



Land accounts for biodiversity – A methodological study for the allocation of land with high nature values to owners and industries

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Summary

This report is a summary related to a pilot study that Statistics Sweden (SCB) and the Swedish University of Agricultural Sciences (SLU) developed together during 2014. The pilot study aimed at developing a methodology to produce statistics over ownership of land (industries, NACE rev 2) that is important to biodiversity. The method connected land use to environmental accounts and through this enable analysis of which the economic actors are that have rights but also responsibilities related to valuable habitats. It is possible that this kind of information can provide an overview over the allocation of responsibility of Swedish land, who owns it and how the ownership structure looks like in relation to the Swedish economy.

The project has used data sources related to types of habitats especially mentioned as important to the conservation of biodiversity. Beyond that data sources were used over ownership of that specific habitat type. The development of the methodology means that data on land use were connected to data on who owns the land for the groups: public sector, business (i.e. industries such as agriculture, forestry and manufacturing) and privately owned land. To achieve this eight different databases and registers were used. Through the link with ownership a 'key' could be created that enables the link to the environmental accounts, an internationally harmonized statistical system that links economy to the environment.

The types of habitats that were part of this report were Western taiga and Grasslands according to the definitions to the European Art-and habitat directive, Article 17, Wetlands according to the definitions in the Swedish wetland inventory and "Key biotopes for forestry" according to the definitions to the Swedish forestry agency.

Table S.1
Hectares of habitats covered in this report:

| | Wetlands | Western taiga | Key biotop for forestry | Graslands – habitat directive | Gras lands total |
|--|------------|---------------|-------------------------|-------------------------------|------------------|
| Total hectares investigated in this report | 4 324 509 | 4 430 474 | 463 940 | 177 716 | 288 542 |
| Total hectares in Sweden | 5 155 800* | 25 768 000** | 463 940 | 3 682 008 *** | 3 682 008 |
| Share investigated in this report | 84% | 17% | 100% | 5% | 8% |

*Souce: Land use in Sweden 2010.

** Source: kNN-database. Calculated as the total amount of surface of all pixels in the kNN-database that contained spruce and/or pine trees

*** Source: Land use in Sweden 2010. Contains both naturally grown gras land and gras lands connected to agriculture land.

Habitats in water have not been covered in this study. No monetary valuation of ecosystem services has been performed either.

The point of departure for this pilot study has been those habitats that are reported under the European Art- and habitat directive, article 17. The basis of this idea was in order to be able to use a classification that is already utilized internationally. Another important aspect was to cover land that was both protected but also outside of the legal protection boundaries. The

habitats pointed out in Natura2000¹ areas are protected legally, but the responsibility to preserve them lies within the whole landscape which makes also other areas with these types of habitats interesting to cover and this has also been done in this study.

Who owns the land?

The intent is to describe and define actors whose actions affect the condition for biodiversity. Actors in this case can be private property owners, businesses and public institutions. In the report the Swedish industry classification SNI is used (it is equivalent to NACE/ISIC). The SNI allocates a business after its main activity regardless of the owner structure. It means that the business is classified based on its activity, not its ownership. One such example is a public corporation active in property business will be classified as belonging to SNI 68 Real estate activities, not SNI 84 Public administration and defence. The results show that it is fully possible through the combination of statistics and registers to allocate habitats to ownership.

The types of habitats categorized in the different registers and databases are different in character. In the Art- and habitat directive specific habitats are pointed out with very high nature values that represent about 10 per cent of all habitats within the directive. To be able to adequately present information about the economic actors and how they use the ecosystems it is desirable to cover also those habitats with lower degree of quality. This is something that requires further elaborations in the future.

The project also found that there are a number of properties owned by businesses but with no industry code. One example is that 16 per cent of land owners of Western taiga could not be identified as neither privately owned nor publicly owned. To be able to produce recurrent statistics of good quality it is important to revisit this situation to reduce the amount of uncertainty in the results.

Terminology for habitats

The project has identified a need to develop the terminology further so that you could distinguish “habitats of very high quality for biodiversity” (that is being used within the Art- and habitat directive) against “habitats in general with different level of qualities”. In this report we use the terminology of habitats in the sense “habitats in general with different level of qualities”.

An in-depth discussion would also be required how we should present those selected parts of habitats that falls outside the boundaries of the strict call for land reported within the Art- and habitat directive. In this report we present data that follows the Art- and habitat directive as well as habitats falling beyond the directive. Table S.2 show which habitats that this report has investigated and which are following the Art- and habitat directive and those that don't.

¹ Natura 2000 areas are areas protected under the 1992 EU Habitats directive. It is an EU-wide network with an aim to assure the long-term survival of Europe's most valuable and threatened species and habitats. http://ec.europa.eu/environment/nature/natura2000/index_en.htm

Table S.2**Habitats covered in this report:**

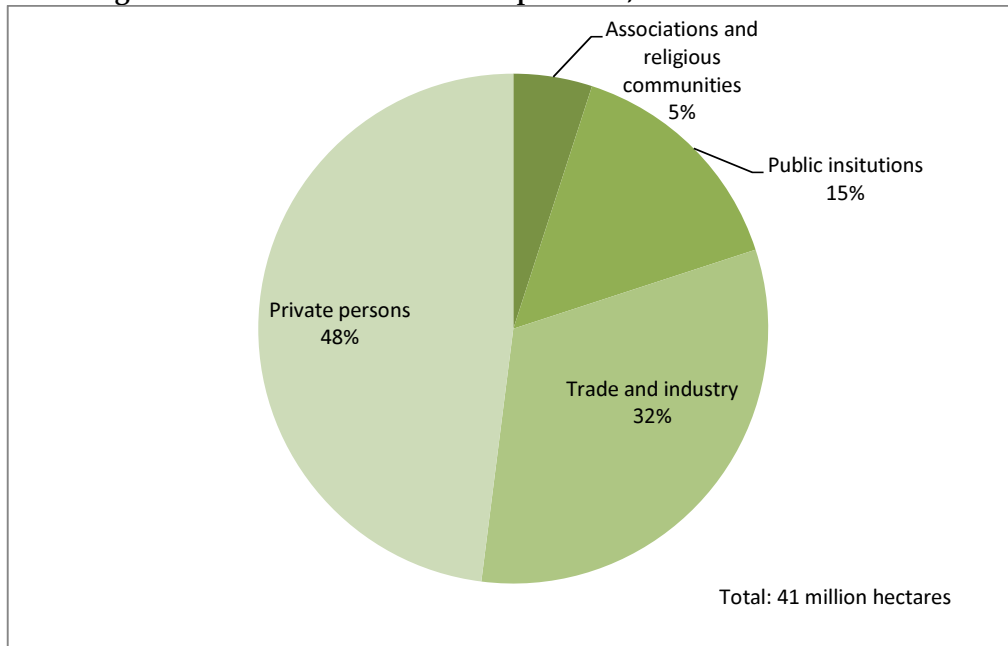
| Habitats in this report | According to A-H directive, article 17 | Beyond the A-H directive, article 17 |
|---|--|--------------------------------------|
| Wetlands | | X |
| Western taiga (EU code 9010) | X | |
| Key biotopes for forestry | | X |
| Meadows | | X |
| Meadows and pasture | | X |
| Grasslands | | X |
| <i>Of which :</i> | | |
| <i>Nordic alvar and precambrian calcareous flatrocks</i> (EU code 6280) | X | |
| <i>Molinia meadows on calc./peaty/clavey-silt-ladean soils</i> (EU code 6410) | X | |
| <i>Siliceous alpine and boreal grasslands</i> (EU code 6270) | X | |
| <i>Other grasslands</i> | | X |

In order to create a value added through this type of statistics about habitats it would be most beneficial to compare to total land use in Sweden. This would provide a better situation to compare land with high values and important land from other perspectives also.

Private people own the majority of Swedish land

In Sweden, most land is owned by private people, close to half of all land. About 30 per cent of the land is owned by businesses, mostly active within agriculture and forestry. The public Sweden own 15 per cent of all land and here we find state, local government and other publicly owned businesses. About 5 per cent of all land is owned by associations and religious communities.

Figure S.1
Percentage breakdown of land ownership in 2010, total Sweden



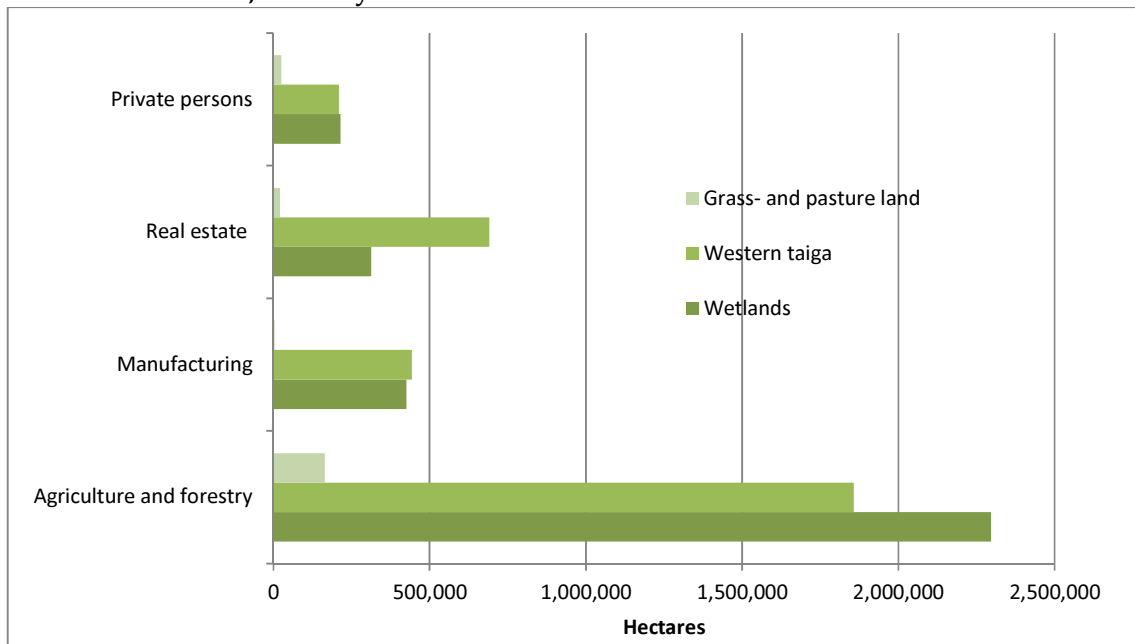
Which industries own habitats with high nature values?

Who owns land that is important for biodiversity, species and ecosystems in Sweden? In comparison with the national land total where private people own most of the land the opposite is evident for land with high nature values.

The experimental results show that for the habitats Western taiga according to the Art-and habitat directive (mixed pine forests) the trade and industry owns approximately 80 per cent of land with Western taiga. Western taiga refers to conifer forests with high nature values. Within the trade and industry it is predominantly agriculture and forestry industry owning land with Western taiga on it. For wetlands and grass- and pasture lands also here it is predominantly the same industries that comes up. The manufacturing industry comes in second place as land owners for the three habitats with the exception of western taiga where the real estate industry are bigger.

Private people own only 5 per cent of the land with Western taiga and the same amount of land with wetlands on it. Private people own about 8 per cent of land with grass- and pasture land.

Figure S.2
The four largest landowners of the habitats Grass- and pasture, Western taiga and Wetlands. Hectares, industry SNI 2007



Note to the figure: observe that it is not possible to add habitats as they may be included in all types of habitats. One example is that grass- and pasture land might be occurring also as wetlands as well as Western taiga to be present in grass- and pasture land and wetlands.