

An aerial photograph of a forest landscape in winter. The ground is covered in snow, and the trees are mostly evergreens. In the center of the image, there is a large, irregularly shaped area that has been cleared or is a natural opening in the forest. The text is overlaid on this central area.

Methodologies and results of mapping of primary and old-growth forests in Northern Finland

Jan Saijets / Natural forests of Sápmi working group

(In Finnish: Luonnonmetsät Sápmi –työryhmä)

5th March 2024

Natural forests of Sápmi working group

Jan Saijets

- Senior research scientist (radio technology), Dr. of Technology
- From a reindeer herding family in Inari
- Represents Sámi parliament in a few biodiversity strategy and forest related processes
- Member of livelihoods and rights board of Sámi parliament
- Responsibility in working group:
 - Background mapping work of potential natural forests
 - Collecting of forest inventory data into maps



Jarmo Pyykkö

- Experienced forest inventor since 1990's (e.g. in Russia)
- Consult for many reindeer herding co-operatives
- Responsibility in working group:
 - Co-ordination of field work of tens of voluntary inventors
 - Field work
 - Producing background maps
 - Digitizing field work



Olli Manninen

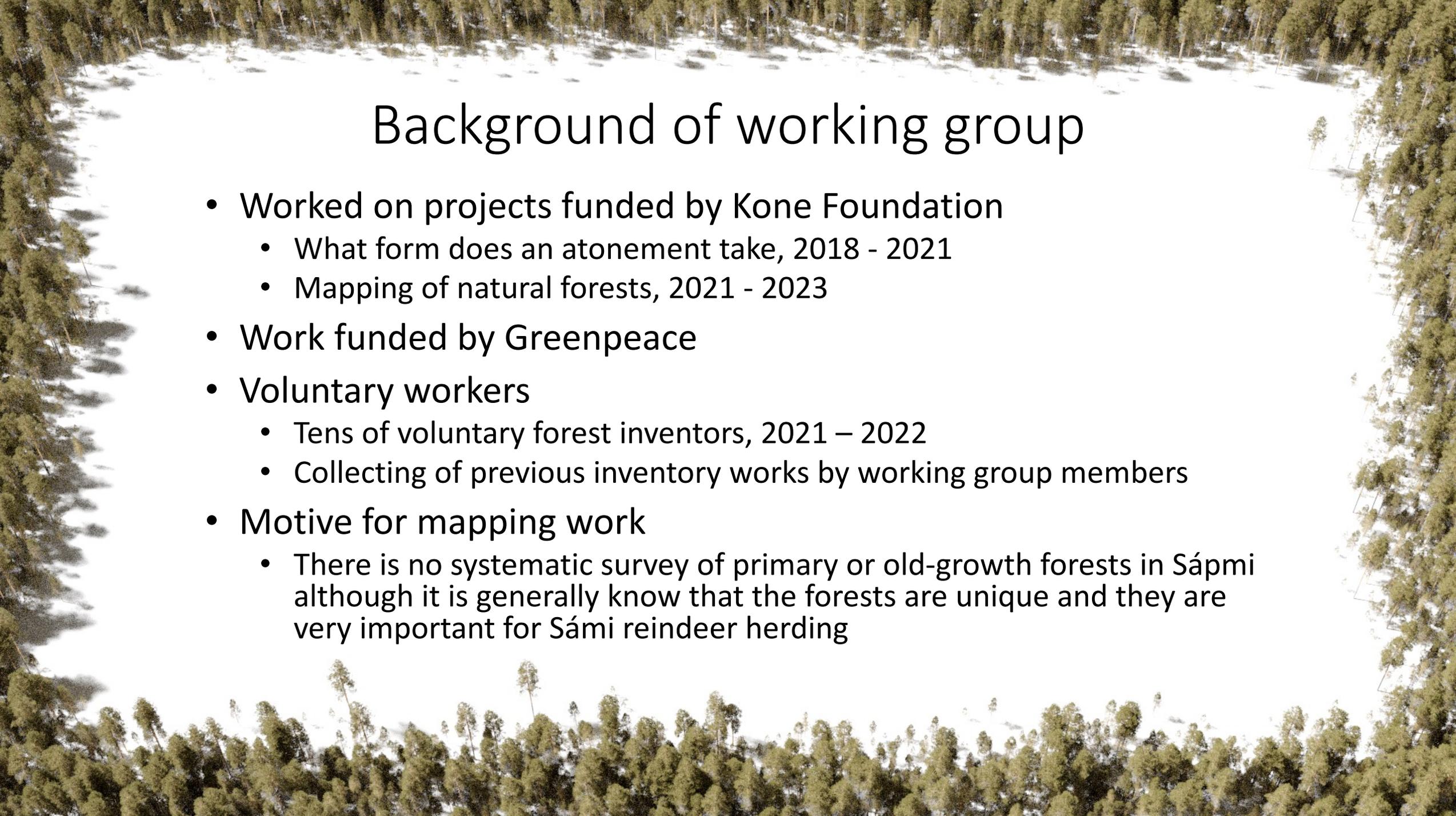
- Experienced forest inventor (e.g. Finland, Sweden, Russia)
- Has done field work in Sámi home region since 2003
- A comprehensive knowledge of forest species
- Responsibility in working group:
 - Field work
 - Digitizing field work



Juha Länsman

- Forest inventor from Inari/Lapland in different projects since 2018
- Consulted Sámi parliament on land use impact assessments (e.g. gold digging)
- Have been 300 days in inventory work since 2018.
- Responsibility in working group:
 - Field work
 - Digitizing field work



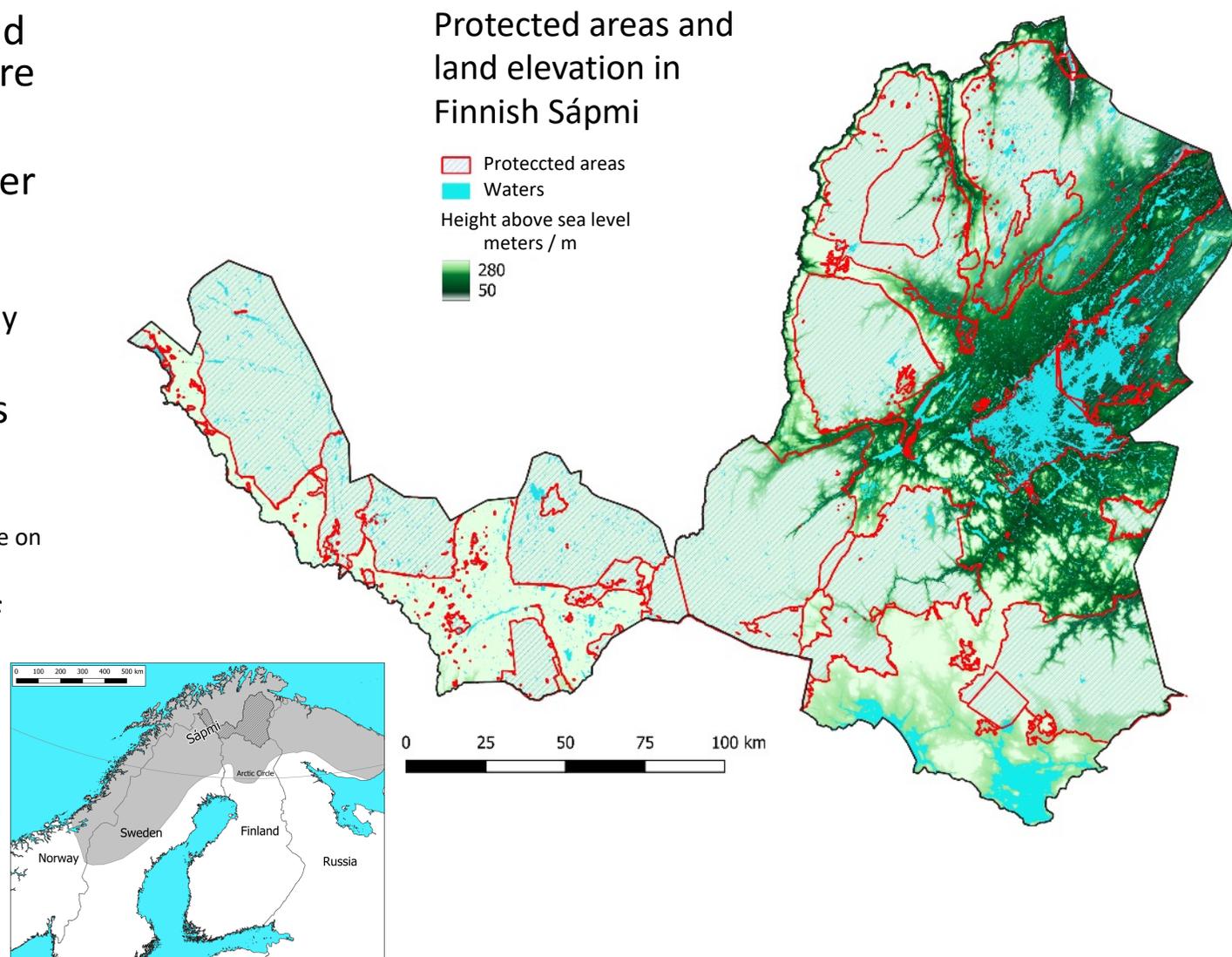
An aerial photograph of a vast, snow-covered forest landscape. The snow is bright white, contrasting with the dark green of the trees. The trees are scattered across the landscape, with some clusters and many open spaces. The perspective is from a high angle, looking down on the terrain.

Background of working group

- Worked on projects funded by Kone Foundation
 - What form does an atonement take, 2018 - 2021
 - Mapping of natural forests, 2021 - 2023
- Work funded by Greenpeace
- Voluntary workers
 - Tens of voluntary forest inventors, 2021 – 2022
 - Collecting of previous inventory works by working group members
- Motive for mapping work
 - There is no systematic survey of primary or old-growth forests in Sápmi although it is generally known that the forests are unique and they are very important for Sámi reindeer herding

Sámi rights and land protection

- Sámi home region in Finland is located in the municipalities of Enontekiö, Inari and Utsjoki and Northern part of Sodankylä. 90% of the lands are controlled by the State.
- A lot of forests have been protected but reindeer winter grazing areas still need more protection
 - Low elevated lands critical for reindeer in forestry use
 - Many of the protected areas are loosely or temporarily protected
- General opinion of the Sámis is against loggings
 - In 2018 election
 - 69 % of Sámis voted for candidates opposing loggings
 - 22 % of Sámis voted for candidates who considered loggings to be on fair level
- Reindeer herding is one of the corner stones of Sámi culture along with other traditional livelihoods.
- International indigenous peoples' rights and domestic law forbid causing significant harm to Sámi reindeer herding. This significant level of harm may have been caused already.



Fellings in Muddusjärvi reindeer herders' cooperative in 1940 - 2021

Year 1940

Legend:

 Water bodies

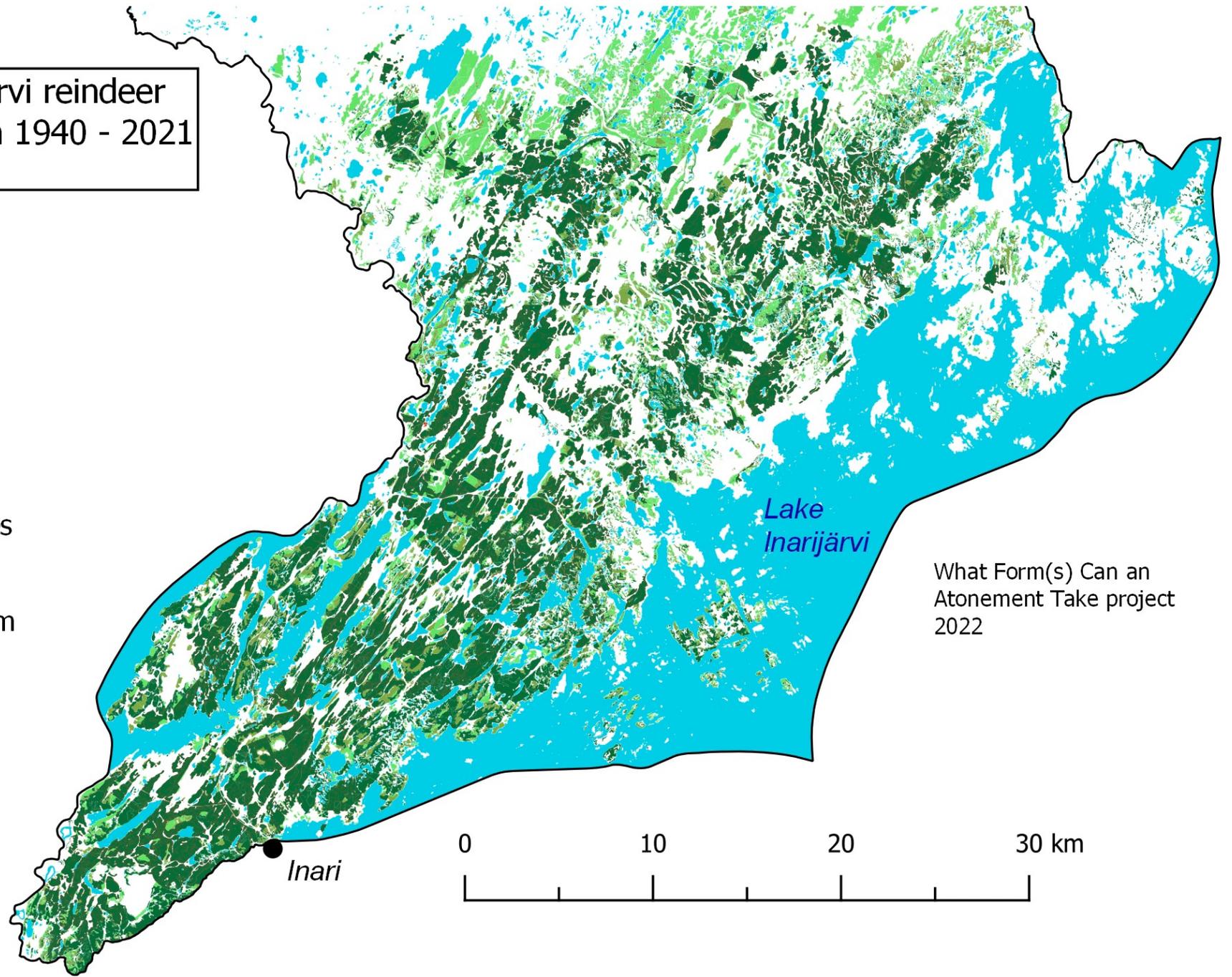
Forest category

 High and dense trees

 Uneven-aged trees

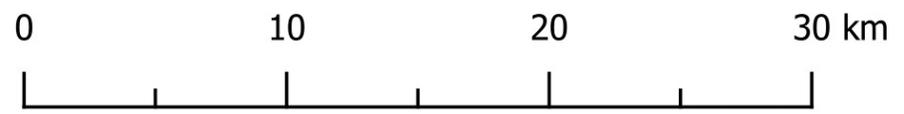
 Low trees, below 8 m

 Felled areas



Lake Inarijärvi

Inari



What Form(s) Can an Atonement Take project 2022

Methodology to find potential natural forests

- Areas without logging history were identified by using maps and remote sensing data.

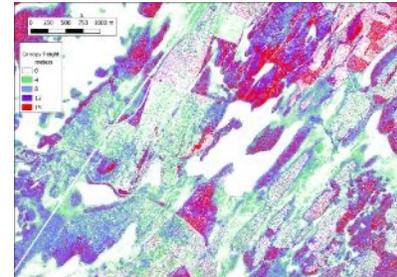
Topographic map by NLSF



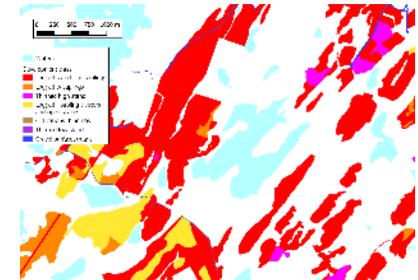
Aerial false color imagery



Canopy models/Lidar data

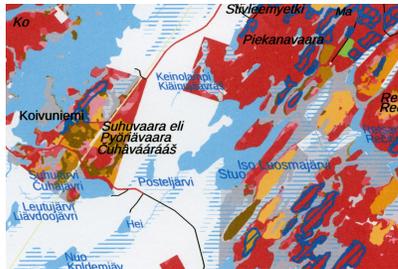


Digitized logging areas

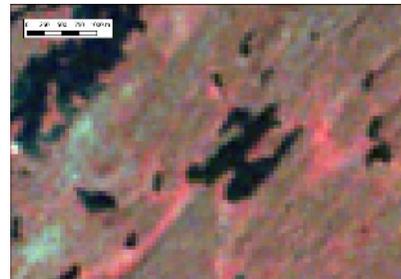


Land areas – (logging areas + treeless areas)

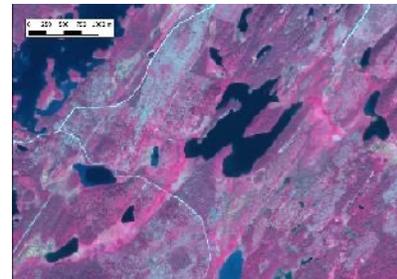
State forest maps by Metsähallitus



Landsat imagery (here 1971)



Sentinel 2 imagery (here 2018)



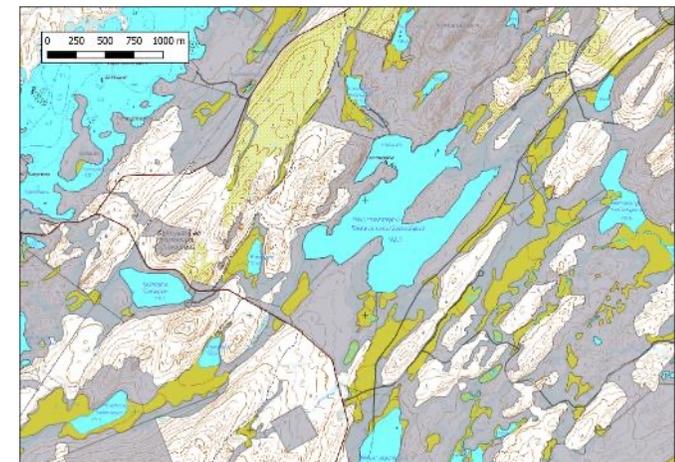
"Continuity forests" or forests without a known logging history

Historical aerial imagery (here 1966)



Other important data:

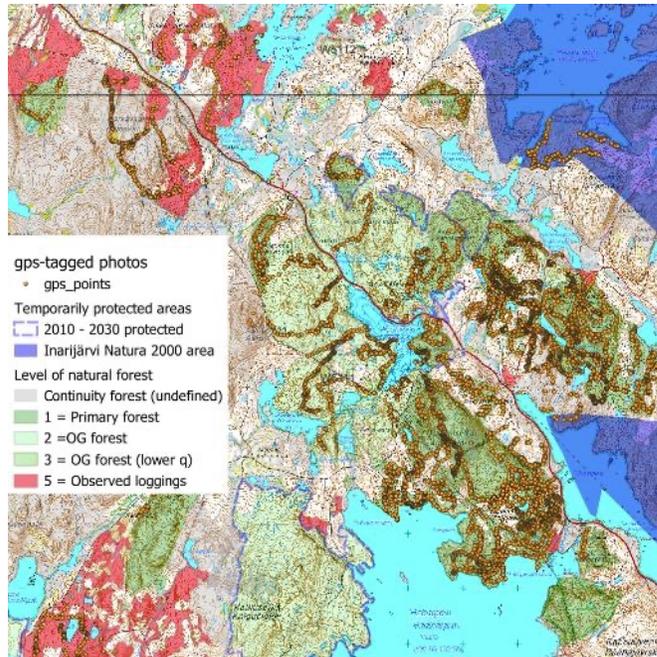
- BPAN-data
- Syke Tarkka –web service
- Interviews of reindeer herders and a retired forest worker



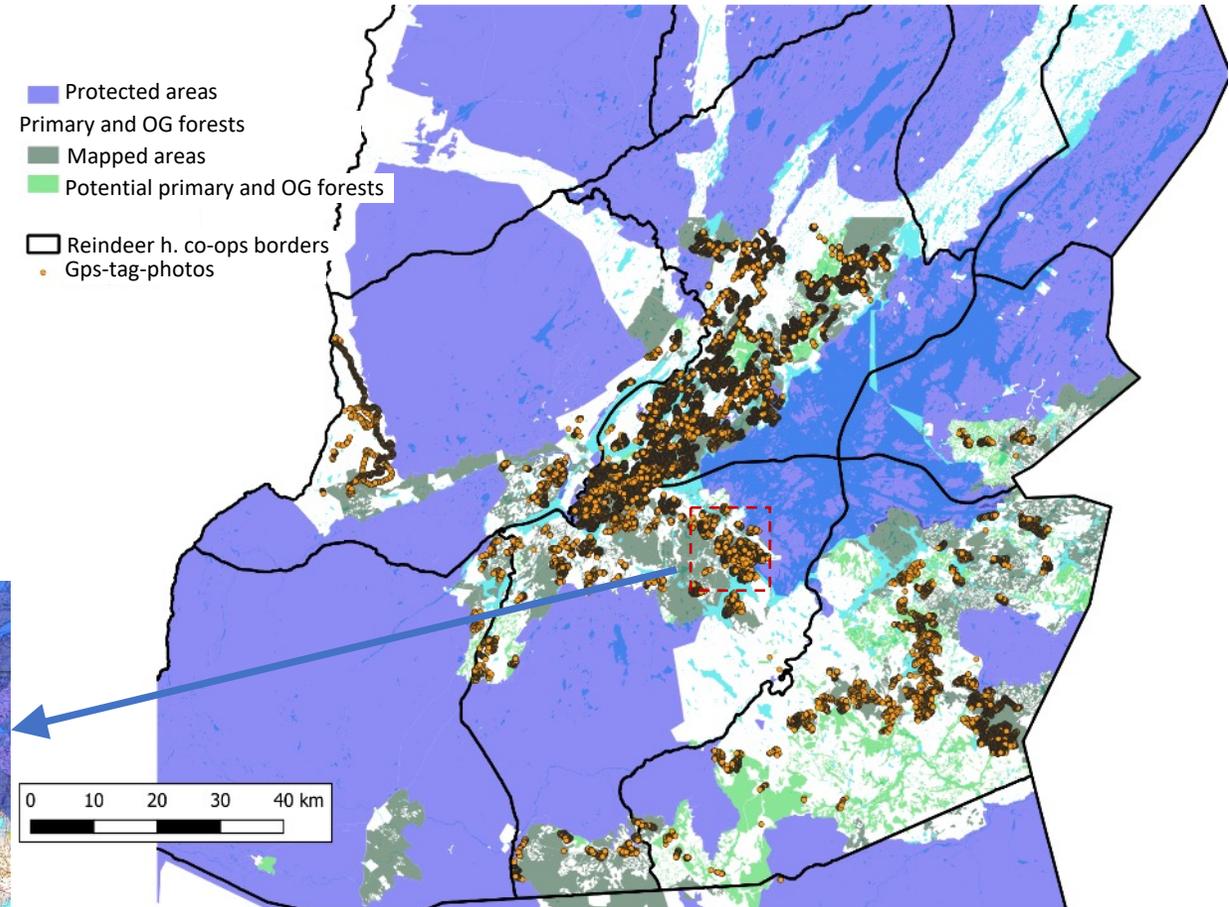
Delineating valuable forest areas

Areas mapped are huge

- Generalization of field data has had to be made based on:
 - Field work observations
 - Remote sensing GIS-data (canopy, aerial images)
 - Local and traditional knowledge of reindeer herders
- Some areas examined quite detailed

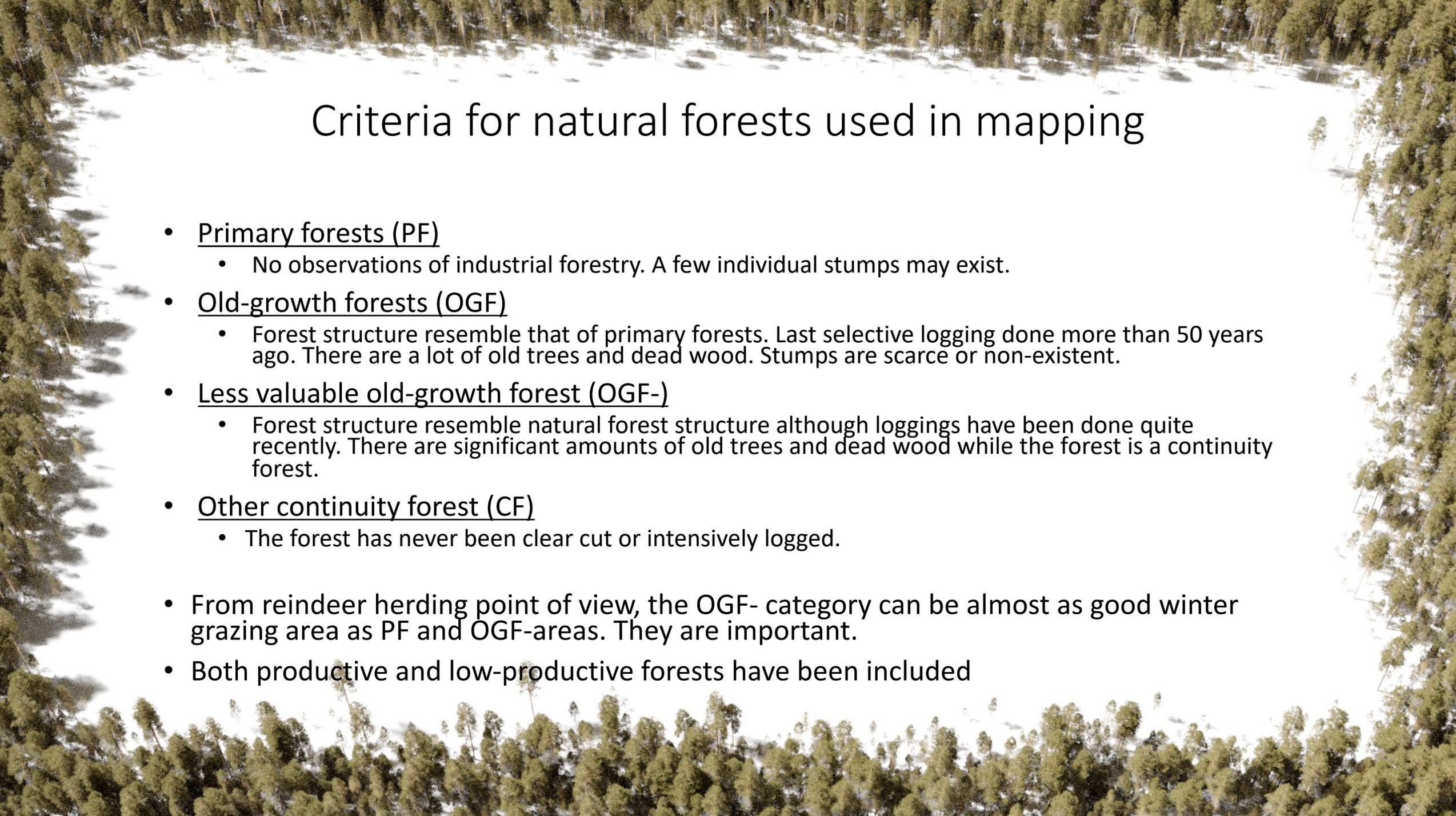


Here are approx.
10 000 photo points



Database of gps-tagged field photos

- 120 000 photos
 - 36 000 photos not yet added to the database

An aerial photograph of a forest landscape. The top half of the image shows a large, open, snow-covered area, possibly a meadow or a clear-cut site, surrounded by a dense forest of evergreen trees. The bottom half of the image shows a continuous forest of evergreen trees. The text is overlaid on the snow-covered area.

Criteria for natural forests used in mapping

- Primary forests (PF)
 - No observations of industrial forestry. A few individual stumps may exist.
- Old-growth forests (OGF)
 - Forest structure resemble that of primary forests. Last selective logging done more than 50 years ago. There are a lot of old trees and dead wood. Stumps are scarce or non-existent.
- Less valuable old-growth forest (OGF-)
 - Forest structure resemble natural forest structure although loggings have been done quite recently. There are significant amounts of old trees and dead wood while the forest is a continuity forest.
- Other continuity forest (CF)
 - The forest has never been clear cut or intensively logged.
- From reindeer herding point of view, the OGF- category can be almost as good winter grazing area as PF and OGF-areas. They are important.
- Both productive and low-productive forests have been included

A lot of unprotected valuable forests exist

Pietarin Tupavaara – primary forests 4000 ha



Temporarily protected until 2030. Agreement with Sámi reindeer herding communities. Such areas 50 000 ha altogether.

Vaadinselkä – Ukonjärvi –ympäristö – primary forest 1300 ha + 900 ha old-growth forests



“Normal” commercial forest without protection

Mapped and potentially valuable forest areas

Total area: 730 000 ha

- Productive forest land 177 000 ha
- Low-productive forest land 324 000 ha
- Swamps and lakes 230 000 ha
- CF areas not included but mapped, OGF- practically not included

State commercial forests:

- 350 000 ha
 - Productive forest land 132 000 ha
 - Low-productive forest 138 000 ha

Loosely protected areas:

- 355 000 ha
 - Productive forest land 27 000 ha
 - Low-productive forest 177 000 ha

Inarijärvi Lake Natura area (not drawn in the map)

- Productive forest land 18 000 ha
- Low-productive forest 8 500 ha

Primary and OG forests

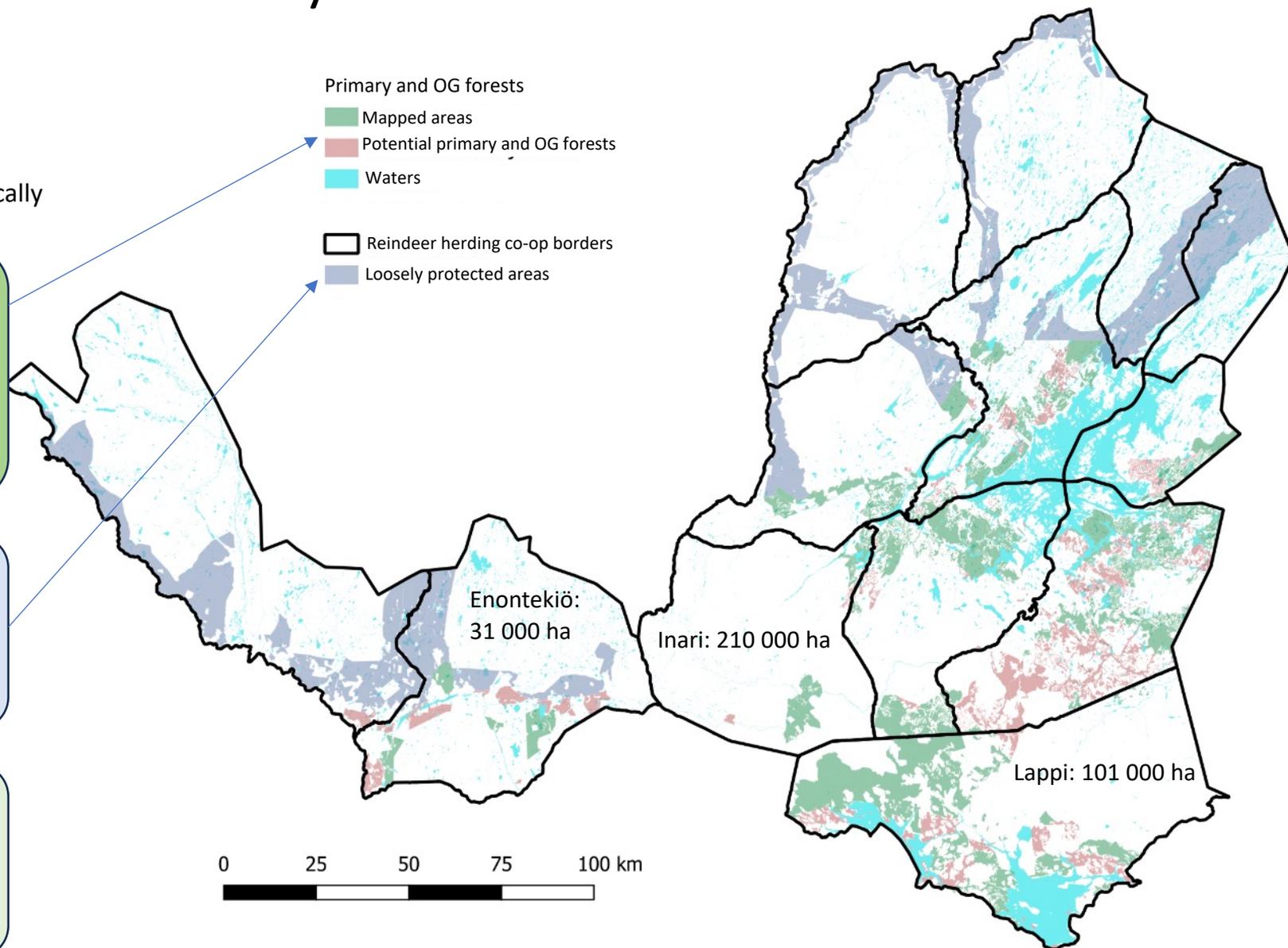
Mapped areas

Potential primary and OG forests

Waters

Reindeer herding co-op borders

Loosely protected areas

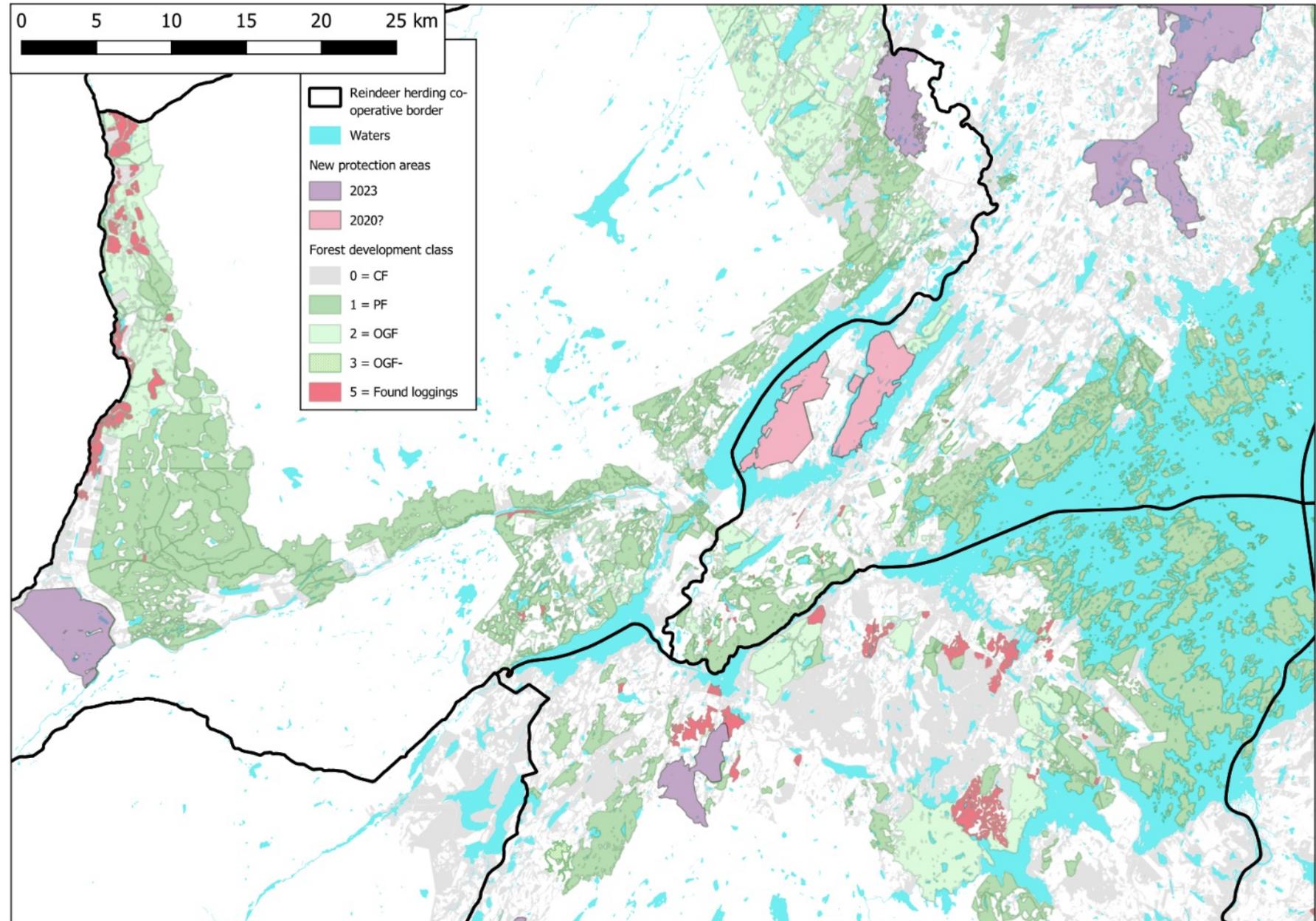


More detailed classification

- Detailed classification is the bottom level of the data

- PF
- OGF
- OGF-
- CF
- Undefined CF
- Found loggings

- Grey areas have not yet been visited and remain so far as undefined CF



Conclusions 1/2

- Identified natural (i.e. primary and old-growth) forests
 - Productive forest land 136 000 ha
 - Low-productive forest land 315 000 ha
- These should be protected instantly
 - This is also the will of four reindeer herding co-operatives.
- Of these outside forestry, but not strictly protected currently
 - Productive forest land 83 000 ha
 - Low-productive forest land 104 000 ha
 - **They consist of:**

Inari Lake Natura 2000 area

- Forest land 18 000 ha
- Low productive forest land 8 500 ha

Loosely protected areas (luontaistalousalue) in Inari:

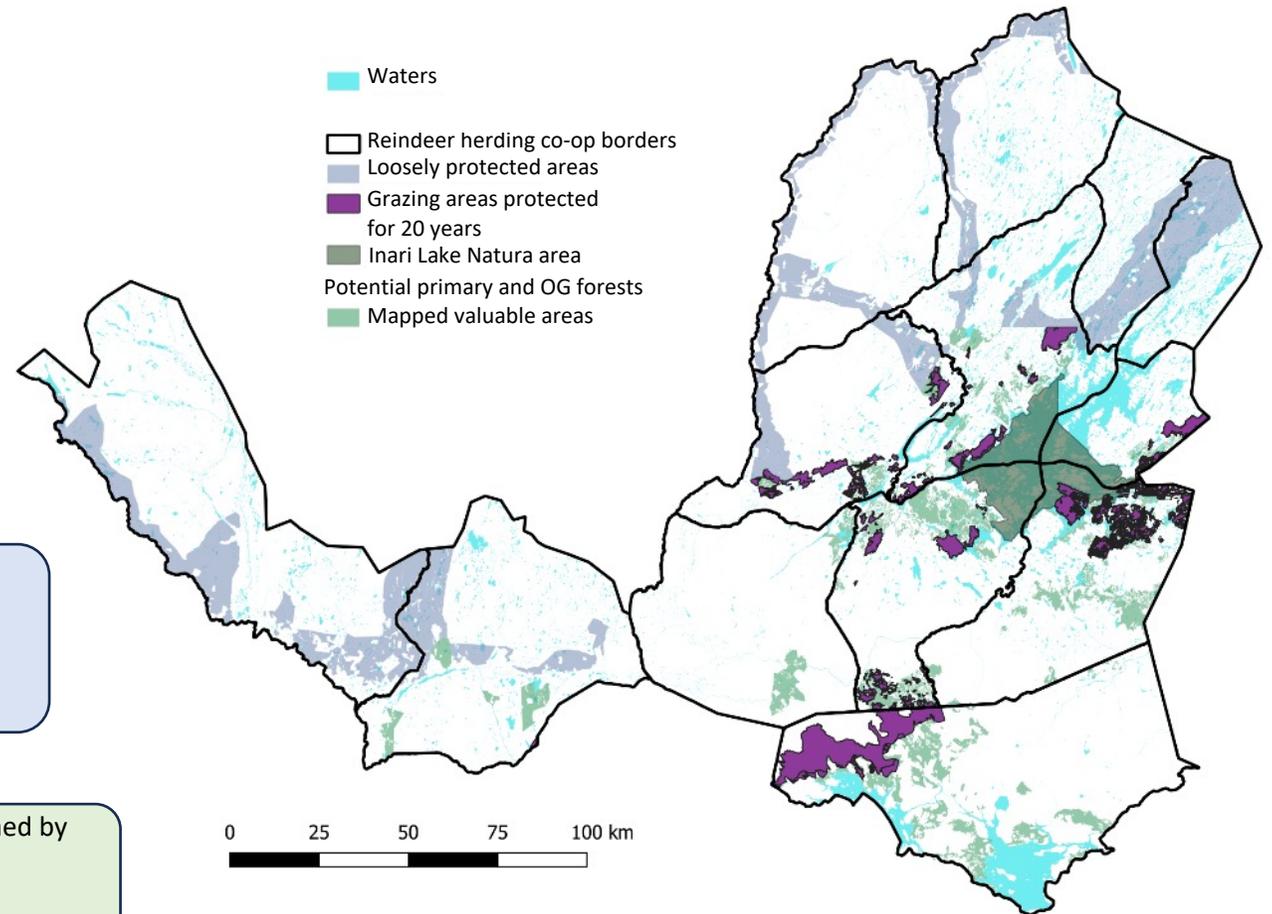
- Forest land 20 000 ha
- Low productive forest land 66 000 ha

Grazing areas protected until 2030

- Forest land 39 000 ha
- Low productive forest land 26 000 ha

Protection areas by Metsähallitus (not defined by law)

- Forest land 5 600 ha
- Low productive forest land 5 800 ha

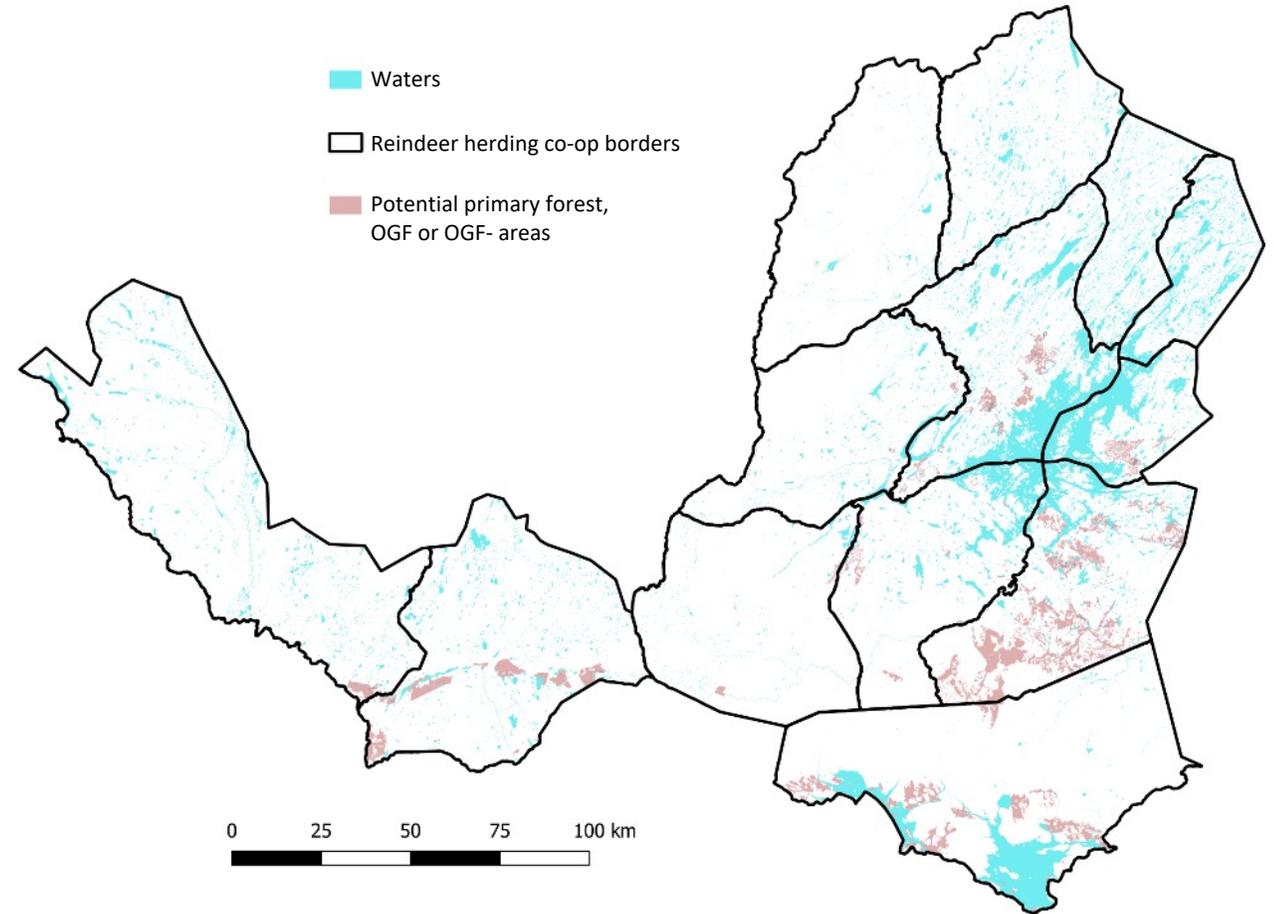


Conclusions 2/2

- So far unmapped and potential natural forests in commercial use should be put under a moratorium:
 - Productive forest land 31 000 ha
 - Low productive forest land 46 000 ha
- To be mapped in 2024 by us!
- Sámi reindeer herders want even more forests to be strictly protected – not only “qualified” natural forests.
 - FPIC-process needed
- Remaining natural forests are the basis of Sámi culture



Potential State controlled commercial natural forests requiring additional field work





= "Thank you" in Northern Sámi language