Conference Report

Grazing Conference at Nordens Ark

25-26th of February 2014, Åby Säteri

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BACKGROUND AND PURPOSE

The present and historic role of grazing animals in shaping the European landscape with its flora and fauna is not to be underestimated. Before the domestication of cattle, natural grazing by aurochs, European bison and wild horse probably kept large parts of the European continent in a semi-open state. However, increasing hunting pressure in combination with agricultural technology led to the gradual disappearance of the wild mega fauna. The ecological role of the large grazers was replaced by domesticated cattle that continued to keep landscapes open. Today, because of the economic development, cattle-farming in Europe is less profitable, which has resulted in land abandonment and forest regrowth over large geographical areas. The land abandonment leads to loss of biodiversity that depend the open or semi-open, herbivore driven landscape types, as well as degradation or change of aesthetic values and ecosystem services. Abandonment of cattle-farming is consequently a concern for the scientific community and public alike. In a time where only fragments of the natural grasslands and meadows remain, grazing from domestic and wild herbivores as a method of nature conservation need to be discussed and evaluated.

In February 2014 a conference was held on the use of grazing animals in nature conservation. The conference was cooperation between Nordens Ark Foundation and Swedish Agricultural University (SLU) and took place at Norden Ark on the west coast of Sweden. The purpose of the conference was to highlight important issues concerning grazing as a method of conservation. Different approaches that are being tested or that are already being practiced in Europe to conserve open landscapes was elucidated, such as “Rewilding” and other methods that involve wild and/or domesticated grazing animals. Challenges within present and future conservation strategies were put to light and potential solutions discussed. Researchers and experts lectured on current grazing issues to the forty present auditors from all around Sweden. This report is a summary of the lectures and discussions that followed.

ABOUT NORDENS ARK

Nordens Ark is a non-profit foundation set up to give endangered animals a future. Our operations include breeding, research and education and efforts to disseminate knowledge about biological diversity. Many of our activities are carried on in the field, both in Sweden and abroad.

In January 2011 Nordens Ark began creating an ecopark on Åby Manor where the facility is located. Some 200 hectares of land are being restored to favor native plants and animals. Land with planted spruce forest are being recreated as reclaimed land and pasture as they were before, using by old Swedish breeds for grazing and controlled burnings as methods to hinder forest regrowth.

ABOUT CFW

The Swedish University of Agricultural Sciences (SLU) is an internationally renowned bio-economy university with research and education on everything from genes and molecules to biological diversity, animal health, sustainable forestry and food supply, all in a healthy environment.

Center for Fish and Wildlife research (CFW) is an outreach platform at SLU that promotes long-term conservation and sustainable use of Swedish fish- and wildlife. CFW work mainly with meeting arrangements, coordination and project management and -facilitation.

INTRODUCTORY LECTURE: “DIFFERENT APPROACHES TO GRAZING” - CARL-GUSTAF THULIN

The conference was initiated with a welcome and a lecture from Carl-Gustaf Thulin, director of Center for Fish Wildlife Research at SLU. Carl-Gustaf began his lecture with a brief overview of Swedish mega herbivores. Like the rest of the European continent, parts of Sweden used to be inhabited by large grazers, such as European bison, wild horses and aurochs (the latter the ancestor to our present domesticated cow). The grazers likely maintained a semi-open landscape which enabled a diversity of flora and fauna. Carl-Gustaf explained that this type of grazing herbivores differs from the browsers which are the most common type of large herbivores in Sweden today, for example the moose and roe deer. Browsers mainly eat branches, shrubs and leaf of spring, while grazers are generalists that consume lower layers of plants and grasses. Most of the wild, grazing mega fauna is now extinct in Europe, and the open landscapes have for long been grazed by domesticated cows, sheep and horses. Today, grazing cattle are in decline due to decreasing economic profitability, resulting in regrowth of forest on previously open land and loss biodiversity within these ecosystems.

This problem has caused researchers to contemplate if it would be possible to reintroduce wild grazers to halt this negative development. One of the suggested animals is the European bison, which was extinct in the wild and later reintroduced to the wild in Poland, first in 1952. There is an ongoing European bison reintroduction-program in Bornholm, Denmark, and in Germany the first wild born European bison calf was born in 2013. Thus, the question if we should reintroduce wild bison to Sweden as well must be raised. Carl-Gustaf described that the European bison is one of the few remaining grazers that has a right of domicile in Sweden. Moufflon sheep and fallow deer are intermediate feeders (both grazers and browsers) that would fill a similar ecological niche, but they are not native to the Swedish ecosystems. At SLU, several researchers are thus involved in doing a reintroduction sustainability analysis in order to evaluate if reintroduction of bison would be sustainable in Sweden and, if so, where this would be most suitable. Many challenges have been identified, such as potential traffic-accidents, disturbances on forest and agriculture, but there are also advantages, among others that the swedes already are used to live beside large mammals such as moose and deer. Another project at SLU focus on evaluating how the Gotland pony may contribute to the landscape development with its grazing, and thus could function as an ecosystem equivalent to extinct wild horses.

The lecture concludes with the question: What to do to halt forest regrowth and loss of biodiversity? Part of the answer according to Carl-Gustaf is to supplement domestic grazers with their wild counterpart.

KEYNOTE LECTURE: ”REWILDING AND THE AUROCHS COMEBACK” - RONALD GODERIE

The next lecture was held by Ronald Godiere of the TaurOs Foundation in the Netherlands. He began with a description of ideas that have been developing in the Netherlands; resulting in the now world renowned nature reserve Oostvaardersplassen. The reserve was originally reclaimed from the sea with the purpose of being used as industrial land. Due to flooding the idea was abandoned and the land was left to develop freely. This provided an opportunity to try out a new conservation strategy that had been discussed: the use of grazing cattle to create an open landscape. Today the reserve holds herds of koeni ponies, red deer and heck cattle that roam freely with minimized human influence. Ronald

explains that this is a controversial matter as some of the animals will starve during wintertime, something that each year generates discussions in the Dutch parliament about animal welfare. Nevertheless, the area has come to be an astonishing example of how nature develops without human interference, and has been a spark to the rewilding debate. It proves that grazing cattle in sufficient numbers have the ability to halt forest regrowth and recreate grasslands in central Europe. This led the creation of the Taurus Foundation – with the goal of restoring landscapes by promoting natural processes, such as grazing. The foundation today owns 800 animals that are leased out to graze natural parks for conservation purposes.

Ronald then talked about Rewilding Europe, a foundation built upon a vision to restore European wilderness through natural processes and passive management. Rewilding Europe have identified three keystone species that are missing from the ecosystems: wild horses, European bison and aurochs. The aurochs was extinct in Poland 1627. It was a powerful grazer that in wintertime also ate twigs, stems and bark as a food source, thus preventing forest regrowth. It was well adapted to harsh climates, had big horns to defend it from predators, and should have been an optimal bovine for rewilding purposes. The TaurOs Programme (www.taurosproject.com) was started in 2008 with the goal of breeding and distributing populations of self-sufficient cattle breeds with the aurochs as a reference. TaurOs use bovine breeds that are phenotypically similar to the aurochs in order to breed for desired phenotypes, and aim to have several big herds of wild Taurus/aurochs by 2025.

“THE DOMESTICATION PROCESS AND OTHER ANIMAL WELFARE ASPECTS ON NATURAL PASTURE SYSTEMS" - LOTTA BERG

Lotta Berg from the Swedish Centre for Animal Welfare (SCAW) at SLU, added a new perspective to the discussion of having self-sufficient/”wild” animals in Sweden. The animal welfare legislation aims to secure that domesticated animals are free from disease, pain, and suffering, implying requirements on management, housing and feeding. Because of this legislation, Lotta argue that a project like the Oostvardersplassen, where animals are not inspected every day and can starve and die of diseases without intervention, would not be possible in Sweden unless exceptions are made. Wild animals (that have never been domesticated) on the other hand are not included in the legislation. So where to draw the line on what is wild and what is tame?

To elucidate this issue, Lotta went on to describe the domestication process; how humans genetically change the traits of the animals, including behaviour, to fit our purposes. Domesticated animals can become feral again if released in the wild without human contact, but are still genetically different from their origin. If domesticated animals are released in the wild, domestication comes to a halt and the natural selection pressure reappears. To conclude: domestication can be changed but never reversed.

Lotta then returned to talk about what passive management of domesticated cattle for nature conservation could implicate. Grazing has many biodiversity and animal welfare advantages but is at the same time problematic. To prevent forest regrowth, high stocking densities are needed maintain appropriate grazing-pressure, and in winter no additional feed is supplied to ensure that brushes and shrubs are cleared. This will mean that some animals will not get enough feed, especially during the harsh winters in Sweden. Other problems are parasites and the risk of predation.

When it comes to legislation it is not clear when feral animals are no longer to be considered domestic. Thus, the question if feral herds of domesticated animals can roam free in Sweden is a matter that needs to be investigated thoroughly before implementation.

"BIODIVERSITY, OLD CATTLE BREEDS AND UTILIZATION OF OUTLAYING LAND" - ANN NORDERHAUG

The next speaker was Ann Nordenhaug from the research institute Bioforsk in Norway. She described preindustrial agriculture in Norway, and how the semi-natural habitats have been shaped by cultural and natural processes over thousands of years. Large areas of outlaying land have been used for grazing and winter fodder harvest, on mountains, seashores, islands and heathlands alike, enabling a rich biological diversity. As opposed to traditional non-intervention conservation practices, the maintenance of biodiversity in these semi-natural habitats need active management In Norway, summer farming in the mountains is especially important, and cattle are considered most suitable for maintenance of species-rich grasslands.

Several theories postulate that old cattle breeds are more efficient and better for the landscape than the production breeds mainly used today. To test this, comparative studies of how different cattle breeds utilize of the landscape; such as choice of vegetation type, plants to ingest and distance travelled; were performed in Norway and Sweden. The studies revealed that old cattle breeds probably have less need for nourishment than modern breeds, and that they move more easily on rough ground – an indication of better landscape management. The study also confirmed that cows, by preferring semi-natural, grass- and herb dominated habitats, contribute to maintenance of biodiversity and seed dispersal.

"LONG-TERM TREE REGENERATION AND GRAZING" - MATS NIKLASSON

Mats Niklasson described that a fundamental and intriguing question in vegetation ecology is the dynamics and balance of open and forested landscapes. In northern ecosystems there are very few landscape types that are permanently deforested without human impact, except very wet or very dry places. Mats explained, that in landscapes where tree establishment is possible, there are mainly two disturbance agents that drive the succession towards openness: fire and grazing. Grazing and fire are basically very different as disturbance agents, but also have similarities when it comes to their effect upon the woody vegetation. There are however very few studies on the influence of fire and grazing on the openness of landscapes in Scandinavia.

This led Mats and his colleague Jan Lannér to compile a long-term historical record of number of domestic herds grazing over several centuries on Hallands Väderö in SW Sweden, a 300-ha island that is still grazed today. From this data, together with tree-ring samples, they assessed grazing-pressure over the last 350 years to see if tree regeneration was somehow connected to grazing and grazing pressure. Mats described that there seems to be a connection between grazing and the regeneration of trees. In periods with documented high grazing pressure (especially winter grazing by sheep, but also cattle, horses, hares and pigs) there were no trees regenerating on the island. In periods with low or no grazing pressure at all, trees regenerated at a high rate. Mats concluded that tree-regeneration dynamics on the island was largely fluctuating over time, and that parallel and large changes in grazing pressure were the factor likely driving this - a finding that corresponds to some extent with the result that can be seen at Oostvaardersplassen.

KEYNOTE LECTURE 2 "GRAZING AND THE CULTURAL LANDSCAPE: A LONG-TERM PERSPECTIVE" - URBAN EMANUELSSON

The last lecture was given by Urban Emanuelsson from the Swedish Biodiversity Centre at SLU. Urban explained that there was a 2500 years gap between the herbivore mega fauna went extinct and the first domesticated cows appeared. A number of organisms associated with grazed areas probably disappeared from many areas during this gap, but came back when domesticated mega herbivores (and humans) started to have impact on the landscape. Thus, Urban claimed that if we lose the cow in Sweden, 30-40% of biodiversity will be lost, and stressed that domesticated cattle are as much a keystone species as wild animals. Humans have affected the landscape for a very long time by hunting, keeping livestock, using fires to clear land, farming and cutting trees for leaf fodder. To leave this human-impacted landscape to "free development" would be devastating for all animals and plants that are adapted to it.

Urban explained that co-evolution have resulted in adaptation of many plants and trees to extreme grazing pressure from herbivores; e.g. grass provide fodder for cows, and benefit from that grazing control stronger competitors. Hence, Urban agreed with previous speakers in that the disappearance or decrease of herbivores would result in forest regeneration, denser forests and loss of species that prefer open or semi-open landscapes. It is therefore extremely important to support small-scale farmers to preserve some of our most diverse biotopes.

Finally, Urban emphasized that, whether we should focus on wild or domesticated herbivores for management and preservation of biodiversity, the answer is both!

CONCLUDING DISCUSSION

The seminars ended with a discussion about whether initiatives and strategies such as rewilding and faunarestoration could assist in haltering the decline of biodiversity and corresponding degradation of ecosystem services related to open and semi-open landscapes. There are many aspects to consider, some of which can be in opposition with each other; such as complying with current animal welfare legislation and allowing domesticated cattle to become feral. Increasing numbers of free-roaming, large herbivores may also have un-wished effects on farmland, domestic cattle and forests, with potential, negative consequences for small and large-scale farmers.

The group also discussed where funding and ambition could generate most biodiversity-for-the-buck. For example, are protected areas with large numbers of wild herbivores preferable and/or more easily managed than small-scale farming and traditional farming practices? The conclusion was that increased numbers of herbivores are needed, and that those should preferably be a combination of domestic livestock and wild herbivores. There was also a discussion of differences between grazing herbivores such as domestic cattle and wild fallow deer in grazing behaviour and effects. Thus, to what extent can group living fallow deer grazing replace or complement cattle grazing? This issue, along with many other, remained unsolved, but provided food-for-further-thought. The auditorium concluded that more research is needed, and possibly also changes in legislation, before many of the thoughts and suggestions put forward could be implemented in large-scale management efforts and project undertaken. There was however an obvious enthusiasm for the questions addressed and for the future potential of the issues brought up at the seminar.

WEDNESDAY 26TH OF FEBRUARY

The following day the group was guided by Mats Niklasson around Nordens Ark. In focus was the Ecopark and relevant representatives of the animals in the park, such as Przewalskiis wild horse, old breeds of horse, cow, pig, goat and sheep – some of which are used to graze the Ecopark.