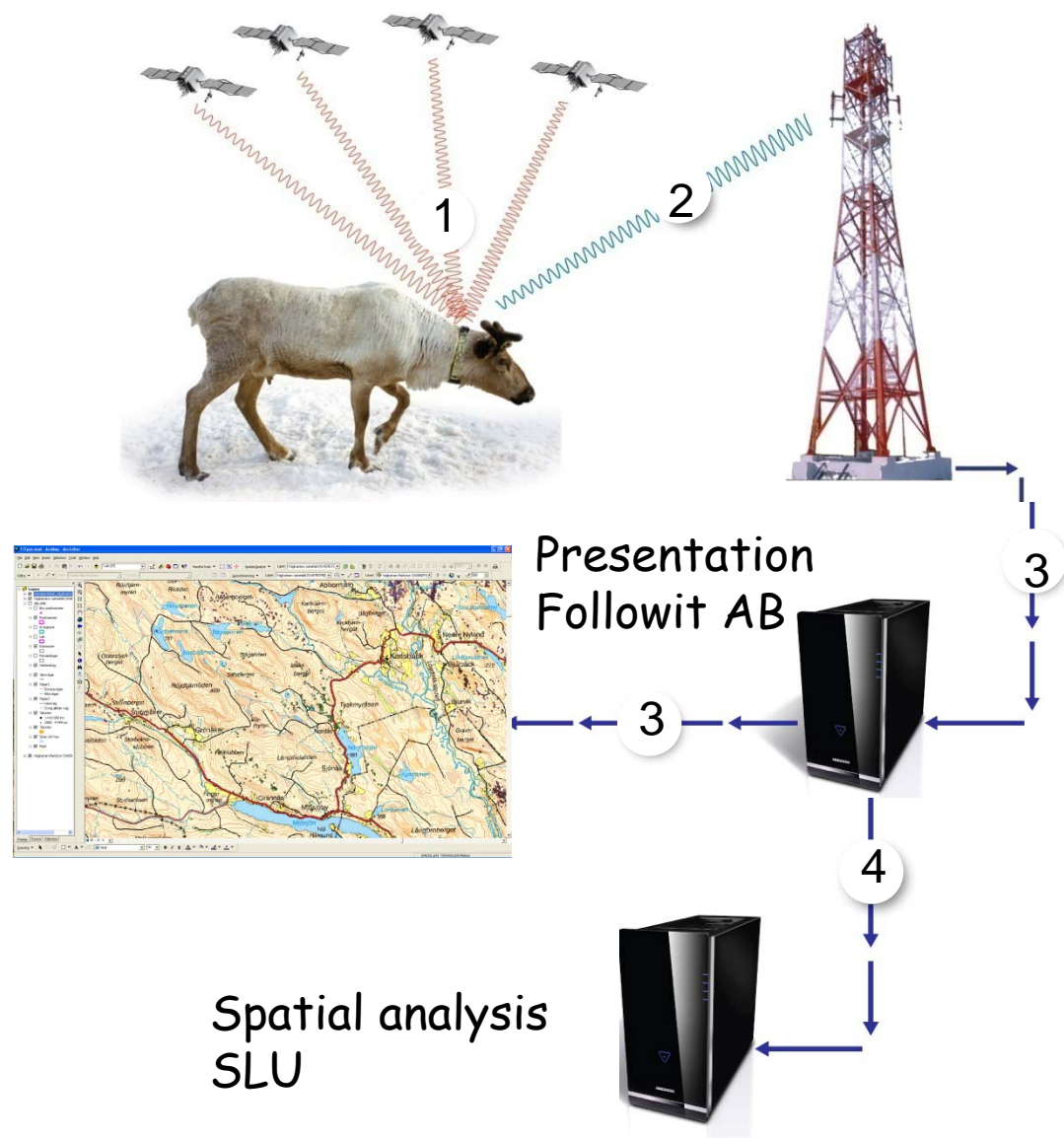


Real-time GPS on reindeer



1. Each reindeer is positioned every second hour with GPS. All positions stored in the collar.
2. Positions are sent as a SMS or via GPRS over the cellular network.
3. Positions are displayed in real-time on web-based maps by Followit AB in Skellefteå.
4. Positions are transmitted to a database server at SLU in Umeå for real-time use in GIS.

2006-03-22 23:00:00

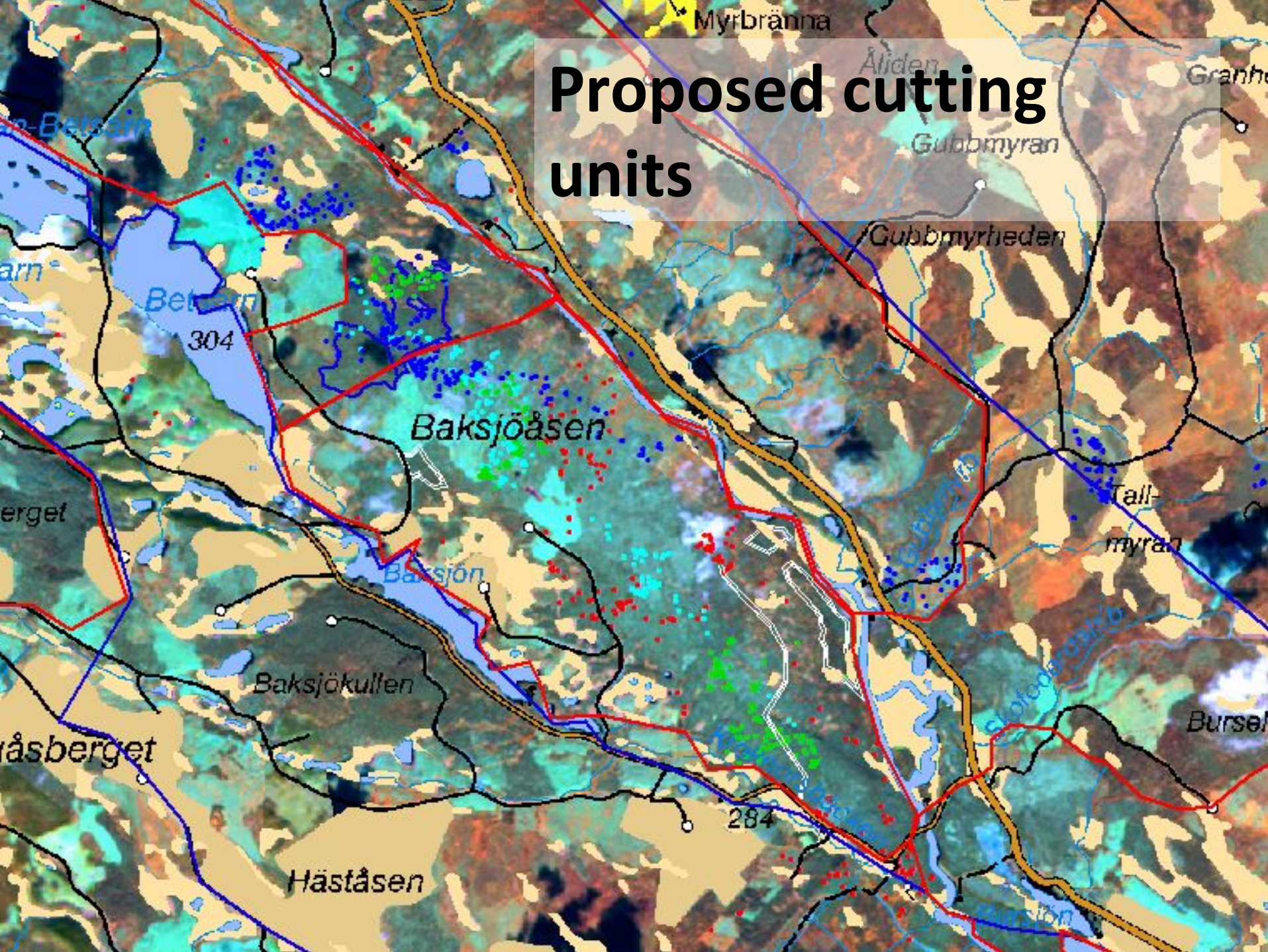
Ren position

- 02102
- 02103
- 02104
- 02107
- 02108
- 02110
- 02116

Renbruksplan

- Nyckelområde
- Kärområde

Proposed cutting units



RHP as a herding tool

- RenGIS has allowed the reindeer herders to;
- plan for sustainable use of the grazing lands (internally) and
- to better communicate the needs of the reindeer herding communities with other actors thus opening up the possibilities to coordinate on complex issues regarding land-uses in the reindeer herding area.

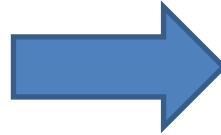


From conflict to collaboration

Reindeer husbandry plans (RHP)

Identified needs:

- Defining the purpose of consultations
- The need for a landscape approach
- The need for reliable data
- The need for extended knowledge
- Economic analysis
- Conflict management mechanisms



Digital capture of traditional ecological knowledge

Real-time GPS on reindeer

100 reindeer herders trained in GIS (custom-made) and satellite image interpretation

100 000 km² "mapped" in 14 reindeer herding districts

108 computers with custom RenGIS and satellite images from 2007-2008

Swedish Forest Agency involved at all levels

All forest companies partners

RHP

Status 2009

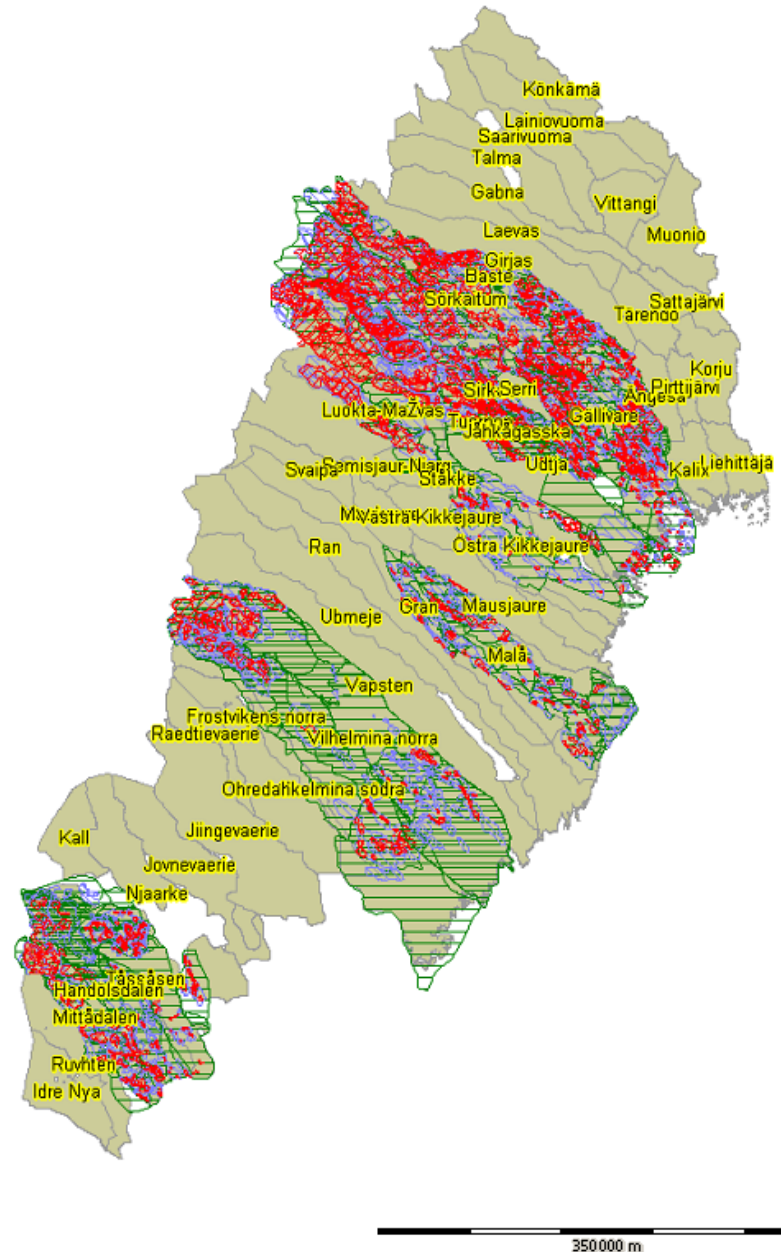
100 000 km² "mapped" in 14 reindeer herding districts

100 reindeer herders trained in GIS (custom-made) and satellite image interpretation

108 computers with custom RenGIS and satellite images from 2007-2008

270 GPS collars on reindeer in 8 Sami Communities

RHP used in consultations with forest-mining- wind power companies etc.



Increased knowledge and understanding together with a clear overview of the resources will facilitate in the planning and decision making process and reduce conflict





karin.baer@same.net

leif.jougda@skogsstyrelsen.se

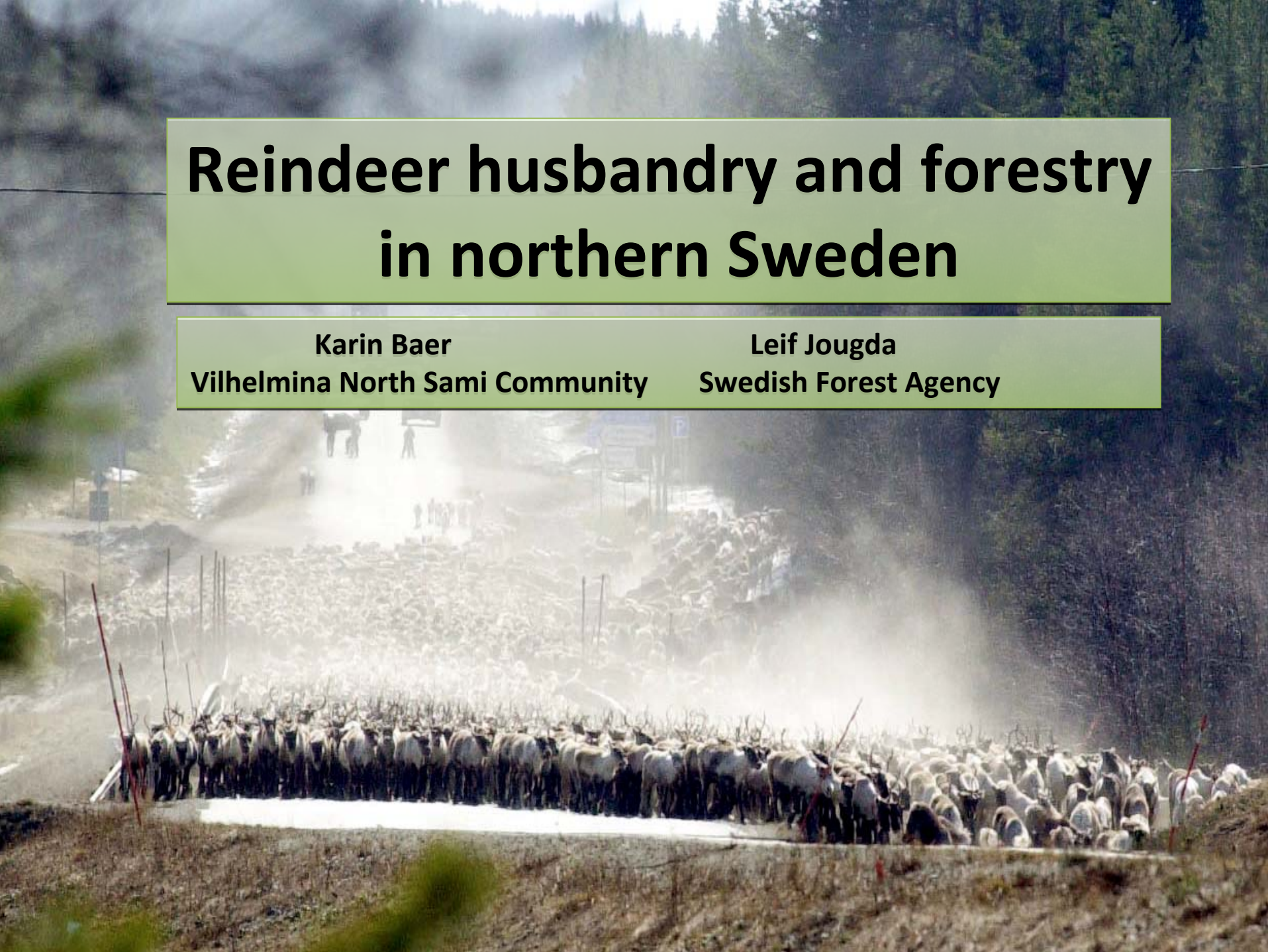
Reindeer husbandry and forestry in northern Sweden

Karin Baer

Vilhelmina North Sami Community

Leif Jougda

Swedish Forest Agency



Forestry vs reindeer husbandry – a multiple use situation



Parallel land-use

The two sectors affect
each other

Consultation
necessary

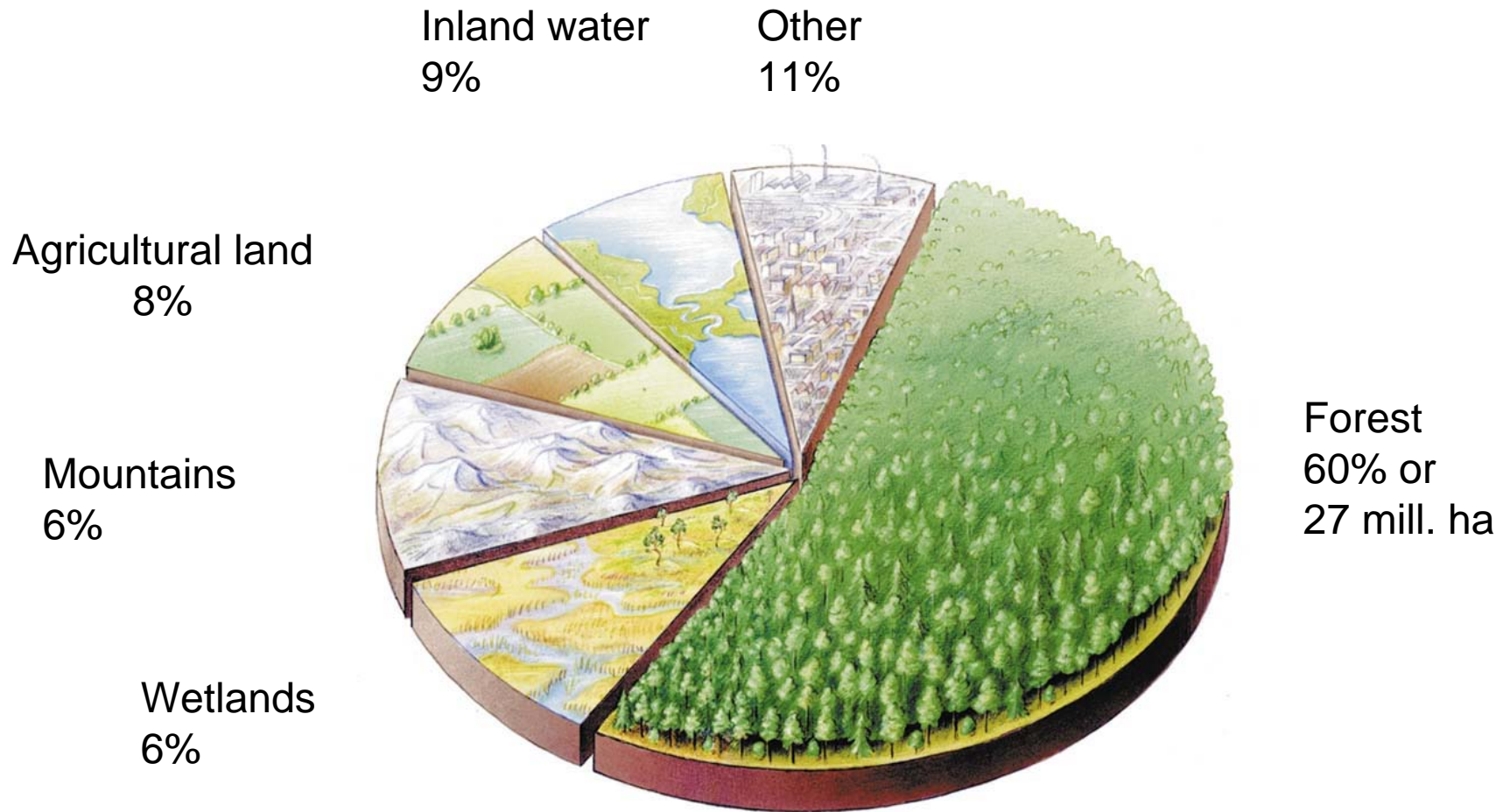


The Swedish Forests

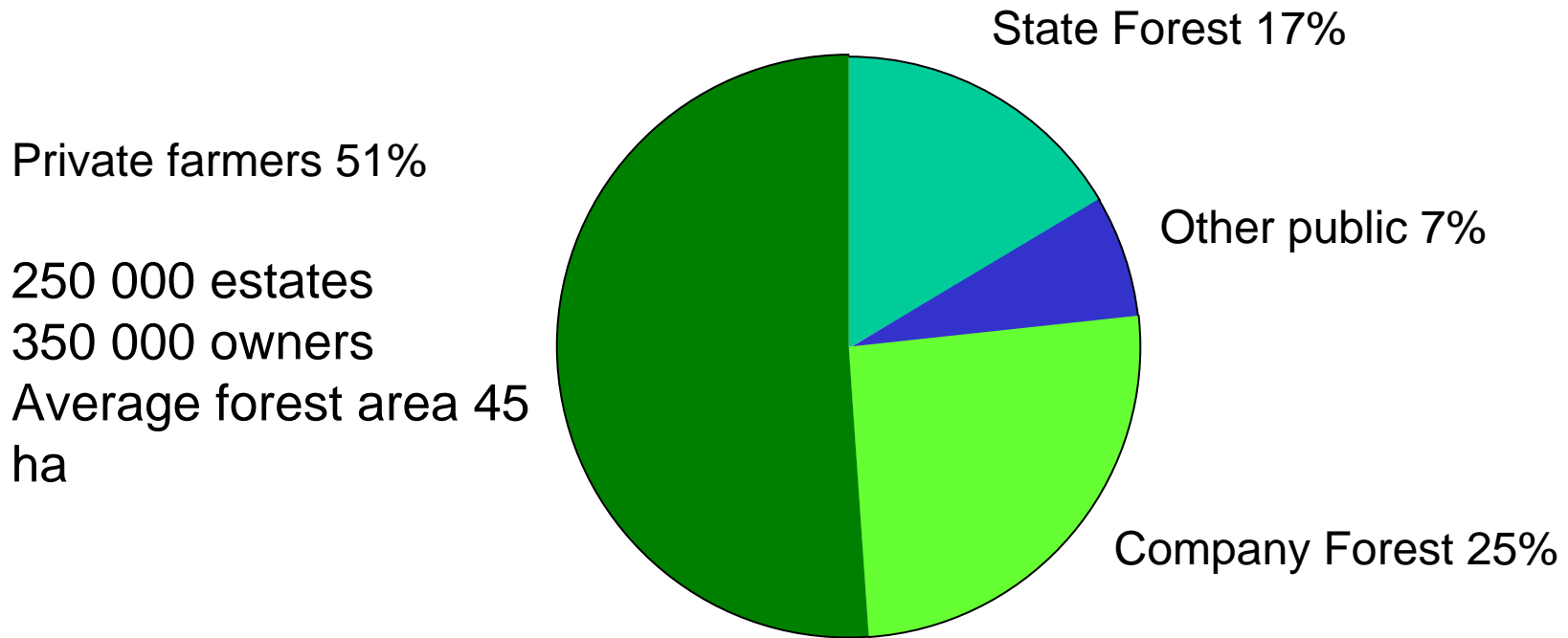
- **Sweden is a forest country**
- **Forest is our most important natural resource**
- **<20% of Swedish export income**
- **Gives employment to 3 % of the population**
- **Also important for the human being**



Land distribution



Landowner structure

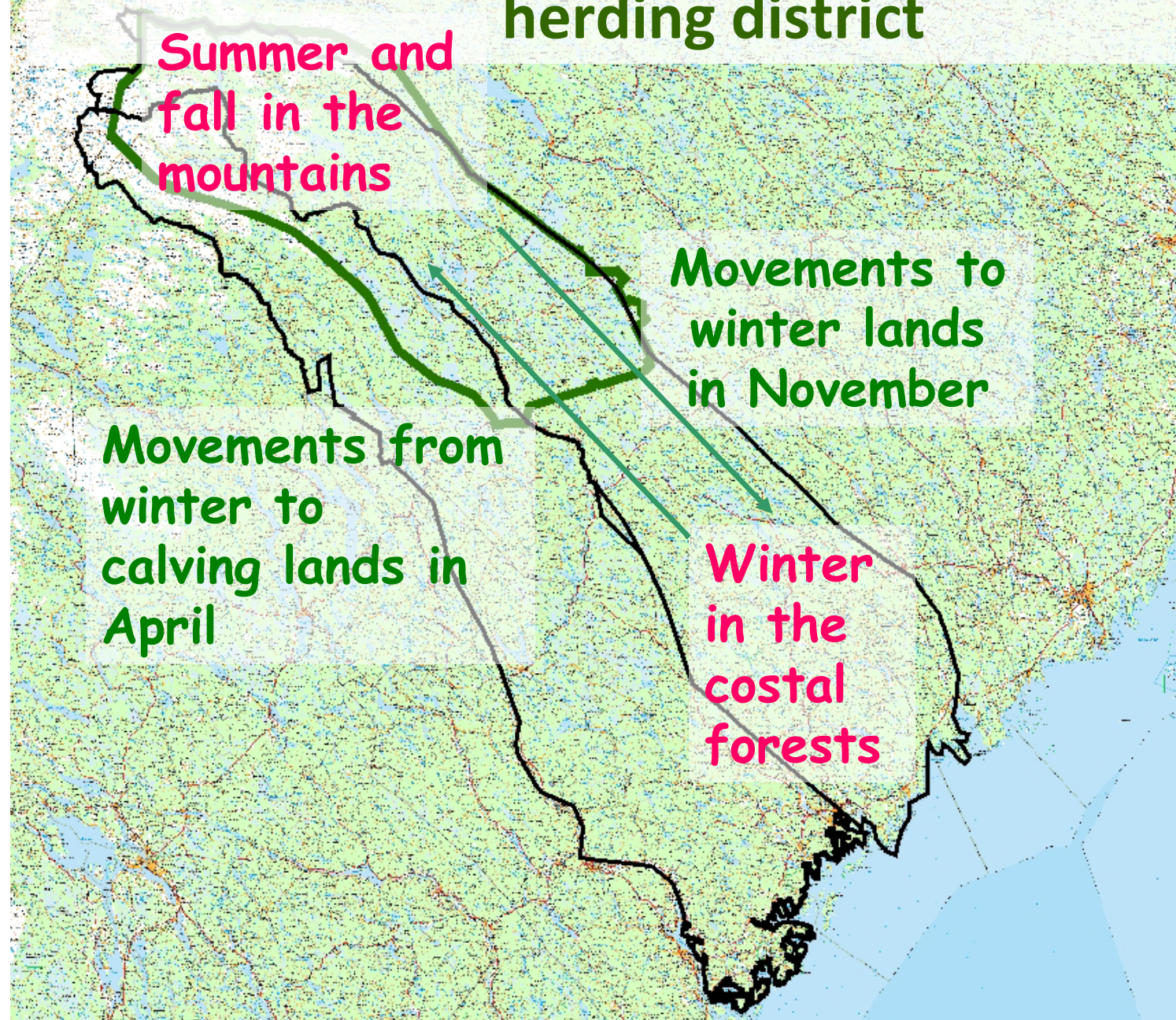


Reindeer husbandry in Sweden

- All reindeers (about 230 000) are owned and managed by the indigenous Sámi people.
- Almost 50 % of Sweden are used for grazing and nomadic movements of reindeer (Swedish Reindeer Grazing Act).
- Reindeer husbandry is of large economic and cultural importance for the Sami society
- Land ownership and reindeer grazing rights overlap



Yearly movements within a reindeer herding district

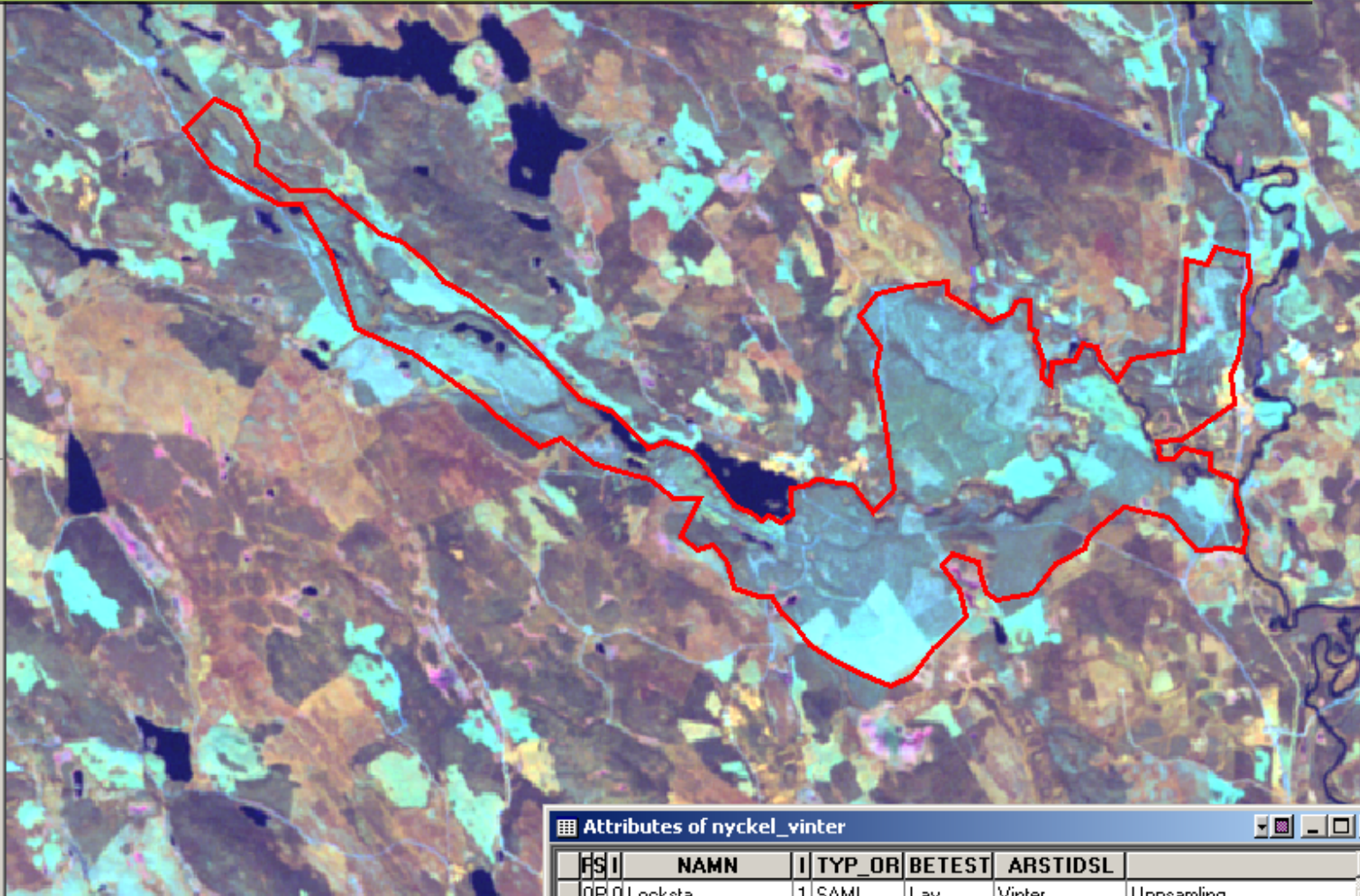


**Forestry is considered a
major threat to the
survival of reindeer
husbandry**



Land-use plans for reindeer husbandry in Swedish Renbruksplan (RHP)

- Layers
- ☐ D:\Data\renplan\re
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 - ☐ karn_vinter
 - ☐ karn_varvinter
 - ☒ karn_var
 - ☒ karn_sommar
 - ☒ karn_sensommar
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 - ☒ karn_forvinter
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 - ☐ nyckel_var



Attributes of nyckel_vinter

FS	I	NAMN	I	TYP_OR	BETEST	ARSTIDSL	
0P	0	Locksta	1	SAML	Lav	Vinter	Uppsamling

Record: 4 Show: All Selected Records (0 out of 12 Selected.)

A Renbruksplan should:

- **Provide support in day to day activities in reindeer husbandry (by collecting information about quality, quantity, distribution, and availability of resources)**
- **Provide support in land use discussions with other land users (mainly forestry)**

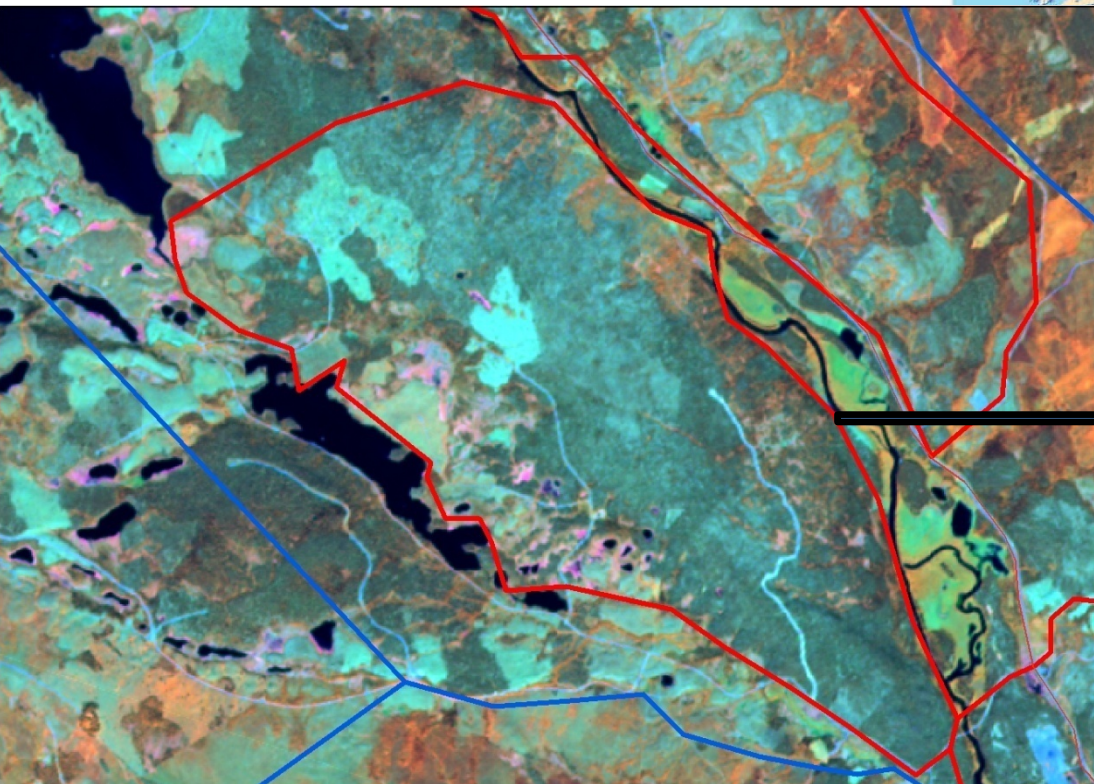
Contribute to increased knowledge and understanding between different resource users and thereby reduce conflict

Strategy for project Renbruksplan

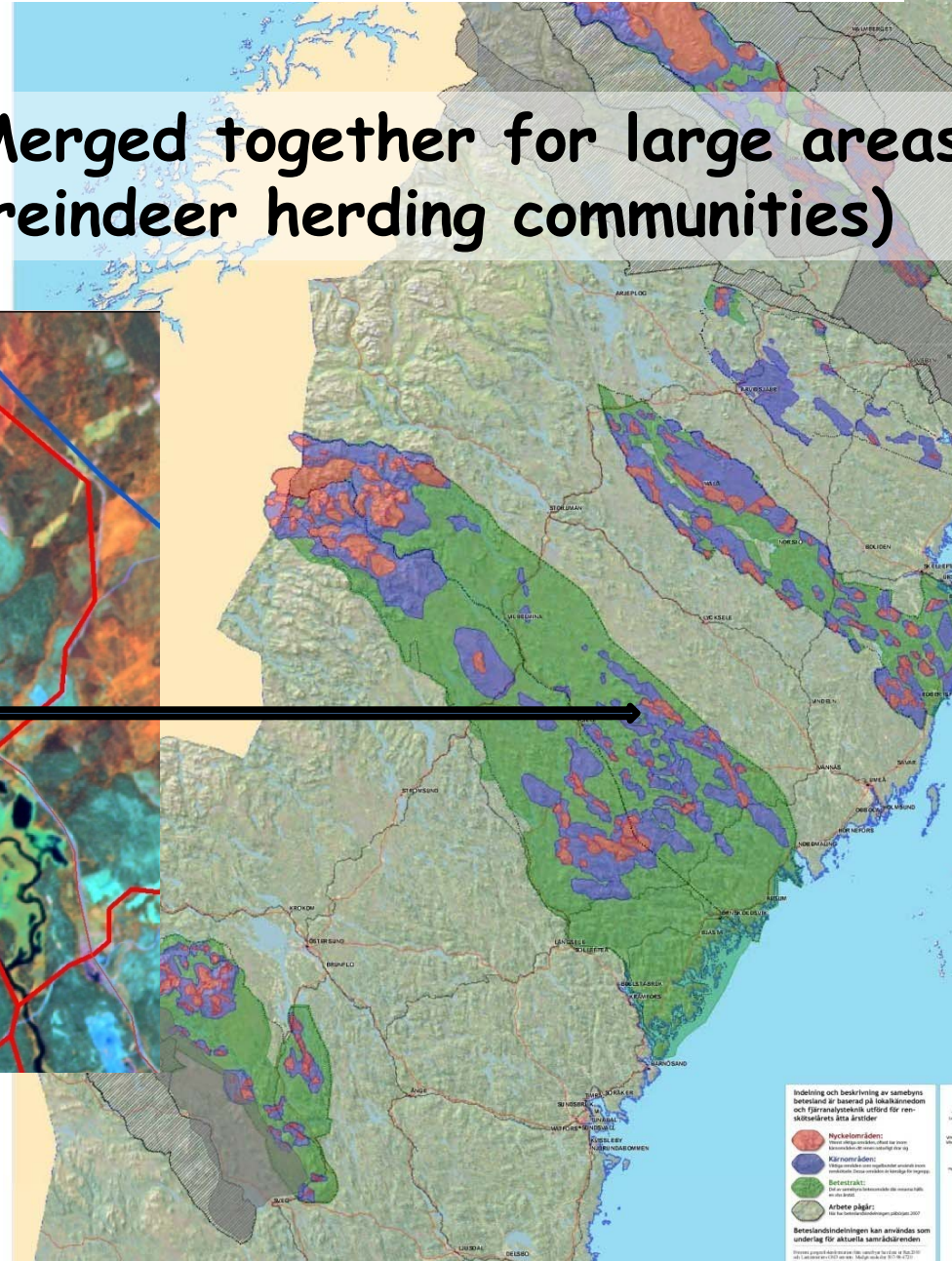
Information collected
locally (winter group)



Merged together for large areas
(reindeer herding communities)



Key habitat area
Ground lichen
November-April



Indelning och beskrivning av samelyns
betesland är baserat på utskärningen
och fjärranalysen utförd för
skattningen av arealer.

Mykologiska:
Röd: Mykologiska områden som är
viktiga för samelyns betesland.
Grön: Mykologiska områden som är
viktiga för samelyns betesland.
Blå: Mykologiska områden som är
viktiga för samelyns betesland.

Arbetsplan:
Röd: Arbetsplan områden som är
viktiga för samelyns betesland.
Grön: Arbetsplan områden som är
viktiga för samelyns betesland.
Blå: Arbetsplan områden som är
viktiga för samelyns betesland.

Beteslandindelningen kan användas som
underlag för aktuella samrådsområden.

Identification and delineation of important grazing lands

Preliminary delineation

- Based on local knowledge about habitat choice of the reindeer
- With satellite image as background to identify and digitize information in a custom-made GIS

Field inventory preparation

- Printing of field maps and field planning

Field inventory

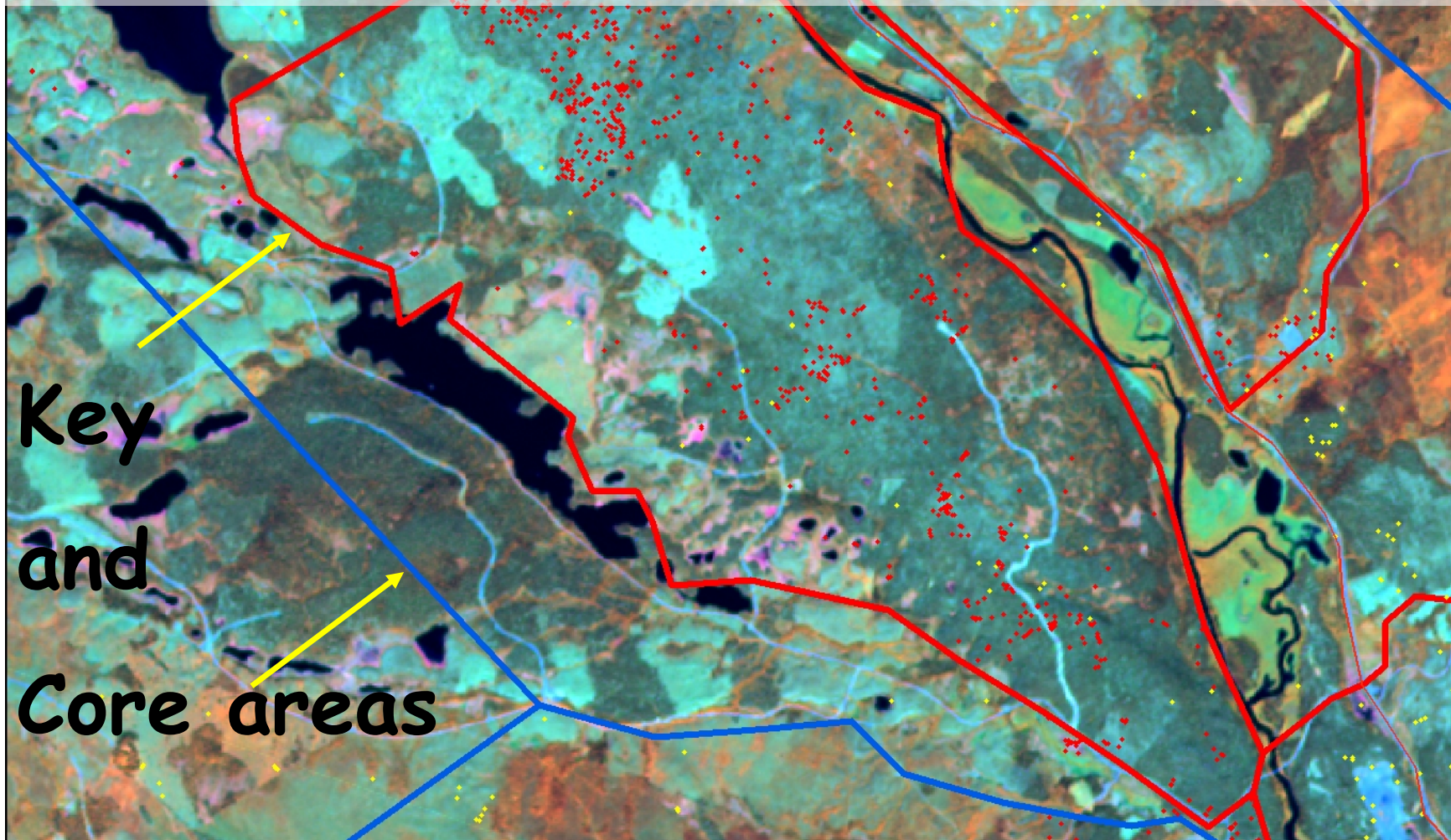
- Field visits of all identified core areas

Back in the office

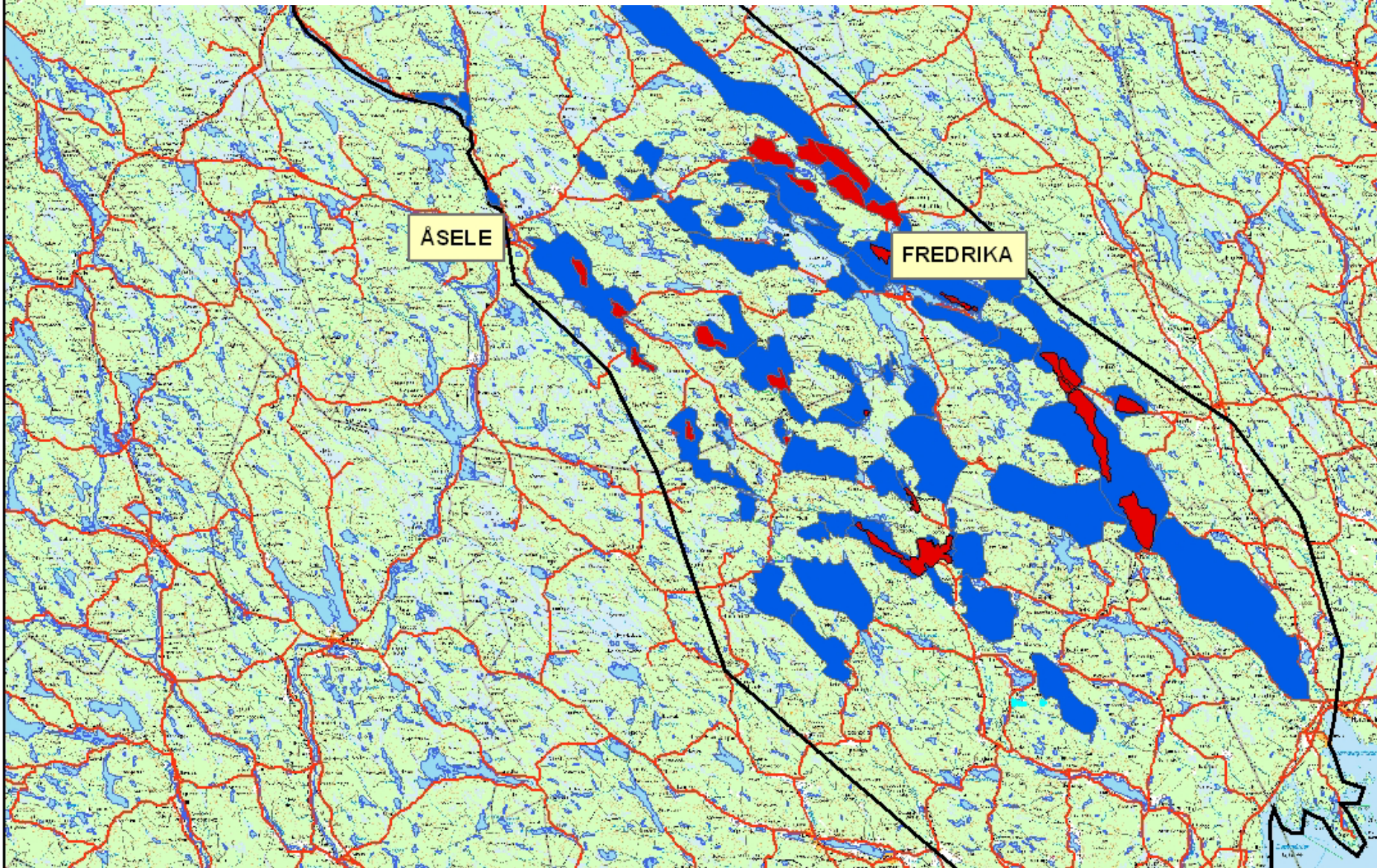
- Adjust boundaries based on field visits
- Update database with field information



Identification and delineation of important grazing lands



Winter grazing land Vilhelmina North Sami Community



New techniques in traditional societies

- Through the process of compiling and explaining the complex land use needs of reindeer husbandry, the reindeer herders have learned both from themselves and from each other.
- The process of documenting land uses both locally and on the landscape level has developed into an important pedagogical educational tool within reindeer herding communities (including females and youth)