

# **RESTORATION AND MANAGEMENT** of Östergötland's agricultural landscape

**A LIFE project report 2005 - 2009  
SWEDEN**



LÄNSSTYRELSEN  
ÖSTERGÖTLAND



Linköpings  
kommun



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**THE LIFE PROJECT** "Restoration and management of Östergötland's agricultural landscape" (ROSORIS) ran for five years and, in one way or another, involved many people. Those who carried out most of the work were Dan Nilsson, Peter Dahlström, Anneli Lundgren, Thomas Johansson and Ulla-Britt Samuelsson of Östergötland County Administrative Board and Anders Jörneskog of the municipality of Linköping.

Cover picture: Pollarded trees in the meadows at Hallstad

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# A successful nature conservation project

*In an EU LIFE project that ran from 2005 to 2009, the county administrative board and the municipality of Linköping restored and managed several of Östergötland's finest meadows and enclosed pastures. Now that the final measures have been implemented, we are pleased to be able to report that the project was a great success.*

*Many hectares were cleared for pasture and thousands of metres of fencing were erected. Cows and horses can once again be seen grazing these previously overgrown areas. Consequently, the conditions are now right for conserving the rich flora and fauna that have long been present in Östergötland's valuable agricultural landscape.*

*All the sites in the project were Natura 2000 sites and thus part of the EU's network of areas with very high natu-*

*ral values. Thanks to the measures that were implemented, the areas now have "good conservation status". This was the project's overall goal.*

*Besides the nature conservation work, various other measures were also implemented to make these beautiful areas more accessible to visitors.*

*We now have a great responsibility to ensure that the 41 restored areas remain prime sites for both biological diversity and human visitors.*



Magnus Holgersson  
Acting county governor

*Littoral meadow at the Svartämynningen nature reserve*



# Summary

From 2005 to 2009, the county administrative board and the municipality of Linköping ran, with support from the EU's LIFE fund, a nature conservation project at 41 sites tied to Östergötland's agricultural landscape. Well scattered within the county, all the areas were in Natura 2000, the EU's network of especially valuable habitats.

The meadows and enclosed pastures of the agricultural landscape are amongst the habitat types boasting the greatest abundance of species. Many insect species are supported by the rich verdure. Indeed, the landscape's bushes and trees accommodate extremely large numbers of insects, lichens and mosses. All in all, the biological diversity in the agricultural landscape is immense.

**The project focused** on those meadows and pastures in the Natura 2000 network that, for various reasons, did not satisfy the "good conservation status" requirement when the project started in 2005. In most cases, traditional grazing and haymaking had decreased or entirely ceased. There was thus a great need for measures in these areas. Without traditional use, fields are soon taken over by scrub and invasive grasses and sedges. After no great passage of time, the once rich enclosed pastures turn to forest. Unfortunately, over the past few decades, this development has been very common in Sweden's agricultural landscape.

Provided that such "overgrowth" has not gone too far, it is possible to break the negative development. The project removed many old worn-out fences and replaced them with new. Bushes and trees were cleared and, after discussions with landowners and livestock keepers, it was possible to restart traditional grazing. Depending on the situation at each site, various measures were implemented after detailed, individual working plans had been drawn up.



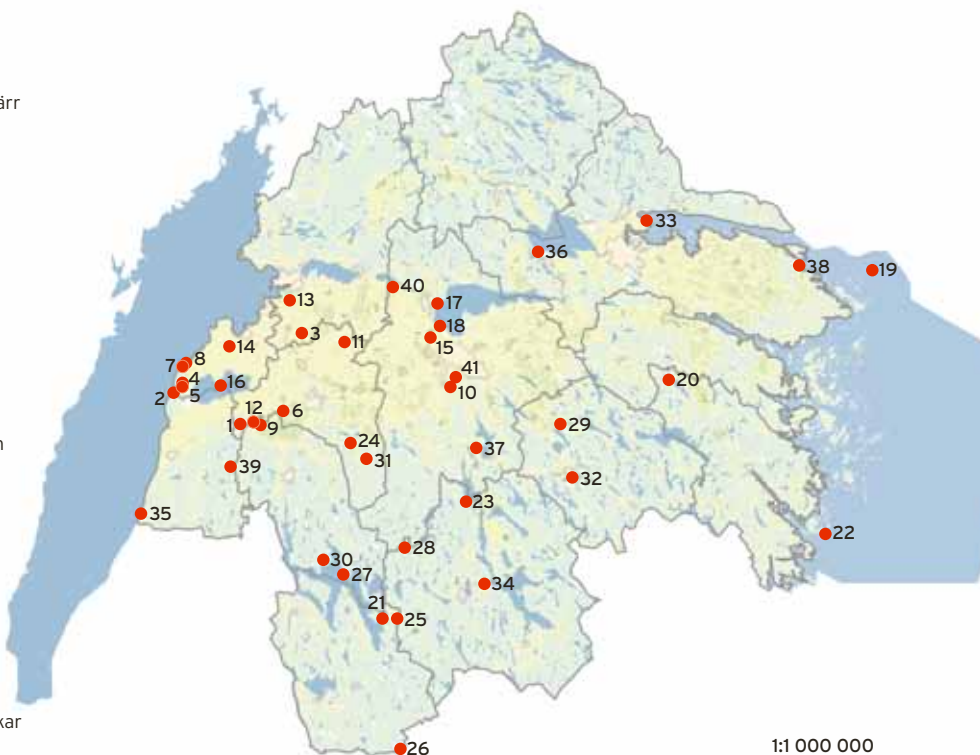
**The project enabled** us to take part in conferences in Sweden and other European countries. We also went on an extremely instructive study visit to Romania's old agricultural landscapes. Through these national and international exchanges, we acquired know-how that will be of great use in our continued work in Östergötland's agricultural landscape.

Besides the nature conservation initiatives, we have also produced information signs and folders for a selection of the areas. We hope that they will help more visitors to find their way to these excellent sites.

It is with great joy that we can report our success in reaching the goals of our project. Either by muzzles or bar mowers, the fields are once again being maintained. The typical flora and fauna of the sites have developed positively and we hope that the areas have now been conserved for future generations.

# Map of Östergötland

- | Nr | Namn                    |
|----|-------------------------|
| 1  | Åsabackarna             |
| 2  | Ombergsliden            |
| 3  | Götala kalkfuktäng      |
| 4  | Västra Karlsbo kalkkärr |
| 5  | Omberg                  |
| 6  | Stora Ljunamyren        |
| 7  | Hovsnäs kalkfuktäng     |
| 8  | Borghamns kalkkärr      |
| 9  | Rinnamyren              |
| 10 | Torrberga rikkärr       |
| 11 | Goviösa kalktorräng     |
| 12 | Torpa östergård         |
| 13 | Hilltorps kalkkärr      |
| 14 | Kastad kulle torräng    |
| 15 | Lera kalkkärr           |
| 16 | Tåkern                  |
| 17 | Kungsbro                |
| 18 | Svartåmynningen         |
| 19 | Bråviken yttre          |
| 20 | Harsbo-Sverkersholm     |
| 21 | Rocks mosse             |
| 22 | Bokö                    |
| 23 | Hallstad ängar          |
| 24 | Västra Harg             |
| 25 | Smedstorp               |
| 26 | Södra Bråta             |
| 27 | Bjälånäs                |
| 28 | Gamla Måla              |
| 29 | Herrsätter              |
| 30 | Bjärhult                |
| 31 | Ramshult                |
| 32 | Åtvidabergs tätort      |
| 33 | Malmölandets ekbackar   |
| 34 | Västra Eneby            |
| 35 | Holkaberg               |
| 36 | Ribbingsholm            |
| 37 | Västerby                |
| 38 | Bråxvik                 |
| 39 | Bomhult                 |
| 40 | Göta kanal              |
| 41 | Tinnerö eklandskap      |



*Group of experts at Hilltorp's calcareous fen*



*Short-spurred fragrant orchid*



*Grazing animals in Tinnerö's oak woodlands*



# LIFE - Promoting nature conservation and the exchange of findings

**L**IFE is the EU's financial instrument for supporting nature conservation projects that conserve and restore natural habitats for wild animals and plants. The prime purpose of LIFE is the implementation of the EU's Birds Directive and Habitats Directive. Based on both these directives, especially valuable habitats within the EU have been identified and linked in a network that is called Natura 2000. Each EU member country is responsible for conserving and developing the identified areas. Via LIFE, support is available for

financing the restoration and management of the areas in the network. To a certain extent, compensation for measures promoting outdoor activities is also available.

Our ROSORIS project was run from 2005 to 2009 at 41 Natura 2000 sites. Half the SEK 20 million budget was contributed by the EU. The other half was funded by the Swedish Environmental Protection Agency, Östergötland County Administrative Board and the municipality of Linköping.

*The Renstad pasture on Omberg*

# Project facts

## What we have done

Erected 80 km of fencing
Cleared 435 ha for grazing and hay
Restored 252 ha of littoral meadow
Restarted pollarding of 17 trees
Planted 116 oak trees
Built watering facilities for animals at 24 sites
Built collecting pens at six sites
Produced eight information signs
Produced five folders

## Exchanges

Arranged an international conference
Arranged a closing conference
Arranged a seminar on the management of calcareous fens
Arranged a course on the restoration of pollarded trees
Participated in three international conferences
Participated in an international project management meeting
Participated in the closing conferences of two Swedish LIFE projects
Went on a study visit to Romania's agricultural landscapes



*The Duke of Burgundy butterfly is extremely rare, but is found at several of the project sites.*



*Marsh helleborine is a species that is typical of Östergötland's calcareous fens.*



*Östergötland is a core area for the very rare hermit beetle. The species occurs in at least eight of the project areas.*





*Fly orchid*



# Dry and wet calcareous soils

One of Östergötland's most characteristic and unusual habitats is the calcareous fen (sometimes also referred to as "orchid fen" in Sweden). These habitats are traditionally farmed and wet areas that have a high lime content. They used to be far more common, but reclamation, drainage and the cessation of traditional farming mean that there are now few left.

The fens have a very valuable flora, the orchids being the species that first catch the attention of visitors. However, molluscs are the fens' rarest and, from an EU perspective, most conservation worthy species group. The calcareous fens of Östergötland have several very uncommon species that are not found in many other places in Europe.

Before implementing the measures in the fens, we arranged a rewarding seminar where the invited experts helped us to draw up the working plans on which our work was based.

Although our dry calcareous meadows are in the same geographic area as the calcareous fens, they have an essentially different flora and fauna. Great dryness is the characteristic feature of these meadows. The rapidly draining soil dries quickly and only the hardiest species survive. As in the calcareous fens, there are several rare species here that we in Östergötland have a great responsibility to conserve.

In the project, we implemented measures at 15 sites with calcareous soils. Thirteen of these were the calcareous fens at: Åsabackarna, Hilltorp, Torpa Östergård, Götala, Västra Karlsbo, Omberg, Ombergsliden, Stora Ljuna, Hovanäs, Borghamn, Rinna, Lera and Torrberga.

The dry calcareous meadows in Kastad and Govlösa made up the number. Thanks to the clearances and fencing, it was possible to conserve the high natural values at all these sites.



*The rare Geyer's whorl snail is found in several of the project areas.*



*Pasqueflowers grow on Östergötland's dry calcareous meadows.*



*Enclosure at Bjärhult*

## The rich meadows and

Östergötland's forest settlements have a very rich agricultural landscape. For several hundred years, these areas have had many smallholdings. Farmers used to toil here to clear new ground and use the often nutritionally poor soils. This has resulted in a mosaic of forests, pastureland, hay meadows and fields. In this landscape of small-scale agriculture, the biological diversity is, seen as a whole, extremely high.

Unfortunately, over the past few decades, development of the meadows and enclosed pastures of the forest settlements has been very negative. Many of the smallholdings have become unprofitable to farm and have either been abandoned entirely or fused into larger agricultural units that are operated in a more streamlined



*Machine clearance of wild rose bushes*



# enclosed pastures of forest settlements

manner than before. Nearly all the hay meadows have gone and even the area under grazing has reduced dramatically. Forest has once again been able to spread over the previously open expanses where the vegetation was formerly kept down by muzzle and scythe. Consequently, there has been a retrograde step in biological diversity.

Through fencing, clearance and other measures, the project made it possible to continue traditional use of some of the most valuable meadows and enclosed pastures.

The forest settlement areas in the project were: Harsbo-Sverkersholm, Smedstorp, Södra Bråta, Bjältnäs, Gamla Måla, Herrsäter, Bjärhult, Ramshult, Holkaberg, Rocks mosse, Bokö, Hallstad ängar, Bråxvik and Bomhult.



*Manual clearance of scrub*



*Grazing animals at Bjältnäs*

# Bird-rich littoral meadows

**N**ext to Östergötland's lakes, there are often low-lying lands that were long of great importance to our forefathers. These areas flooded every year and the nutrition-rich water provided the right conditions for a luxuriant growth of grass that was most often mown to provide an abundant hay harvest. This traditional mowing of the land encouraged a rich birdlife with many breeding species such as lapwing, yellow wagtail, dunlin, curlew and redshank. The best known littoral meadows are those around the Tåkern bird lake. However, there are also valuable littoral meadows at, for example, Roxen.



Nowadays, haymaking on the littoral meadows has almost entirely vanished and the harvest is taken from the fields. After the Second World War, most of the flood meadows became pastureland. From the nature conservation point of view, this latter does not differ much from hay meadow. However in the 1970s and 1980s, the use of many of these areas as pastureland also ceased and the littoral meadows that were once so rich with birdlife became overgrown with tall grasses and bushes.

Even where there is still grazing, flood meadows often eventually become tussocky and thus not quite as attractive for birds. At intervals of several years, running rotary cutting machines over the littoral meadows improves the ground for both livestock and birdlife.

In the project, we treated tussocks and ground away undesirable vegetation in four areas: Tåkern, Svartåmynningen, Kungsbro and Ribbingsholm. The areas were in traditional use even before the project started. However, thanks to the implemented measures, the conditions for birdlife have improved.





# Oak pastures teem with life

Many of Östergötland's enclosed pastures have large oaks. No other type of tree in Sweden has so many plants and animals associated with it. The over 1,000 species that have the oak as their host include insects, fungi and lichens. Thus, to ensure that these species are conserved, it is important that we restore and manage the oak environments in Östergötland.

Most of the large oaks in today's landscape germinated and grew in open hay meadows and pastureland. Today, when many of these areas are no longer mown or grazed, the old trees stand as a reminder of a former habitat. Scrub and trees grow near the old oaks and the light and moisture conditions alter dramatically for the species that live in association with them. In the long run, the oaks will also be suppressed by the other trees and disappear from the forests that are springing up around them. When their habitats change, the many species that were previously found on the solitary oaks reduce in number or disappear entirely.

In the project, we enclosed pastureland and, through clearance, freed oaks formerly overgrown by trees that deprived them of light. These measures have now made it possible for many rare species to survive. One example is the very rare hermit beetle. This occurs in several of the project areas.

The oak-focused areas in the project were: Tinnerö eklandskap, Västerby, Ribbingsholm, Västra Harg, Västra Eneby, Årvidabergs tätort, Göta kanal and Malmölandet.



*Apple blossom in Tinnerö's oak woodlands*



*Stag beetles are found at several of our sites*



*Oak pasture at Västra Eneby*

# Monitoring

To confirm that the implementation of measures really gives the expected results, the monitoring of nature conservation initiatives is vital. Furthermore, so that true trends are detected, the monitoring must be long-term. Consequently, the monitoring undertaken in the project should be seen as the start of a task that will continue well after the project's finish.

In the oak woodlands, we have studied hermit beetles. On the littoral meadows, we have carried out censuses of breeding birds. In the calcareous fens, we have

monitored molluscs. At several sites in enclosed pastures, we have recorded changes in butterfly populations.

To complement this biological monitoring, we also decided on aerial photography as a further way to document the measures. Using a small single-engined aeroplane, we photographed many of the sites both before and after measure implementation. Clearly revealing the changes resulting from clearances, aerial photographs have proven very cost-efficient.



*Taking aerial photos before and after a clearance gives an excellent overview of the results. These photos are of the Hilltorp site. Here, measures were implemented to expand the area occupied by small and overgrown calcareous fens. The upper picture is from 2006; the one on the right was taken in 2009.*





# Enjoy the countryside!



Information sign at Bjältnäs

We hope that many people will come on outings to our magnificent countryside. To add further value to their visits, we have implemented special measures in several of the project areas. Via folders, signs and a website, visitors can learn about the natural values of each area.

Many of our nature reserves and Natura 2000 sites that were not in the project are also well worth a visit. Parking places, walking trails, viewing points, wind-breaks, outdoor fireplaces, etc. are all provided with the visitor in mind.

*Enjoy Östergötland's countryside!*

Information about nature reserves and Natura 2000 sites:  
[www.lansstyrelsen.se/ostergotland](http://www.lansstyrelsen.se/ostergotland)

Information about Tinnerö Eklandskap:  
[www.linkoping.se/natur](http://www.linkoping.se/natur)

Information on guided nature tours in Östergötland:  
[www.naturguidning.se](http://www.naturguidning.se)



Dedication of the oak pasture at Västra Eneby



From 2005 to 2009, 41 meadows and enclosed pastures were restored in Östergötland. All the areas were part of Natura 2000, the EU's network of especially valuable natural habitats.

Primarily because traditional use had lessened or entirely ceased, the natural values in these areas were under great threat at the start of the project. The measures implemented in the project were very successful and it will now be possible to further conserve and develop the areas' great natural values.

With financial support from the EU's LIFE fund, the project was carried out by Östergötland County Administrative Board and the municipality of Linköping.

