



ARTDATABANKEN

SCIENCE AND  
EDUCATION **FOR**  
**SUSTAINABLE**  
**LIFE**



# Restoration actions for grasslands in protected areas

Examples of successful restoration  
activities for specific habitats and species

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SLU Swedish Species Information Centre



Natura 2000 Biogeographical Process  
Seminar for the Continental, Alpine,  
Pannonian, Steppic and Black Sea  
Regions

25-27<sup>th</sup> June 2024, Czech University of  
Life Sciences, Prague





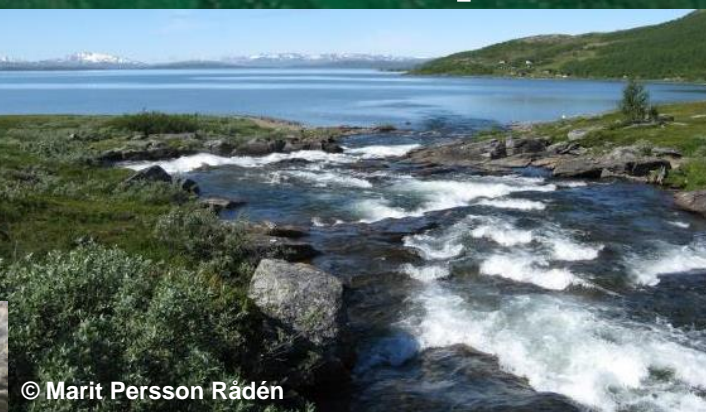
# 89 habitats and 166 taxa represented in Sweden



*Euphydryas aurinia*. © Sven Birkedal



*Tortella rigens*. © Tomas Hallingbäck



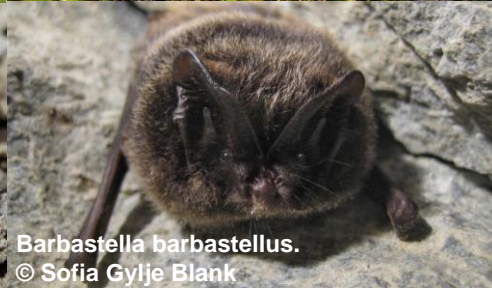
© Marit Persson Rådén



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*Lacerta agilis*. © Krister Hall



*Barbastella barbastellus*.  
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*Bufotes viridis*. © Krister Hall



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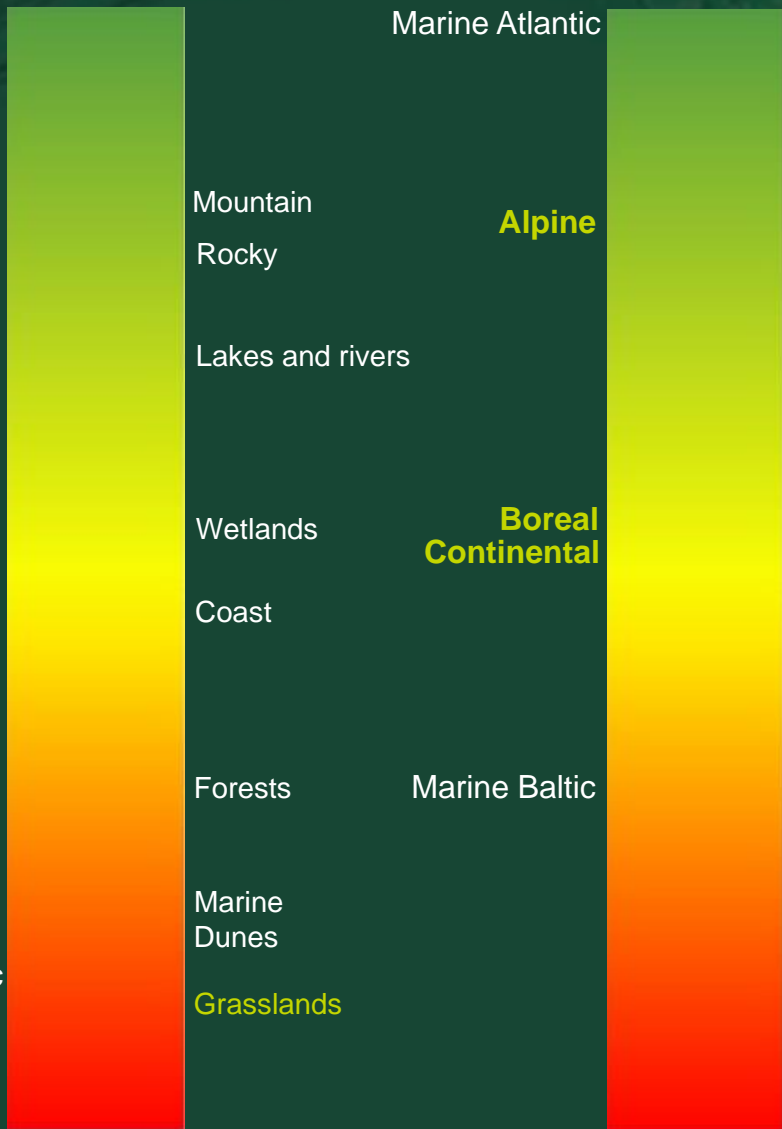


# Barometer (from Swedish report 2019)

Favourable

Inadequate

Bad



Mountain  
Rocky

Lakes and rivers

Wetlands

Coast

Forests

Marine  
Dunes

Grasslands

Marine Atlantic

Alpine

Boreal  
Continental

Marine Baltic

Mammals  
Bats  
Vascular plants  
Limnic invertebrates  
Fish  
Bryophytes and lichens  
Terrestrial molluscs

Reptiles and amphibia

Xylophagus invertebrates

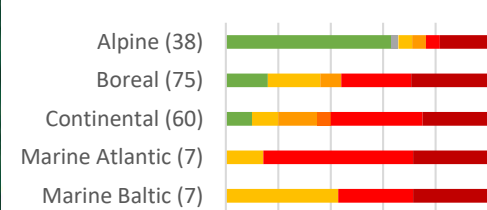
Butterflies

22 grassland habitats incl. 9070

6 mountain habitats incl. 6150 and 6170

- Overlapping areas for the Habitats and Birds Directives
- Areas for the Habitats Directive
- Areas for the Bird Directive

Habitats – conservation status per region



ARTER		SAMLAD BEDÖMNING					
GRÄSMARKER		ALP		BOR		CON	
KOD	Svenskt namn	2013	2019	2013	2019	2013	2019
1330	salta strandängar						
1630	strandängar vid Östersjön						
2320	rissandheter						
2330	grässandheter						
4010	fukthedar						
4030	torra hedar						
5130	enbuskmarker						
6110	basiska berghöllar						
6120	sandstäpp						
6210	kalkgräsmarker						
6230	stagg-gräsmarker						
6270	silikatgräsmarker						
6280	alvar						
6410	fuktängar						
6430	högtängar						
6450	svämängar						
6510	slätterängar i låglandet						
6520	höglänta slätterängar						
6530	lovängar						
8230	hällmarksstorräng						
8240	karsthällmarker						
9070	trädklädd betesmark						
4060	alpina rishedar						
4080	alpina videbuskmarker						
6150	alpina silikatgräsmarker						
6170	alpina kalkgräsmarker						
7240	Alpina översilningskärr						
8340	glaciärer						

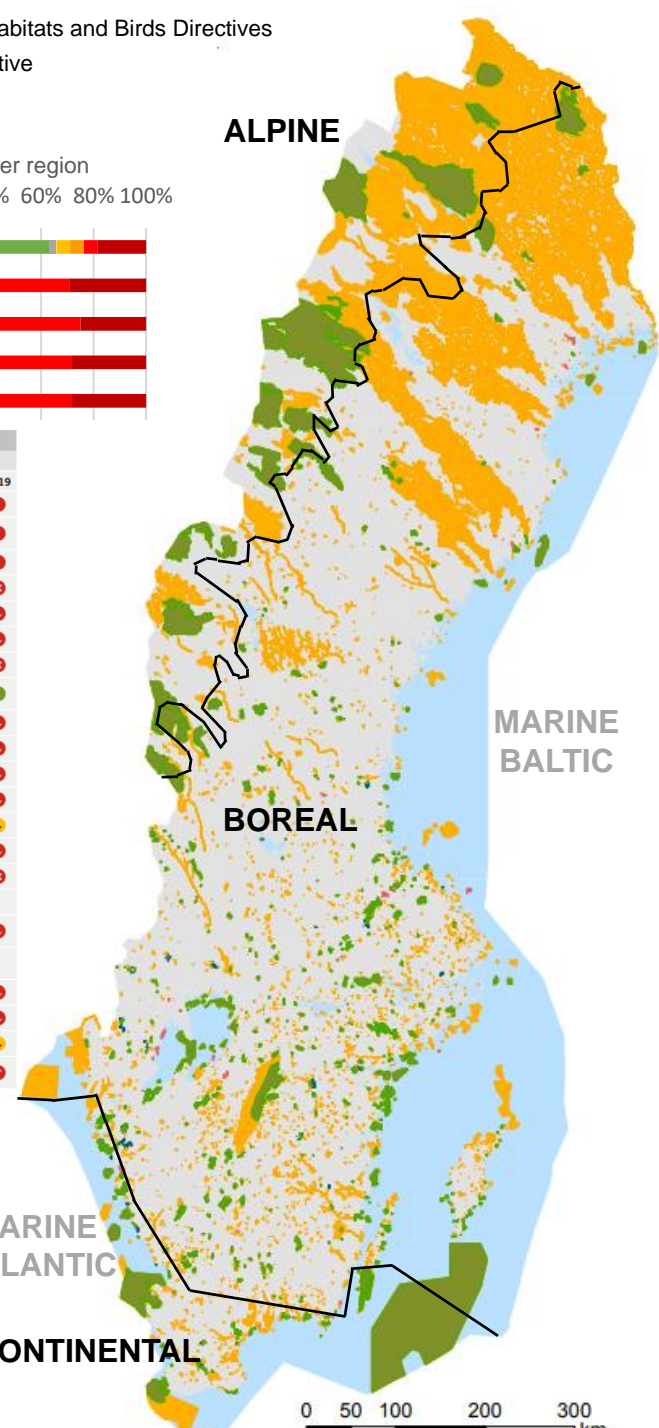
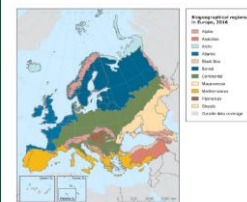
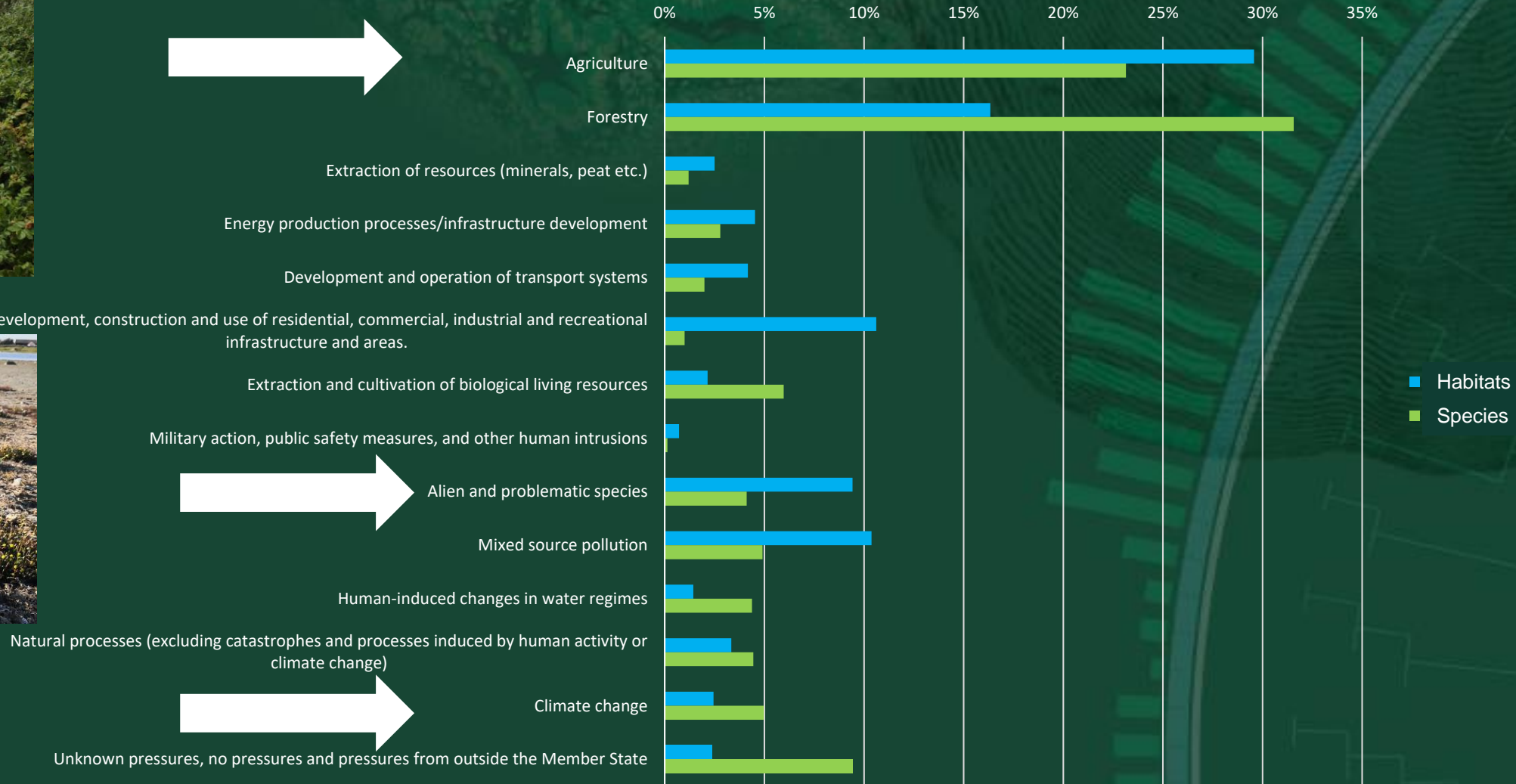
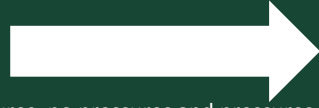


Figure 3. Biogeographical regions in Europe (Source: ISEA<sup>17</sup>)

# Number of reported pressures and threats related to sector (high and medium pressures & threats)

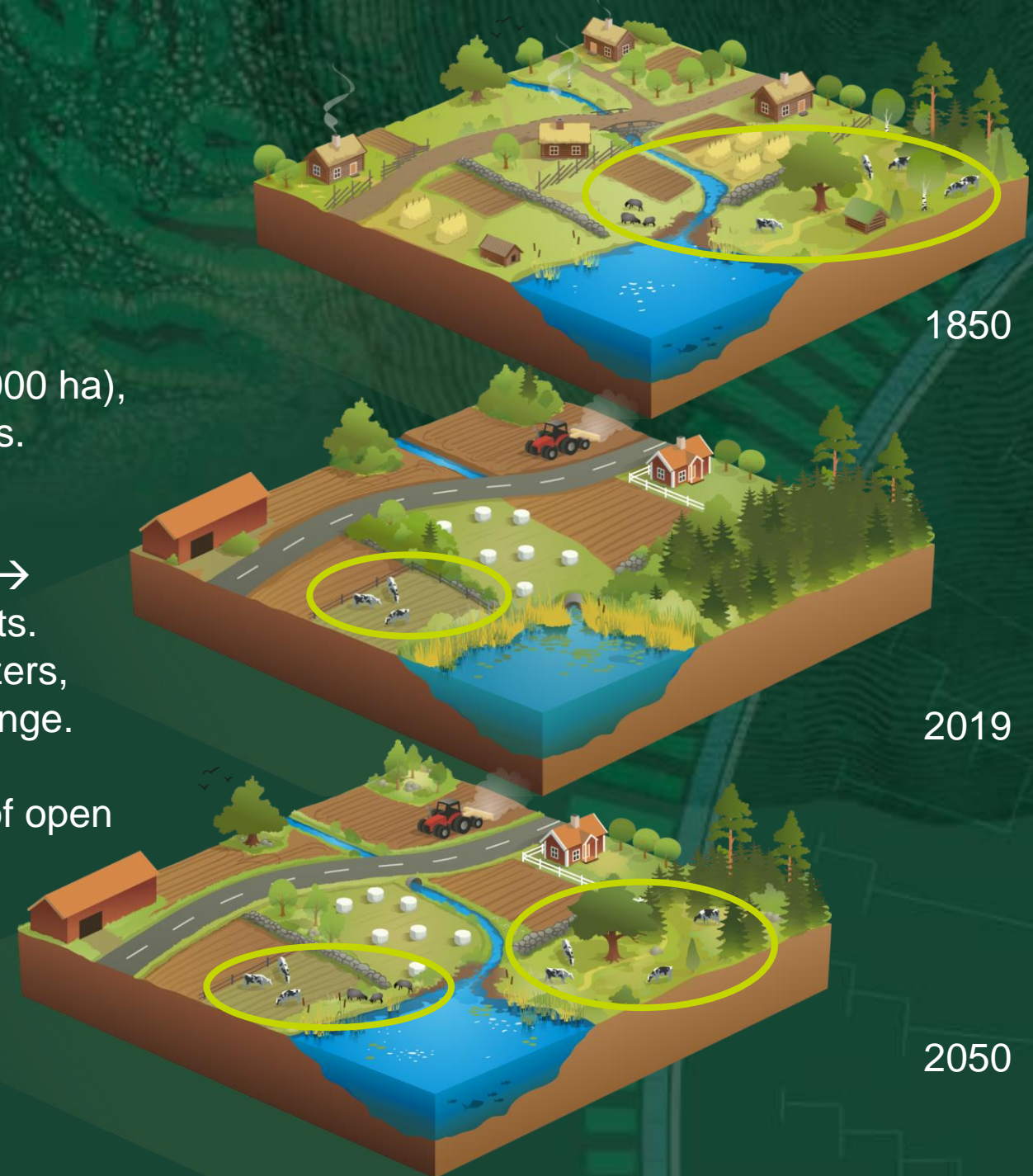


■ Habitats  
■ Species



# Land use changes

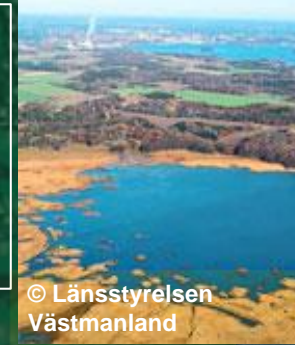
- **1850:** Grasslands 30 % land cover (appr. 367 000 ha), 25 % meadows and 75 % semi-natural pastures. Small-scale agricultural landscape.
- **2019:** Grasslands < 1 % land cover. Meadows → cultivated fields, semi-natural pastures → forests. Intensified agriculture and forestry, use of fertilizers, overgrowth, invasive alien species, climate change.
- **Vision 2050:** Restoration and use of all types of open grasslands to produce biological diversity.





Grassland habitats: 1330, 1630, 4010, 4030, 5130, 6110, 6210, 6230, 6270, 6410, 6510, 6530, 8230, 9070

- *Botrychium simplex*
- *Lucanus cervus*
- *Osmoderma eremita*
- *Anthrenochernes stellae*
- Several birds



© Länsstyrelsen Västmanland



© Bergslagsbild (LIFE GRACE)



# GRACE, MIA and Askoviken

- **Objectives:** Restore and improve archipelago and coastal habitats.
- **Main threats:** Overgrowth, declined livestock farming, high costs.
- **Managing principles:** Grazing/mowing, local engagement.
  - Clearing of trees and bushes, prescribed burning.
  - Tuft and stump removal, channels in reer bed zones.
  - Regeneration of pollards, planting of oak samplings.
  - Investments for grazing and mowing (eg. ferry docking points, corrals, animal crossings, fences, gates, hay cutting machines, animal shed).
  - Investments for visitors (eg. stiles, board walks, hiking trails, picnic areas).
  - Communication and monitoring activities.



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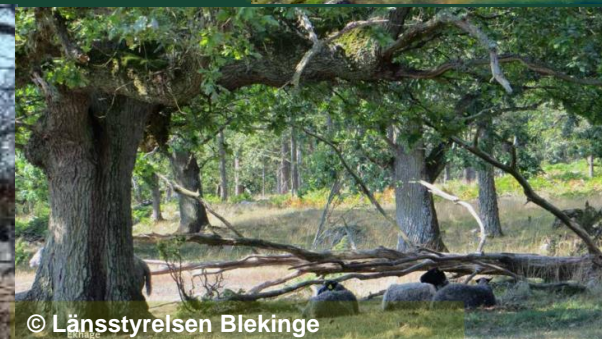
Disabled access stile. © Länsstyrelsen Stockholm



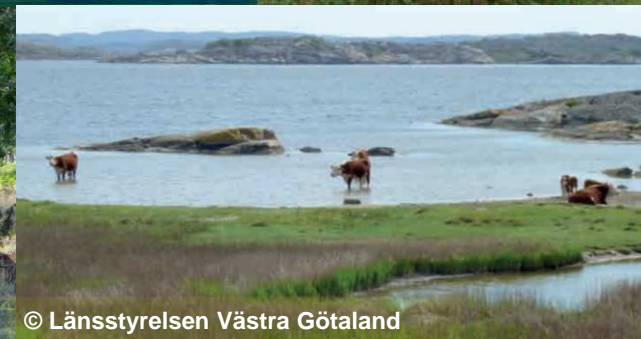
Ferry docking point and board walk. © Linnea Olsson



Animal shed. © Länsstyrelsen Stockholm



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# Example Hjälstaviken

- Cutting of tufts (50 %) in 6410\* →
  - increased grazing capacity (15 → 50 cattle)
  - increased shallow water area/blue fringe
  - facilitates long term management (trimming/field mowing every 3rd year)
- Fencing and clearing of forest → soft edge, shelter.
- Clearing of shrubs in 6270\*\* → favorable conditions for the only population of *Phengaris arion* in middle of Sweden.



*Phengaris arion*. © Erik Sjödin



© Linnea Olsson



© Linnea Olsson



© Länsstyrelsen Uppsala



© Linnea Olsson



© Linnea Olsson



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\* Molinia meadows on calcareous, peaty or clayey-siltladen soils

\*\* Fennoscandian lowland species-rich dry to mesic grasslands, equivalent to 6230



# Meadows

- Grazing not equivalent to mowing – flowers and vegetative parts are important to pollinators and many insects (focus in LIFE RestoRED).
- Cutting of tufts in 6410 → may be managed by mowing.
- Bogs, mires and fens (7000 habitats) – often mowed historically. Alpine zone – extensively grazed by *Rangifer tarandus*.



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Andrena willkella © Erik Sjödin



© Jennie Niesel



© Urban Gunnarsson



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- *Dianthus arenarius*
- *Dianthus ssp arenarius*
- *Phengaris arion*
- *Lacerta agilis*
- *Anthus campestris*
- *Lullula arborea*
- *Caprimulgus europeus*

# SandLife

- **Objectives:** Restore and improve sandy habitats.
- **Main threats:** Overgrowth, invasive aliens species, lack of natural disturbance.
- **Managing principles:** Grazing, continued disturbance (excavating/harrowing/plowing, digging, bulldozing).
  - Clearing of trees, bushes and invasive alien species (eg. *Rosa rugosa*), management of heather.
  - Removal or loosening up of grass vegetation, burning (vegetation, litter).
  - **Creating areas of bare sand** (patches excavated, bulldozed or ploughed/harrowed, calcareous sand up from deeper layers).
  - Investments for grazing and visitors (fencing, stiles, gates, etc.)
  - Communication and monitoring activities.



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- Natura 2000-areas in the project (name of nature reserves in brackets)
1. Haversta
  2. Loholmslunds sanddynreservat
  3. Bjärskov
  4. Ångöfjället strandlång
  5. Ångöfjället
  6. Fäbörstuhallen (Flommen)
  7. Fäbörstuhallen
  8. Kåhusa
  9. Sandhamnen (Hagstad, Hagstad, Järna och Bakåkra)
  10. Killa markbuktstads
  11. Klammavädd
  12. Verån (Öttemåla, Diskamölkan, Kullen, Binsjöns backar)
  13. Möllögården
  14. Rånöda
  15. Frisaboda
  16. Gropåll
  17. Lymby
  18. Riskaby
  19. Åby sandbuckar
  20. Gårby sandhuf
  21. Skerås
  22. Böckstens västra
  23. Böckstens östra



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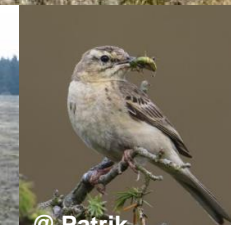
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@ Maria Sandell



@ Länsstyrelsen Kalmar



@ Patrik Olofsson



@ Länsstyrelsen Kalmar



- 50 percent of the farm's pastures will be semi-natural grassland with high biological diversity.
- The animals must graze on semi-natural grassland for at least 50 percent of the grazing period.
- Only meat from steers, heifers and young cows can be sold as semi-natural grassland meat.
- During the housing period, the animals must be fed at least 70 percent roughage.
- The meat must be tenderized for at least two weeks before it reaches the consumer.



## Cooperation and economy

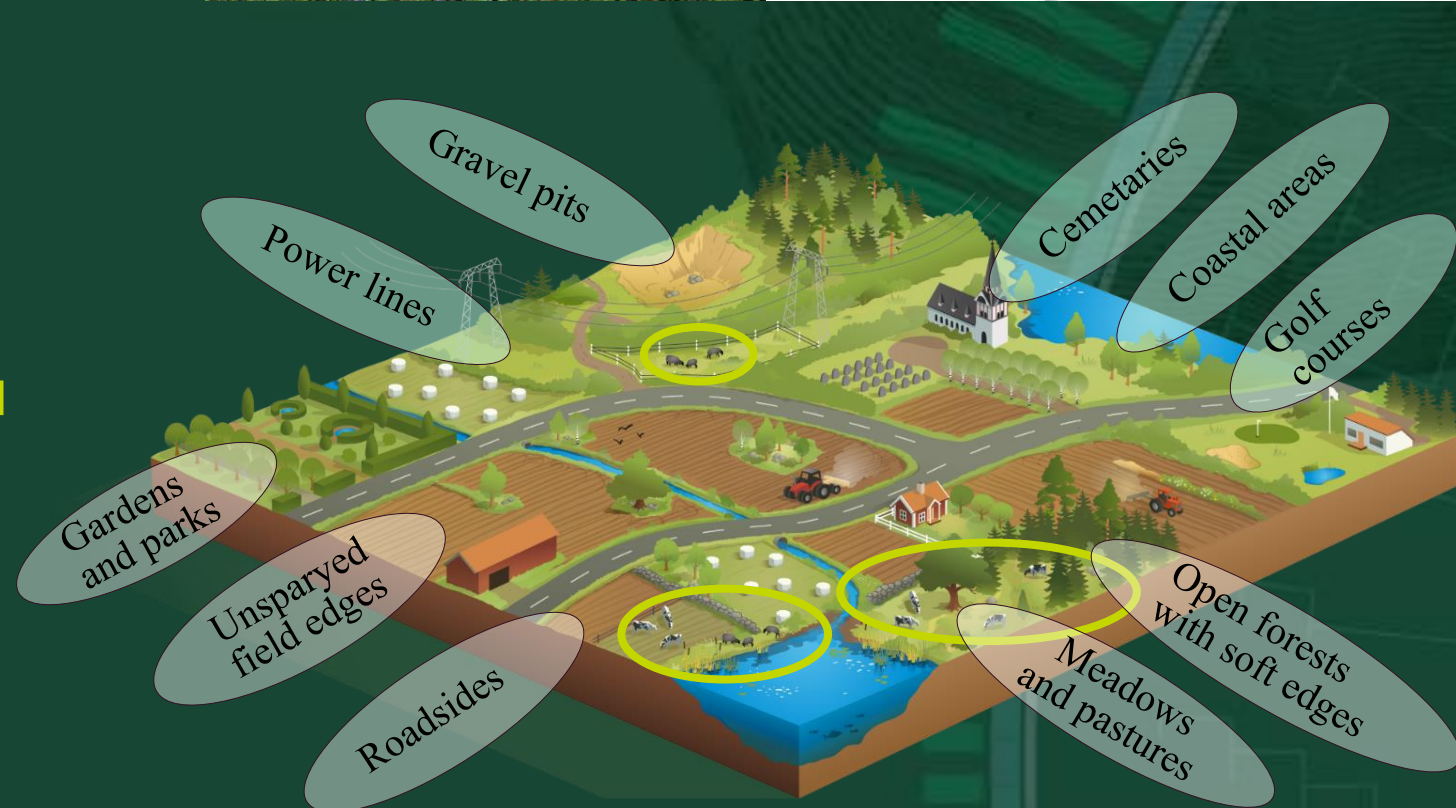
- “Svenskt sigill naturbeteskött” – meat from animals grazing semi-natural grasslands. Partner in research projects. Similar brand for milk, “Naturbetesmjölk”?
- “Roslagsmjölk” – milk from local farmers.
- Regional cooperation and networking – project Roslagshagar (partly funded by WWF). Restoration (eg. *Parnas sius*), machine park, counselling and facilitation of administration, economical support for new fences.
- Cooperation between grassland land owners and companies managing grasslands (project Infrastrukturens biotoper), eg. roadsides, power lines, golf courses and airports.
- Semi-natural grasslands as an ecosystem resource – recreation, ecotourism, and business to stimulate people living on the countryside. Eg. Svartådalens bygdeutveckling (partly EU-funded).





# Take home messages

- **Landscape perspective, variation, green infrastructure and regular monitoring.**
- Develop rational methods for mowing. Long-term incentives for livestock farming, and for keeping grazing animals on semi-natural rather than cultivated grassland.
- **Key factors – production, demand, stable economic compensation and CAP politics with adaption to regional conditions.**
- Local and regional cooperation.





# Thanks for you attention!

## CONTACT INFORMATION:

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[www.artdatabanken.se/en/](http://www.artdatabanken.se/en/)

- Lake Mälaren Inner Archipelago – Restoration and Management (MIA, EU LIFE07 NAT/S/000902): [webgate.ec.europa.eu/life/publicWebsite/project/LIFE07-NAT-S-000902/lake-malaren-inner-archipelago-restoration-and-managment](http://webgate.ec.europa.eu/life/publicWebsite/project/LIFE07-NAT-S-000902/lake-malaren-inner-archipelago-restoration-and-managment)
- Grazing and restoration of archipelago and coastal environments (GRACE, EU LIFE09 NAT/SE/000345): [www.graceprojektet.se/en/](http://www.graceprojektet.se/en/)
- Improvement of habitats for wetland birds in Askö-Tidö (Askoviken, EU LIFE04 NAT/SE/000230): [webgate.ec.europa.eu/life/publicWebsite/project/LIFE04-NAT-SE-000230/improvement-of-habitats-for-wetlands-birds-in-sasko-tido](http://webgate.ec.europa.eu/life/publicWebsite/project/LIFE04-NAT-SE-000230/improvement-of-habitats-for-wetlands-birds-in-sasko-tido)
- Restoration of sandy habitats in southern Sweden (SAND LIFE, LIFE11 NAT/SE/00849): [sandlife.se/?page\\_id=785](http://sandlife.se/?page_id=785)
- Ongoing grassland LIFE project: Restoration of EU Redlisted Annex I habitats, dependent on grazing or hay cutting in Natura 2000 sites in Sweden (LIFE RestoRED, LIFE19 NAT/SE/000172): [www.liferestored.se](http://www.liferestored.se)
- Other examples that might be interesting: LIFE Bridging the GAP, LIFE15 NAT/SE/000772 (<https://lifebridgingthegap.se>), handbook on practicing historical ecology (<https://doi.org/10.54612/a.389ecand8n>)

- Naturbeteskött: [www.naturbete.se/om-foreningen](http://www.naturbete.se/om-foreningen) (contact [anna@naturbete.se](mailto:anna@naturbete.se))
- Coop (distributor): <https://www.coop.se/hallbarhet/hallbarhetsarbete/kott/naturbeteskott> (contact [majsan.pense@coop.se](mailto:majsan.pense@coop.se))
- Svenskt Sigill: [www.svensksigill.se](http://www.svensksigill.se)
- WWF: [www.wwf.se/mat-och-jordbruk/hallbartjordbruk/naturbetesmarker/](http://www.wwf.se/mat-och-jordbruk/hallbartjordbruk/naturbetesmarker/) (contact [jenny.jewert@wwf.se](mailto:jenny.jewert@wwf.se))
- Roslagsmjölk: [www.roslagsmjolk.se](http://www.roslagsmjolk.se)
- Project Roslagshagar: [www.upplandsstiftelsen.se/naturvard/goda-exempel/roslagshagar/](http://www.upplandsstiftelsen.se/naturvard/goda-exempel/roslagshagar/) (contact [maria.hoflin@upplandsstiftelsen.se](mailto:maria.hoflin@upplandsstiftelsen.se))
- Project Infrastrukturens biotoper: [www.artdatabanken.se/det-har-gor-vi/samverkan/nationellt/infrastrukturens-biotoper/](http://www.artdatabanken.se/det-har-gor-vi/samverkan/nationellt/infrastrukturens-biotoper/)
- Svartådalens bygdeutveckling: [www.svartadalen.se](http://www.svartadalen.se)