# HUNTing for Sustainability

## - a summary of research findings from Sweden

Foto © Camilla Næss/NINA

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*Camilla Sandström*

The HUNTing for Sustainability multi-discplinary research project has been funded by the European Union's 7th Framework Research Programme. The project involved cooperation with a range of research groups and included case studies from Norway, Croatia, Ethiopia, Scotland, Slovenia, Spain, Sweden and Tanzania.

The primary research activity in Sweden has been related to the sub-project entitled "Institutions and hunting". Institutions are here understood as the "rules of the game" (formal and informal), management arrangements, decision-making procedures and programs that define the practice of hunting, the role of hunters and the guidance of interactions among the hunters in relation to in e.g. biodiversity conservation. Institutional analysis is used to assess the capacity of organizations to implement reforms through the identification formal institutions, such as rules, organisational orders and resource allocation but also informal rules of the game, power relations and incentive structures that may contribute to or hinder implementation.

The Swedish studies have in particular focused on the governance of moose and the on-going institutional change from single species management of moose to ecosystem based management integrating decisions concerning moose with forest management but also the management of large carnivores and other ungulate species such as red deer, roe deer and fallow deer. We have in particular focused on the adaptive aspects of moose management. Through desk top studies, focus group interviews, scenario workshops involving hunters and landowners we have analysed the strengths and weaknesses of the current and future moose management.

Within the context of HUNT we have analysed this data with a view to developing practical tools to increase the adaptive capacity of moose managers. The results of the HUNT-project have been integrated into the official educational package directed towards moose hunters and land owners.

1. Managing large ungulates in Europe - the need to address institutional challenges of wildlife management
2. Challenges associated with introduction of an ecosystem-based management system: A diagnostic analysis of moose management in Sweden.
3. Scenario analysis

# Hunting in Sweden

**Hunting in Sweden is an important activity, providing recreation as well as meat. The wide variety of natural habitats with good opportunities for hunting means that hunting takes place to a greater or lesser extent on most land in Sweden where it is legally permitted**

## Key figures

Area: 449 964 km²
Protected areas 10.6 % - Hunting may occur in regulated forms
Population: 9 316 256
Number of hunters: 264,000 (2009/10)
200 800 paid the hunting license fee in 2011/2012.

## Main game species

**Big game:**
Moose (*Alces alces*), roe deer (*Capreolus capreolus*) wild boar (*Sus scrofa*), brown bear (*Ursus arctos*) Red deer (*Cervus Elaphus*) ; Fallow deer (*Dama dama*)

**Small game:**
European brown hare (*Lepus europaeus*) Mountain hare (*Lepus timidus*), Willow grouse (*Lagopus lagopus*), Rock Ptarmigan (*Lagopus muta*), Black grouse (*Tetrao tetrix*), Capercaillie (*Tetrao urogallus*). Many waders, ducks and gees are also hunted.

**Hunting rights**
Any person owning land has the exclusive right to hunt on his/her own land. If landowners do not want to exercise these rights, they can lease them out in whole or in part.
The Sami, the indigenous population in Sweden, have the right to hunt and fish on the traditional land of the Sami, Sapmi, which is situated in the Northern parts of Sweden. This also include the right to hunt on privately owned land. In large parts of Northern Sweden there are thus parallel rights to hunt tied to the land.

**Prerequisites for hunting**
All hunters (including foreign hunters) must pay a permit  license fee valid from 1 July to 30 June. The fee is 30 €. To be allowed to hunt and eligible for a firearms licence, the hunters must also have passed  the Swedish hunting examination. Foreign hunters need special permits to bring their weapons to Sweden. Many hunters are landowners and may thus hunt or their own property. More than half of the hunters however lease shooting rights or belong to co-operative associations.

**The hunter**
During the hunting season 2009/2010 there were roughly 264 000 hunters granted a hunting permit. Most of these are men, but more and more women are taking up hunting, this season about 14 500.

**Recruitment**
The number of hunters ,counted as those who pay the compulsory hunting fee, has decreased significantly during the last decades.  Since hunting still has a strong support among the public in Sweden, it can be explained by changing demographic s, in particular urbanisation and an aging population.

**The game**
Most game species, both mammals and birds, have increased during the last fifty years. Moose and roe deer are the most common game animals in Sweden. Annually about 90 000 moose and 200 000 roe deer's are harvested. Small game hunting is also a widespread hunting activity, primarily for hare, grouse and ducks. Around 40 species of birds can also be hunted.

**Management**
The hunting rights entail an obligation to manage wildlife.  The government has entrusted the Swedish Association for Hunting and Wildlife Management to provide objective and accessible expertise on other wildlife than large predators, hunting and wildlife management issues, and some wildlife research. The "general assignment " includes an overall responsibility for managing and developing the professional training of hunters, providing advice on

protective and other injury prevention, coordination of moose management, documentation of game access and firing statistics.

**The rules of the game**

From 1967 and onwards the general principle for all hunting is that all animals (wild mammals and birds including eggs and nests) are protected unless there is an official hunting period for a certain animal (Art. 3). The government decides which species can be hunted and when. There are different hunting seasons for various species and they vary between different parts of the country. Which species can be hunted and the hunting seasons that apply are specified in the Hunting Ordinance.

**Controversies**

The support for hunting among the public in Sweden is strong. There is thus a wide acceptance for hunting, in terms of wildlife management but also as a way of providing food. The support for 'pure' recreational hunting is however lower. Controversies surrounding hunting is linked to hunting rights in the mountains, the traditional area for the indigenous population in Sweden, the Sami, browsing damages made by in particular moose but also other herbivores, and to what extent the large carnivores in Sweden can or should be hunted. Another problem related to in particular the large number of herbivores but also the increasing number of wild boars is the number of traffic accidents that occur every year all over the country.

*Photo © Per Jordhøy/NINA*

# Managing large ungulates in Europe - the need to address institutional challenges of wildlife management

*Camilla Sandström*

**The management of large ungulates in Europe has received a lot of attention recently, due to the strong increase in numbers of the 20 species that live in European countries. Not long ago, many of these species were considered endangered, and in some countries even extinct.**

Due to conservation efforts and reintroduction, a number of threatened species have increased and some of them are even considered to be over-abundant. The current number of wild ungulates stands at more than 15 million, which means that the ungulates have a large sociocultural, economic and ecological impact on European landscapes. On the one hand, the abundance of ungulates offers hunting opportunities, which can be valued both in terms of meat and recreation. On the other hand, an increasing number of ungulates also cause more traffic accidents and damage to forests and agriculture. Some countries, where the total ungulate population has increased to its highest level since the Ice Age have raised a general concern for negative ecosystem impacts due to overgrazing.

The management approaches which proved to be successful in protecting and increasing the number of animals has not proved as successful in meeting the needs of stabilizing, or, when needed  even reducing, the numbers of animals to levels accepted by society. Table 1 summarises a number of factors affecting the possibilities to stabilise, or reduce the numbers of animals to levels accepted by society. To address these factors, management approaches, such as the landscape approach via the European Landscape Convention (ELC) or ecosystem management through the Convention of Biodiversity (CBD) are suggested as solutions.

These holistic approaches, however, represent a clear departure from traditional governance and legal traditions in most Western European countries, which have been mainly based on either small private ownership units or large state-scale regulations. The implementation of these holistic approaches has therefore proved to be difficult.

*Table 1. Factors affecting the success of large ungulate management in Europe according to Appolonio et al. 2010*

| |
|---|
| Lack of clarity of management objectives and lack of coordination between different land-use interests to agree on appropriate management objectives. |
| Lack of coordination of management objectives between neighbouring (local or regional) management units. |
| Lack of coordination between countries in cases where ungulates roam across borders. |
| Problems related to scale, i.e. a mismatch of management areas within an actual biological range of ungulate species, so that management is not coordinated across the population's biological range. |
| Problems caused by inappropriate legislation. |
| Inadequate monitoring systems of ungulate numbers and their impact. |
| Failure to set adequate hunting quotas in relation to population densities and dynamics. |
| Failure of management units to achieve hunting quotas, even when these are set. |
| Lack of knowledge regarding possible effects of selective harvesting. |

This study examines the institutional obstacles and incentives affecting the implementation of holistic approaches, such as the CBD and the ELC, to natural resource management. This study focuses in particular on formal institutions, (i.e. codified rules in the ELC and the CBD), taking into account the scope of the conventions, views on participation, management principles, scale, coordination and capacity building, ( i.e. rules and norms that can be assumed to influence wildlife management). More specifically, the texts of the two conventions and the attached operational guidelines have been compared to highlight similarities and differences.

The two approaches shows many similarities, but differ in their focus on either contextual factors affecting landscapes (ELC) or maintenance of ecosystem processes, functions and services (CBD). The two approaches could be regarded as complementary rather than competing. Although some of the management problems (Table 1) will be solved through the implementation of these approaches, they do not give any guidance on how to coordinate across scales and levels to generate collective action. Furthermore, complex property rights systems often constrain the required collaboration and coordination among actors involved in the management of wildlife. However, the robustness of the governance arrangements is strongly dependent on voluntary efforts – and thus also to the various incentives of different actors - to establish collective action for the conservation and sustainable use of natural resources. To implement landscape management or ecosystem-based management, as suggested by the ELC and the CBD, will require new institutional solutions to deal with coordination across management units and management levels.

**Read more in:**

Sandström, C. (resubmitted) Managing large ungulates in Europe - the need to address institutional challenges of wildlife management. Human Dimensions of Wildlife.

*Photo © Heine Krekula*

# Challenges associated with introduction of an ecosystem-based management system: A diagnostic analysis of moose management in Sweden.

*Camilla Sandström, Sofia Wennberg DiGasper & Karin Öhman*

## Swedish moose (*Alces alces*) management has over the years gone from a situation where open access and unrestricted demands lead to over-exploitation, into a situation characterized by abundance of moose.

Whilst high numbers of moose are preferred by hunters, they damage forests through browsing, causing conflicts between the hunters and forest owners. In attempts to resolve the disputes, the Swedish government is introducing a new local ecosystem-based management system. We have analysed this shift from managing a single resource to the broader perspective of ecosystems and to what extent it will contribute to collective action and conflict resolution between the forestry industry and hunters.

We used a diagnostic approach evaluating the current system from the perspective of governing social-ecological systems (SESs) developed by Ostrom (2007) in order to identify problems and opportunities that may respectively help and hinder collective action for moose management.

We also analysed to what extent the introduction of an ecosystem approach would contribute to collective action and conflict resolution between the two major interests involved in moose management in Sweden.
Our analysis of the current single species management and the proposed ecosystem approach from the perspective of governance of SESs has revealed that some of the identified problems will probably be solved through this shift of management styles. One of these problems is the current mismatch between the ecological and social scales, which will be dealt with by introducing a new management level covering the ecosystem of a moose population.

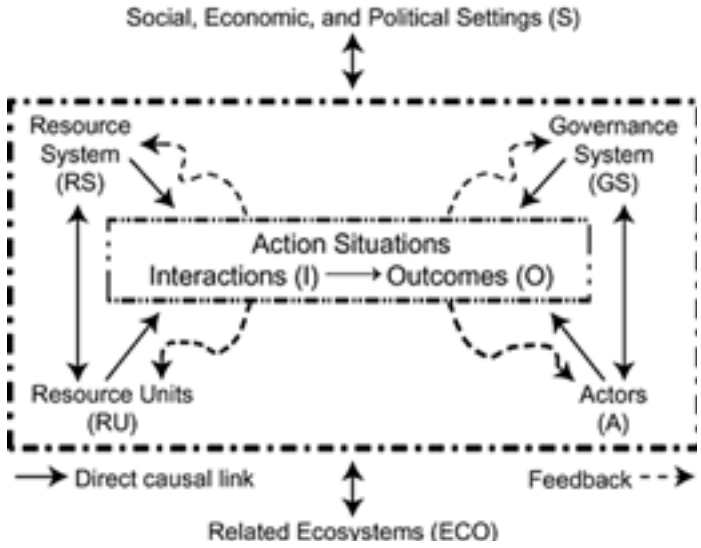


*Figure 1. Action Situations Embedded in Broader Social-Ecological Systems. (Ostrom 2007).*

However, some problems that are not dealt with appropriately will be transferred from the current system (e.g. representation, power sharing, financing and the fact that the new management system is a mix between formally regulated management levels (national, regional and ecosystem-based) and voluntary based management (local)) to the future one since the ecosystem-based approach is no “panacea” for all problems related to wildlife management. One problem that often seems to be underestimated when governments attempt to implement ecosystem-based management regimes on land-based ecosystems (rather than marine systems) is the frequently complex property rights system. This often constrains the required collaboration among actors or stakeholders involved in the management of SESs. The robustness of both the current and future moose management systems is, thus, strongly dependent on voluntary efforts to establish collective action and bonds between landowners and hunters.

*Photo © Per Jordhøy/NINA*

# Changing the rules of 'the game': outcomes and reflections on stakeholder-developed scenarios for the future of ecosystem management in Scotland and Sweden

*Camilla Sandström, Annie McKee and Liz Dinnie*

**Recent and ongoing institutional reform of the management of deer in Scotland and moose in Sweden, requires on the one hand a transition from single-species management to more ecosystem-based, holistic, environmental management, and on the other hand a transition from top-down governmental to more decentralized governance.**

These processes, which include both re-scaling and re-leveling, may influence the power of involved stakeholders as well as how issues and stakes are framed, which in turn may confound institutional reform. This study presents the outcomes of and reflections on the usefulness of scenario analysis as a tool to facilitate the transition to ecosystem and localized governance in complex and conflictive contexts.

The scenarios, which were developed during a series of workshops and involving a range of stakeholder organisations, provide an insight into potential governance options for deer, moose and wider species management in Scotland and Sweden, and the opportunity to

explore the implications of various multi-scale and multi-level governance arrangements. The figure below shows the different scenarios developed in the Swedish scenario workshop. The scenarios which are based on two dimension local vs central governance and ecosystem vs single species management show possible future governance options depending on whether the focus will remain on the moose or if the managers will be able to integrate other species and aspects into the governance. In relation to the re-scaling of decisionmaking power across levels the stakeholders acknowledged problems to identify the optimal scalar level in order to address collective problems; issues of interplay between different levels and scales and problems emerging from a reconfiguration of scalar levels.

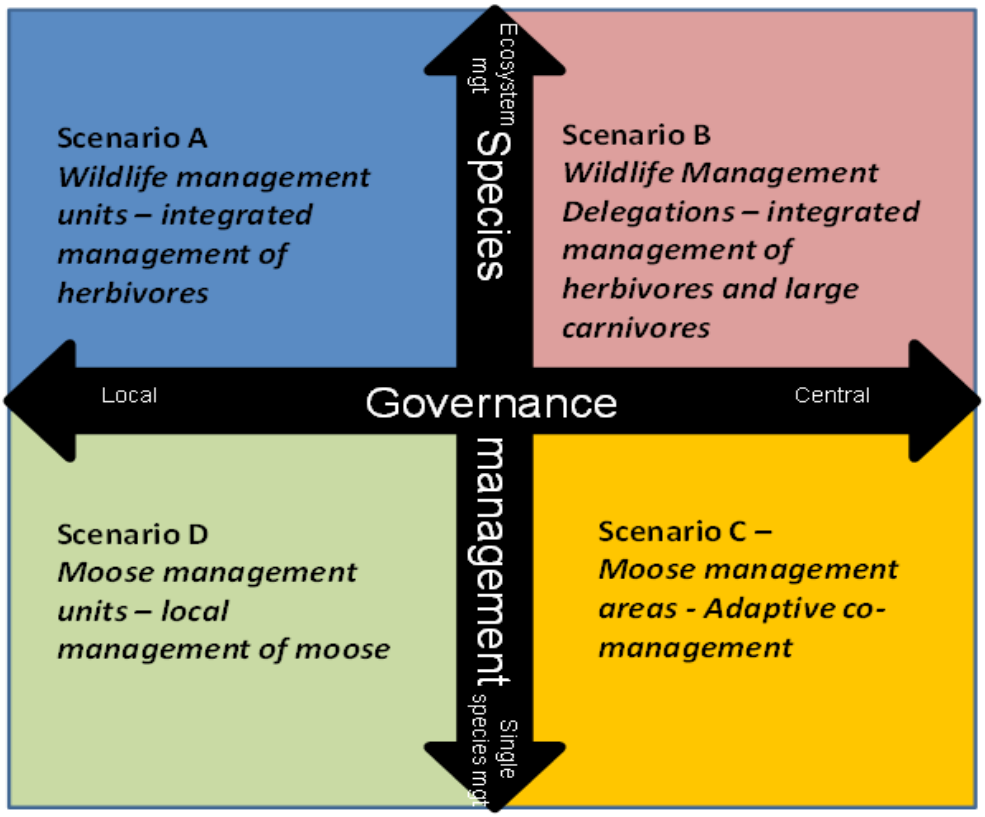


*Figure 2. Examples of future governance scenarios*

The strategies developed by stakeholder participants in order to reach desirable and avoid undesirable future pathways show, that stakeholder may push and pull issues between scales and levels depending on where they have more power and influence. Our findings thus emphasise the need to consider ecological scales and management levels, and the potential tensions between these, when implementing institutional reforms in the context of the complex, 'multi-player' management of a mobile resource.


Please note that many of the research findings presented
in this summary are still undergoing analysis,
but will be peer-reviewed through submission
to open-access academic journals.

For further information and research findings
from HUNT please visit:

**http://fp7hunt.net/**

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