-listed species in general. The monitoring plan drawn up for the Cypripedium and Saxifraga will be implemented after the project has ended.

The worst threat still exists: lack of information regarding populations of the species outside Natura areas. In coming years, the goal is to use funds available on the basis of the provisions on nature management laid down in the Finnish Act on Financing of Sustainable Forestry for species protection. The regional forestry programmes currently under preparation will present the species-specific protection, inventory and management requirements. Metsähallitus will continue species-specific inventories, focusing on areas outside Natura areas. Other actors, too, should now start inventories of Cypripedium colonies. The Regional Forestry Centre of North Ostrobothnia's nature management project for Kuusamo provides a good model. Affecting people's attitudes and giving recommendations for forestry operations provide good tools in critical areas (Southwestern Lapland).

Assessments have begun of how to make the most of the environmental administration's occurrence data also used by Regional Forestry Centres. Optimal use requires ministry-level cooperation (the Regional Forestry Centres are steered by the Ministry of Agriculture and Forestry and the Environment Centres by the Ministry of the Environment) and a change in attitudes; the project has pressed towards this goal by pointing out problems in the flow of information.

Metsähallitus bears special responsibility for the Cypripedium and Saxifraga, and, after a successful start, Metsähallitus should continue the cooperation with Forestry Centres and be ready to provide training help if required. The Cypripedium cannot be protected in Natura areas alone, because one third of its Finnish population, even a half in Lapland, is located outside these areas. Cooperation between the actors is of crucial importance when protecting Directive-listed species. The cooperation networks created during the project provide a good basis for that.

Metsähallitus will monitor the use and condition of the training sites and continue to promote their use. Metsähallitus will maintain the project's website as a useful source of information for at least five years and see to it that all material produced in the project is available on the site.

At the end of the project, its results may be measured with the following indicators:

- Realisation of the restoration plans that remained unimplemented during the project
- The number of restoration and management plans for private lands outside protected areas
- Changes in the status of the colonies in the Hertta system
- Requests for consulting by forestry units to Natural Heritage Service units
- Development of the Cypripedium and Saxifraga populations and the favourability of the protection level as stated by reports to be drawn up every six years

- Status of the populations at restored/managed colonies; the monitoring data to be collected
- Monitoring of the success of restoration measures
- Realisation of the concrete protection measures suggested in the species-specific reports