Biodiversity inventories in nature protection areas – terrestrial habitats

CLIMES-symposium
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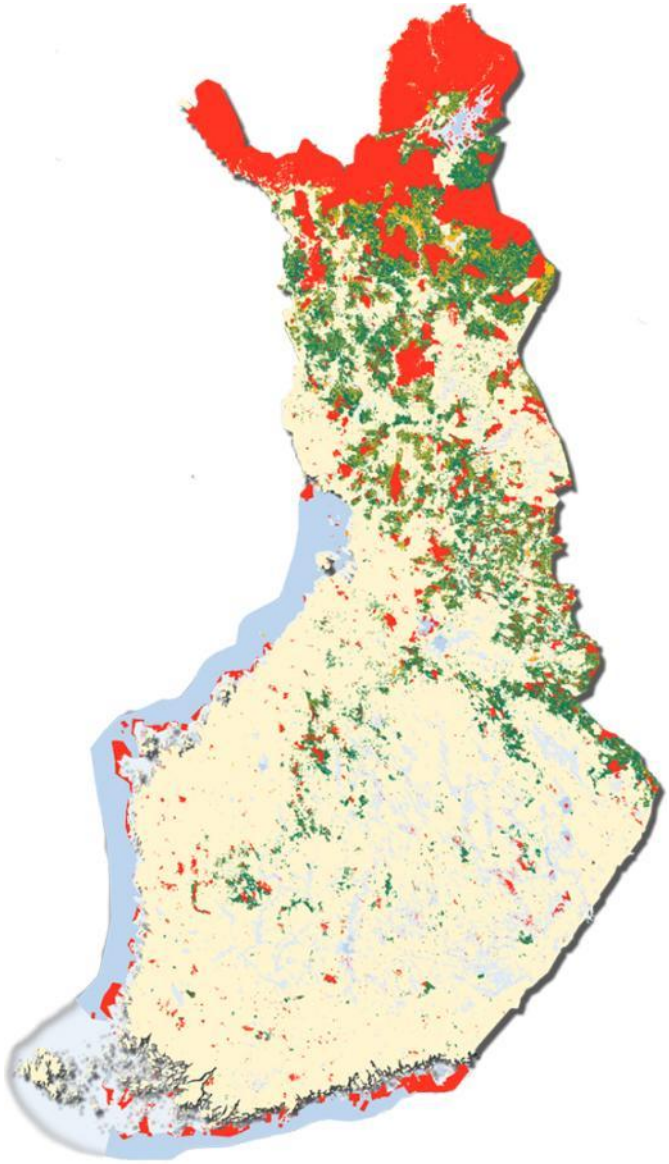
METSÄHALLITUS

Metsähallitus' lands and waters

- Forest land in managed forests, 3.5 million ha
- Poorly productive and non-productive land, 1.4 million ha (excluded from forestry)
- Protected areas, wilderness reserves and other areas, 4.2 million ha
- Water areas, 3.4 million ha
  Public water areas

  In total 12.5 million ha



Natural Heritage Services

•management of national parks and other protected wilderness and hiking areas

•protection of species and habitats

•produces hiking, hunting and fishing services

Habitat inventories in Metsähallitus – LUOTI-project

In 1996-1999 Lapland's most northern protected and wilderness areas were mapped in LUOTI-project. The aim was to produce a general picture of northern Lapland's nature.

A new geographic information system (LUOTI-GIS) was created and the results of inventories were stored in the database.

Inventory area was 2,6 million hectars

- •field inventories 575 000 ha (22 %)
- •remote sensing by aerial photos 2 million ha (78 %)

Habitat boundaries were drawn on aerial ptohos by using stereomicroscope

Habitat inventories in Metsähallitus

In 2001 habitat inventories were started also in the other parts of Finland. The data is saved in Metsähallitus GIS, which is also used by Metsähallitus Forestry.

In 2003 LUOTI –database was converted to Metsähallitus GIS.

From 2004 it has been possible to save habitat data from privately owned protected areas in their own database in GIS.

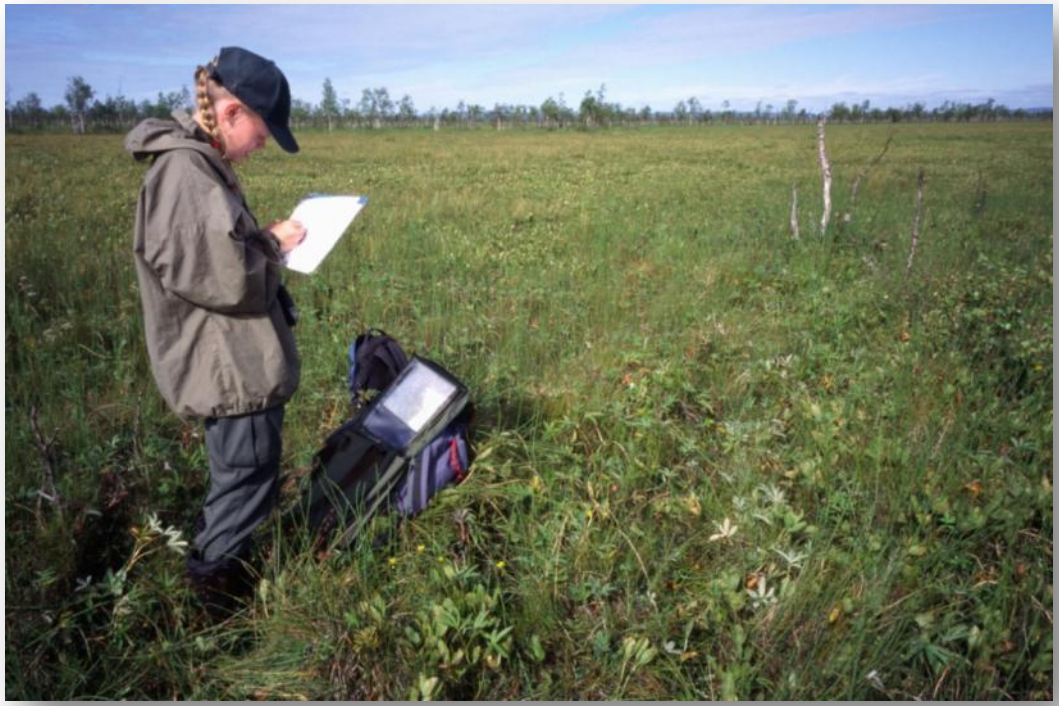
- Protected areas's habitat data is in one GIS system.
  (In 2013 a new GIS system will be taken in use.)

So far habitat inventories are achieved in 3 780 000 ha (624 000 polygons)

There are still 230 000 hectars (mainly in Northern Finland) which are not mapped

Habitat inventories in Metsähallitus

- In Southern Finland habitat inventory is done by field inventory
- In Northern Finland habitat inventory is done by field inventory and by remote sensing using aerial photos
- Field computers are used in field inventory
- Field inventory is needed for example in inventory of springs, eutrofic fens, herb rich forests and other small scale habitats
- Aerial photos are useable with large scale habitats like mire complexes



Habitat inventory data

Collected habitat inventory data depends on habitats and inventory method

All areas:

- Inventory class
- Natura 2000 habitats, their representativity and conservation status

Wooded areas also:

- Stand characteristics
- Dead wood
- Forest destruction

Optional measurements

- Bushes
- Vegetation class
- Shore type
- Geomorfology
- Topography
- Habitat restoration and management needs

Mires

Inventory class (moisture level):

- spruce mires + water level (hummock, lawn, flark)
- pine mires and bogs + water level (hummock, lawn, flark)
- fens + water level (lawn, flark, open water)

Nutrient level:

- ombrotrophic, oligotrophic, mesotrophic, eutrophic

Complex type:

- raised bog: concentric, eccentric
- aapa mire: surface pattern (string structure), palsas, sloping fens
- alpine mire
- local mire complex

Natura 2000 habitat(s)

Forested mires also stand characteristics and dead wood

Forests

Inventory class (groud-vegetation based):

- herb-rich
- moss-subshrub-herb
- moss-subshrub
- lichen-moss-subshrub
- lichen-subshrub
- lichen

Natura 2000 habitat

Stand characteristics

Dead wood

Forest destruction

Rock outcrops and scree

Inventory class :

- gently sloping rock outcrops
- rock faces
- gorges
- boulder fields
- talus formations

Nutrient level:

- acidic
- intermediate-basic
- calcareous
- serpentine

Natura 2000 habitat

Traditional rural habitats

Inventory class :

- heath
- dry meadow
- mesic meadow
- moist meadow
- pollard meadow
- wooded pasture
- grazed woodland
- burn-beaten area

Natura 2000 habitat

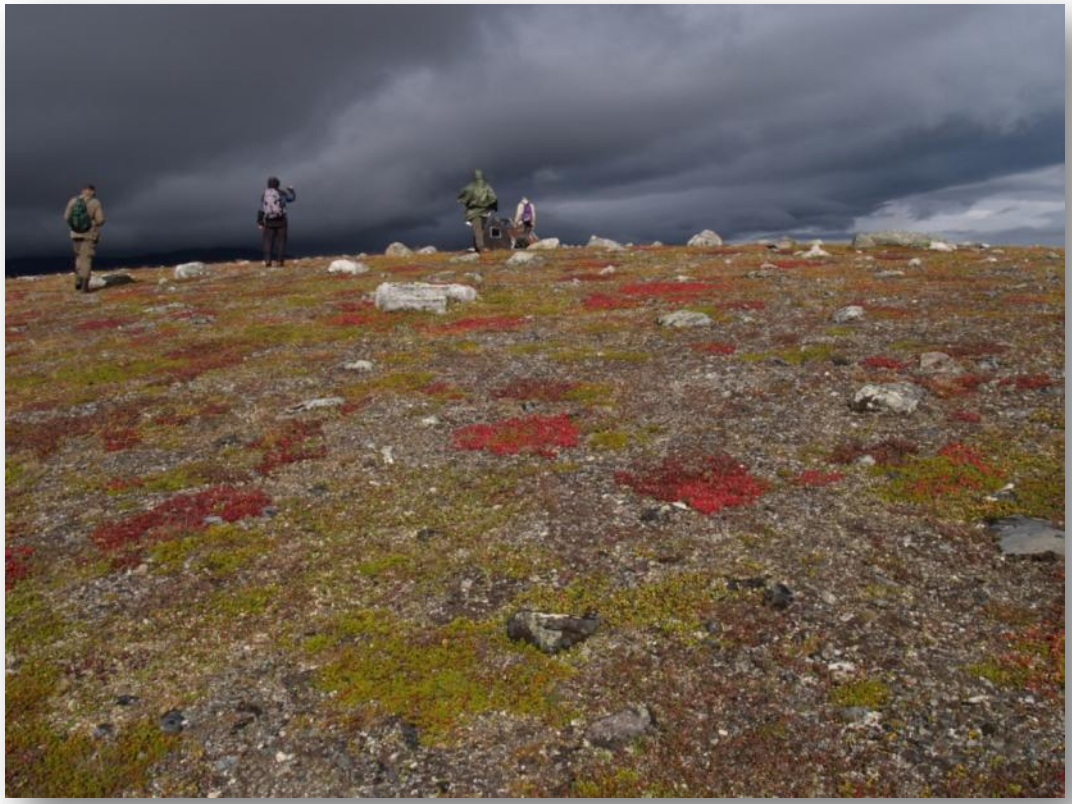
Vegetation type

Open fell areas

Inventory class
(groud-vegetation based):

- herb-rich
- moss-subshrub-herb
- moss-subshrub
- lichen-moss-subshrub
- lichen-subshrub
- lichen
- lichen- hay-sedge
- moss-hay-sedge
- herb-hay-sedge
- snow patches
- snow beds
- bare ground

Natura 2000 habitat



Use of habitat data

Planning in Metsähallitus:

- management plans of protected areas
- hiking services
- restoration of mires and forests
- management of traditional rural biotopes

Monitoring

- Natura 2000 –directive
- Threatened habitat types (the first assessment of threatened habitat types in Finland in 2005-2007)

Environmental impact assessment

- e.g. mineral deposit exploration ja mining projects

Metsähallitus' habitat data is open data

In the future

Basic inventories

- Habitat inventory will be finished in next few years, inventory will still continue in new protected areas

Supplementary inventories

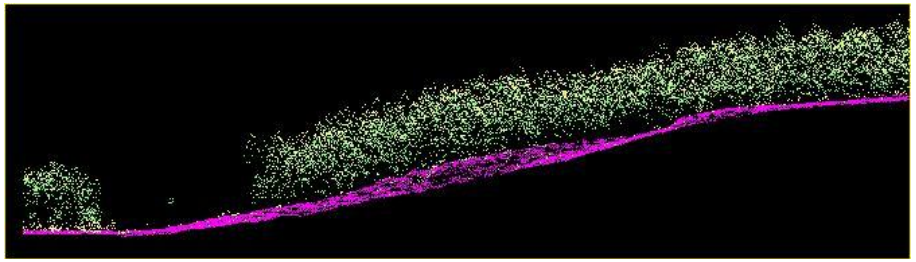
- More detailed mapping is needed specially in Northern Finland for reporting and monitoring (Natura 2000, assesment of theatened habitats)

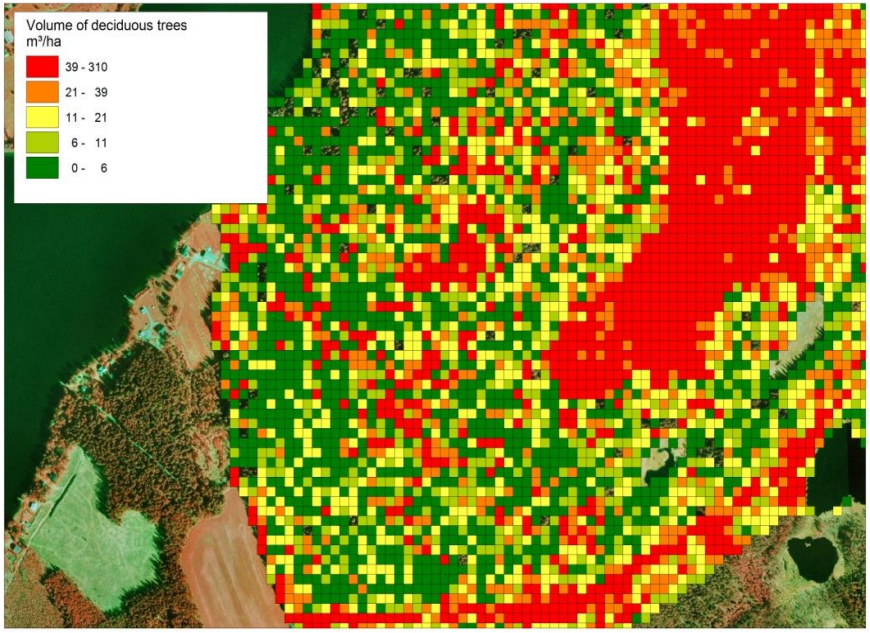
Monitoring of habitats

- There is no habitat-specific monitoring plans in Metsähallitus.
- The aim is draw up monitoring plans after the basic inventories has done
  - What habitats to monitor?
  - How to monitor?

Utilization of airborne laser scanning-data

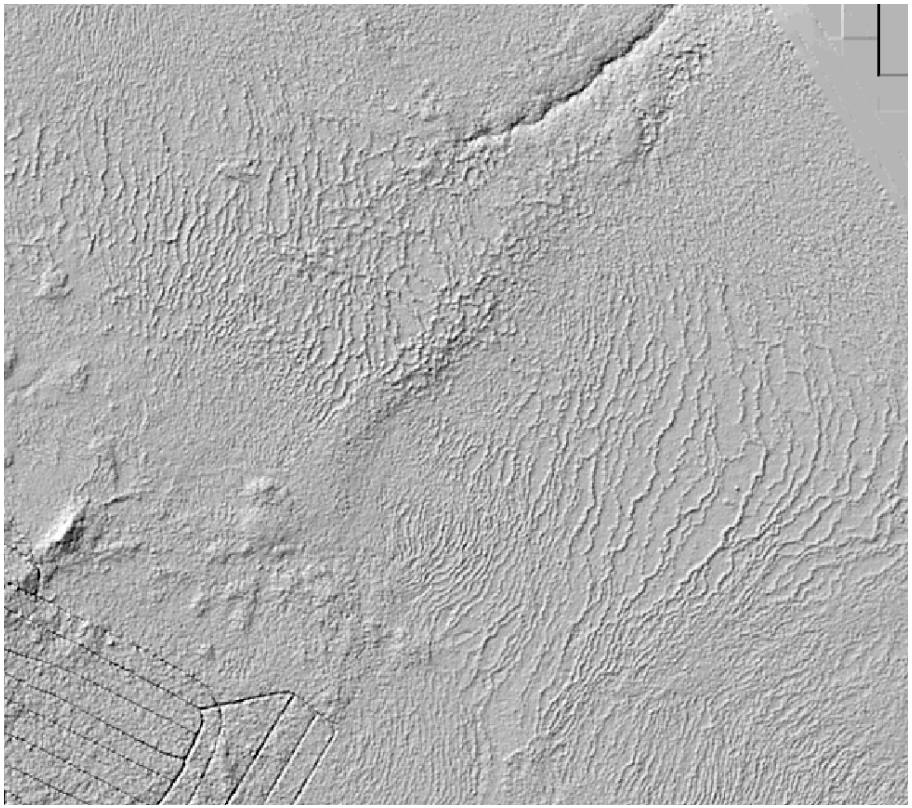
- Airborne laser scanning is used by Metsähallitus Forestry and private forestry
- Central Finland's laser scanning project: testing the use of airborne laser scanning in habitat inventories
- Helps focus the field work on interesting habitats
  - Amount of living trees and small gaps dynamics
  - Proportion of deciduos trees
  - Canopy model
- Natural Heritage Services is also participates in other laser scanning projects with forestry

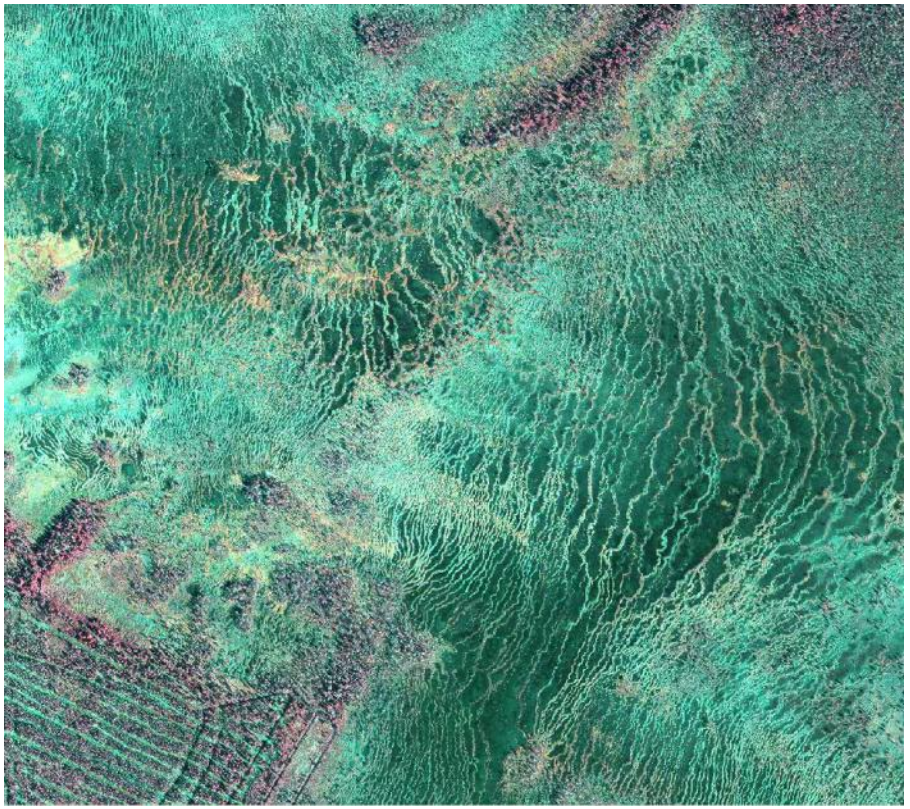




Utilization of airborne laser scanning-data

Monitoring: e.g. mire compelex (aapa mires, raised bogs, palsa mires), tree line in mountain areas, changes in tree species domination





Thank you for your interest!