

# Use of multi-source NFI data in preparation of a local forest programme

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# Background



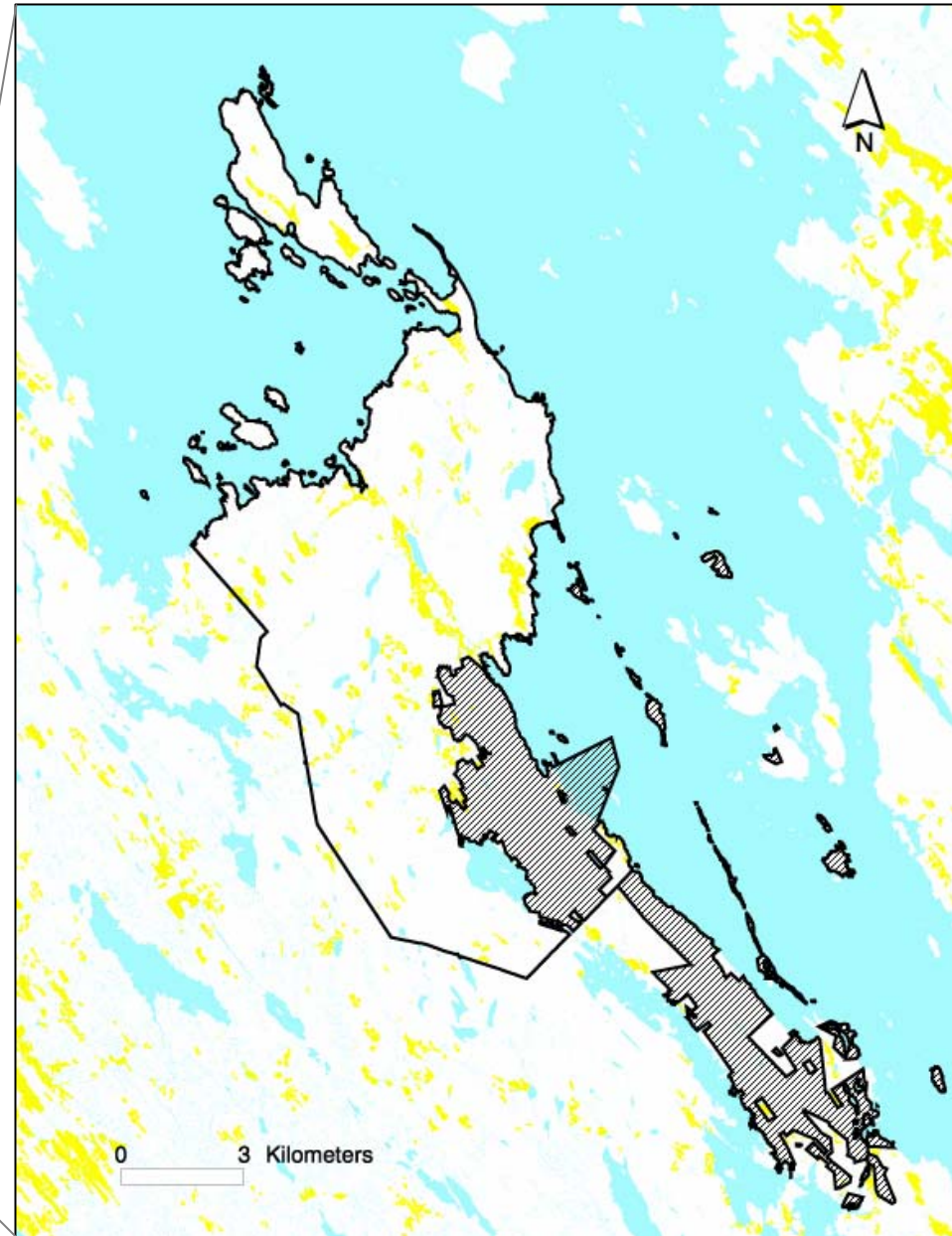
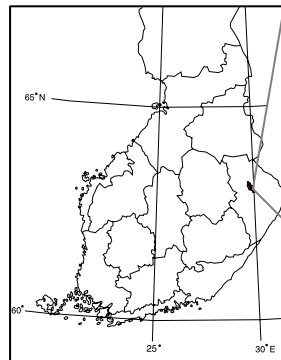
- ELAV – Enhancing Local Activity and Values from forest land through community-led strategic planning (2005-07)
- Case study in Finland:
  - A local forest programme
  - Develop interactive methods and new procedures for forest planning
  - Partners: Metla, Regional Forestry Centre Northern Karelia and Forest Management Association Northern Karelia

# Objective

- Analysis of forest production and utilization possibilities for a small area →
- Need for information on forest resources →
- Initial forest data for MELA by means of the Landsat satellite image data and the NFI sample plot data

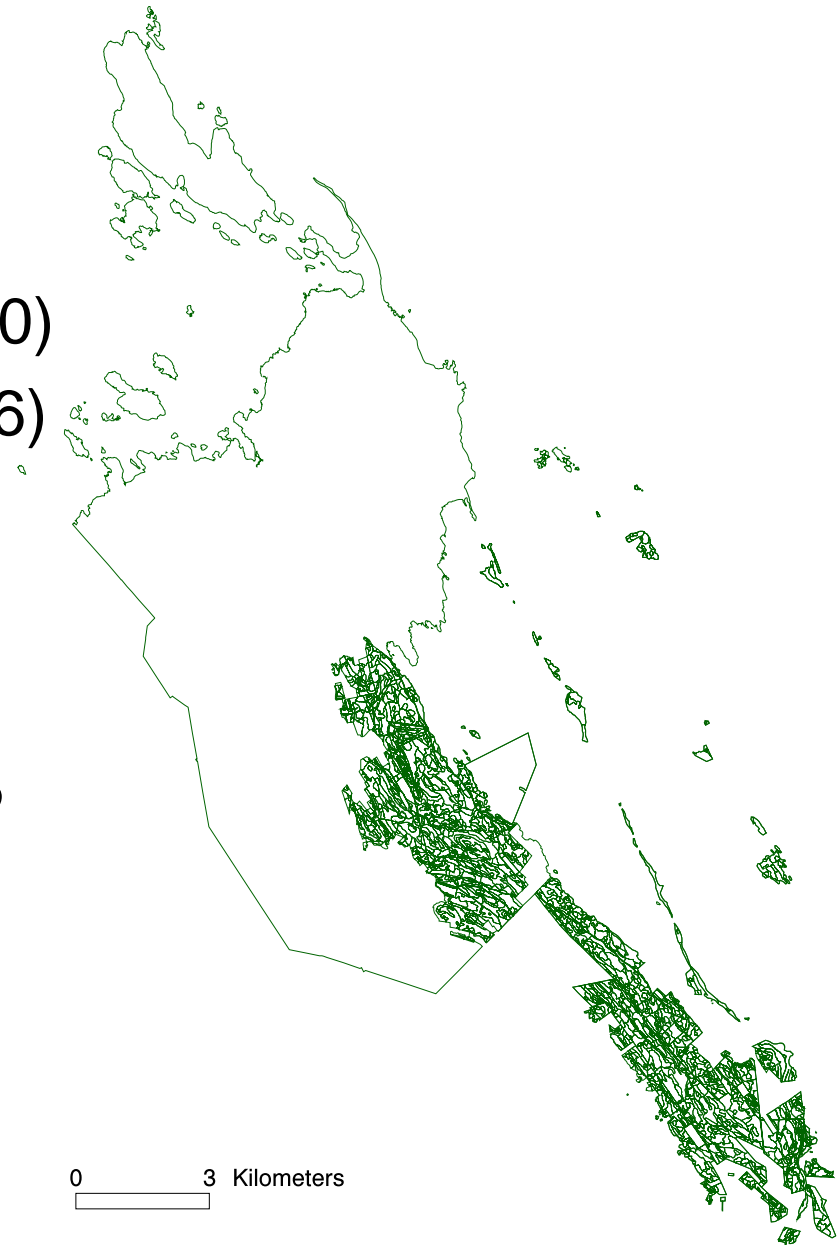
# Material

- Study area: 8000 ha
  - Koli National Park (30 %)
  - Private forest estates
- Input data (year 2000):
  - NFI9 sample plot data
  - Landsat ETM+
  - Map data

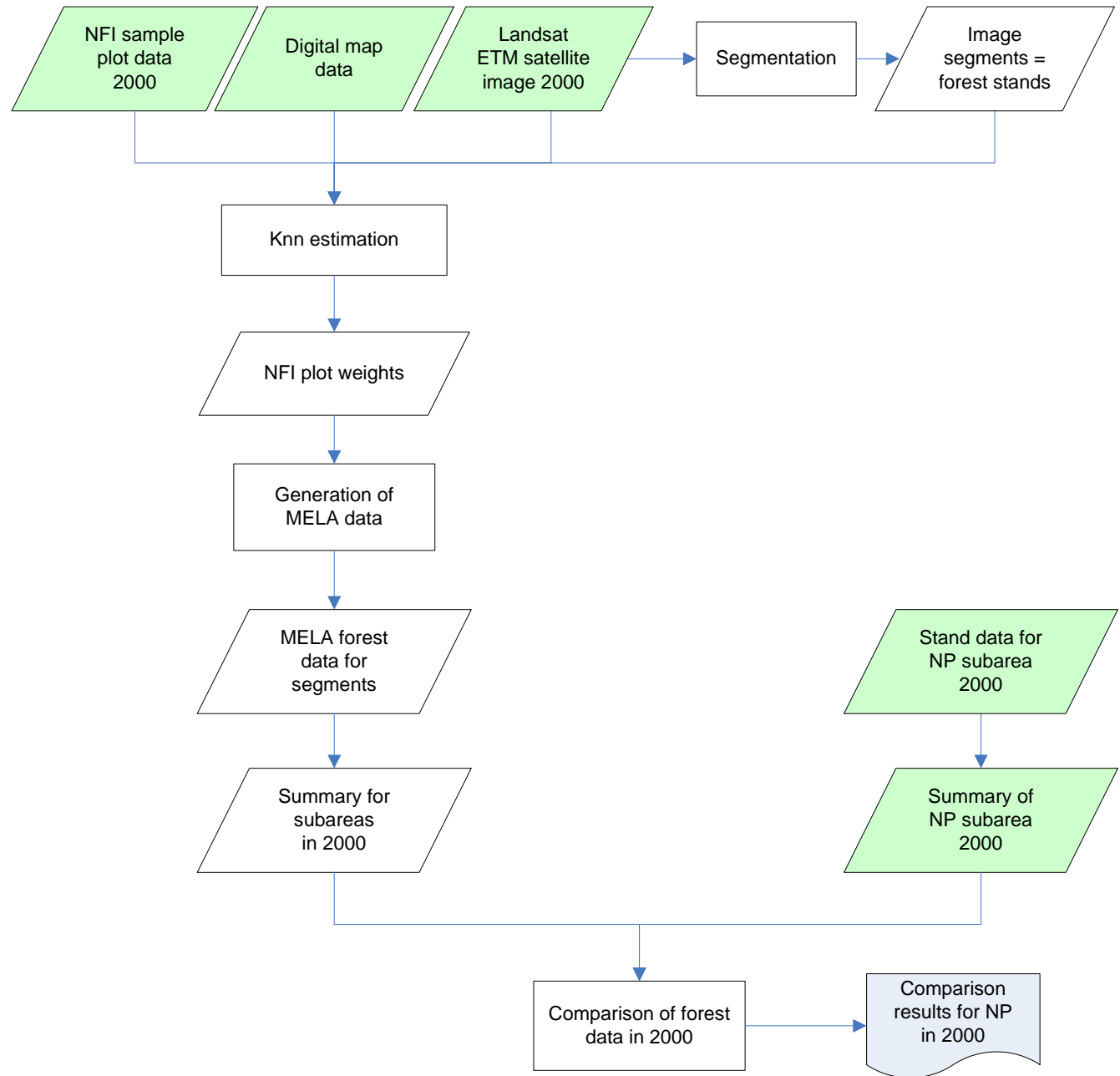


# Material

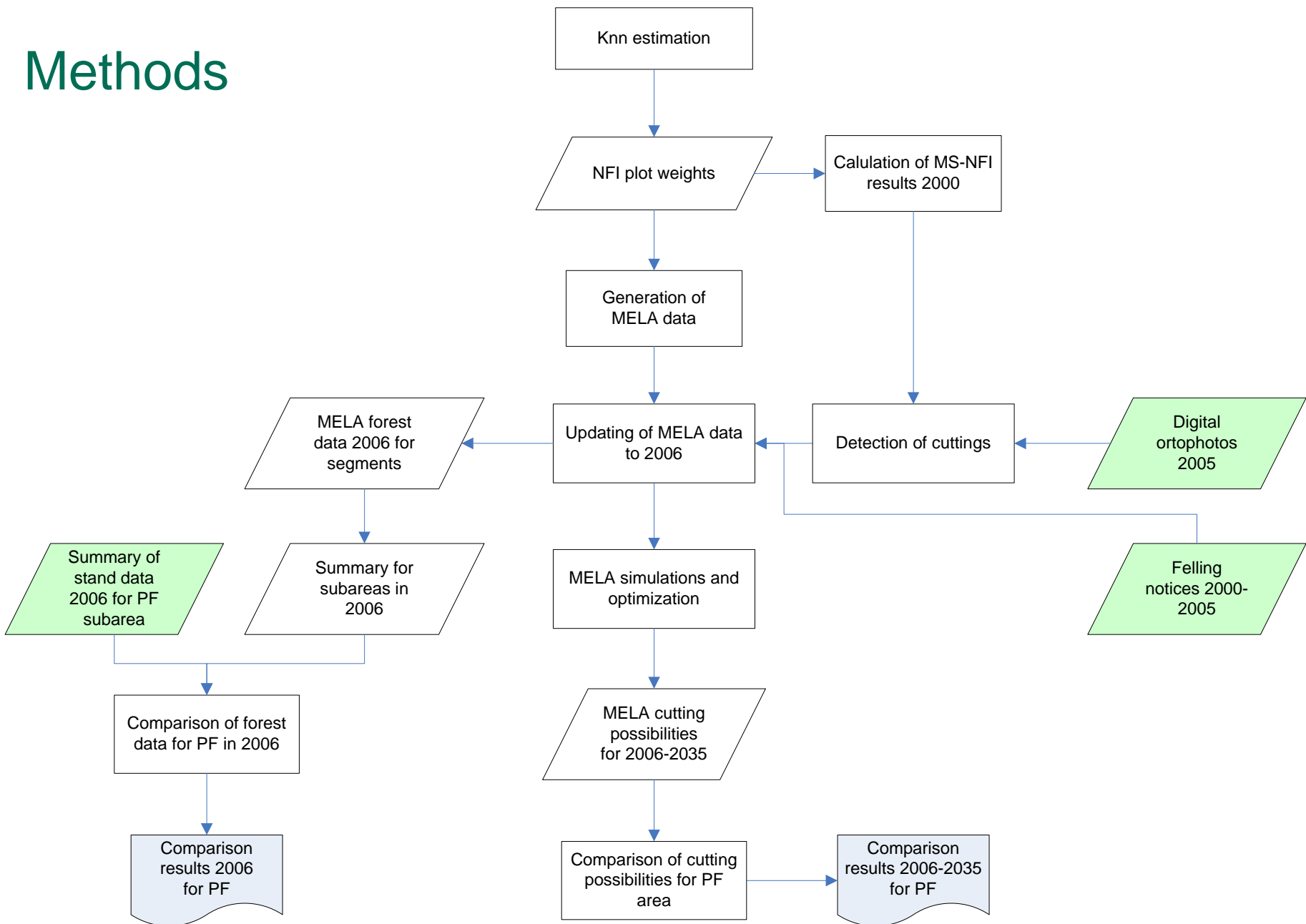
- Comparison data
  - Stand data of the NP (year 2000)
  - Summary data of PF (year 2006)
- Additional data for updating
  - Aerial photographs (year 2005)
  - Statistics on felling 2000 - 2005



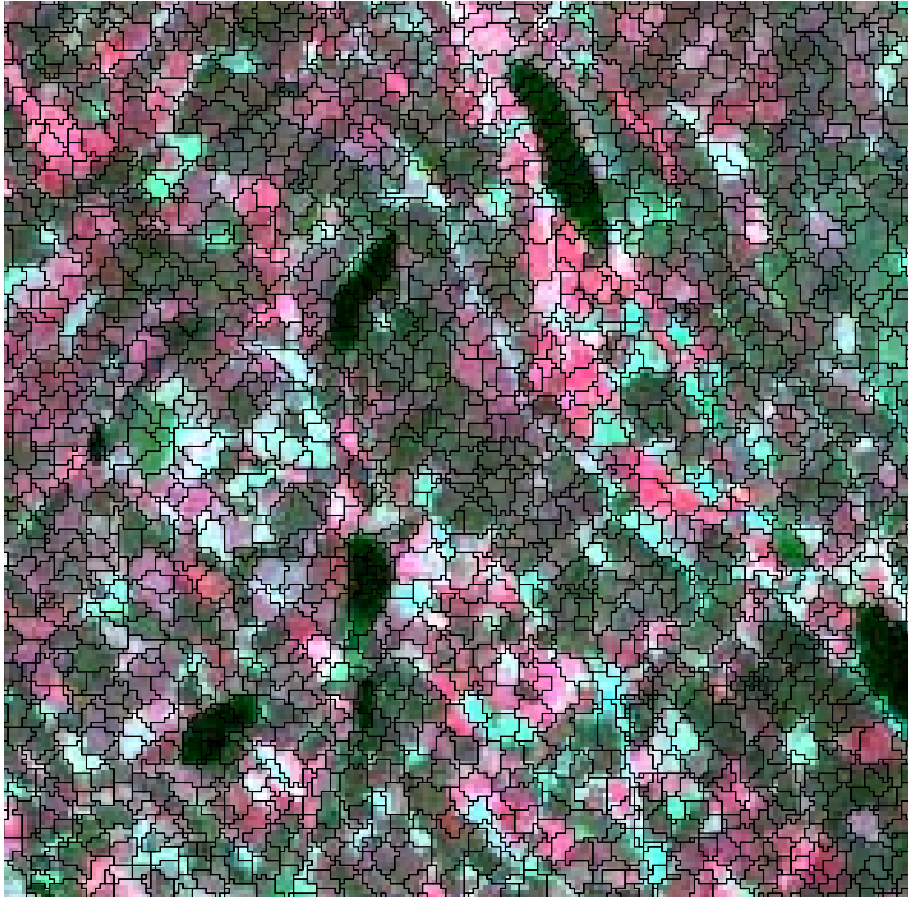
# Methods



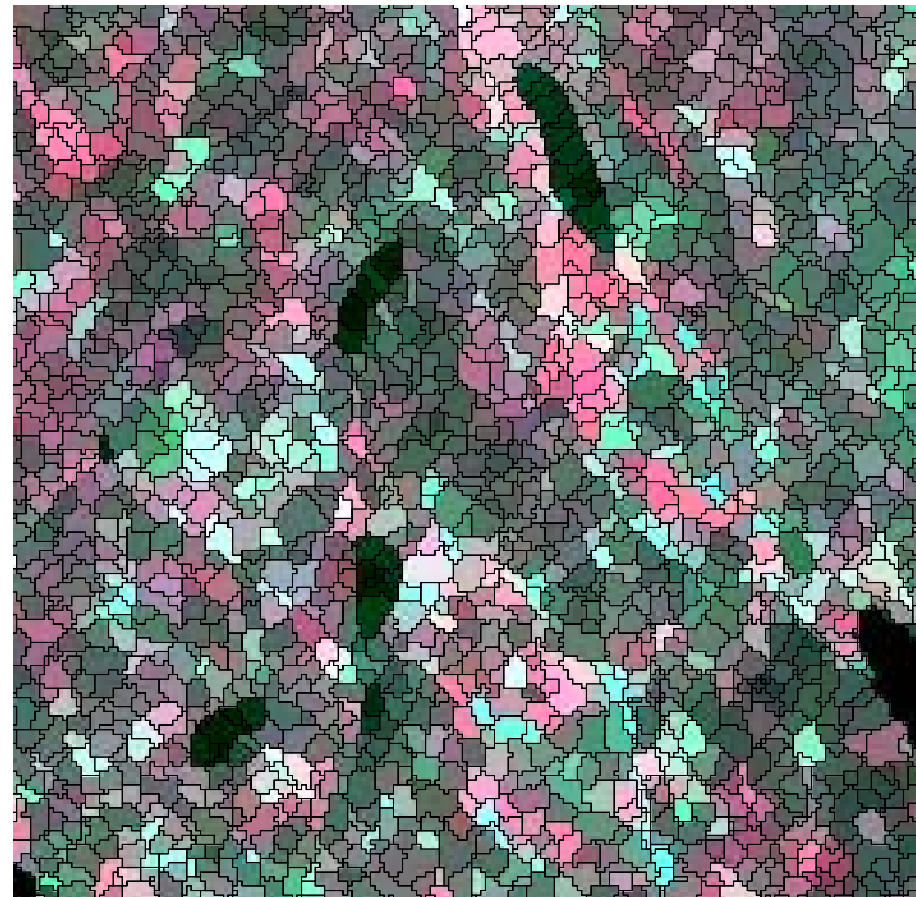
# Methods



# Estimation units and features



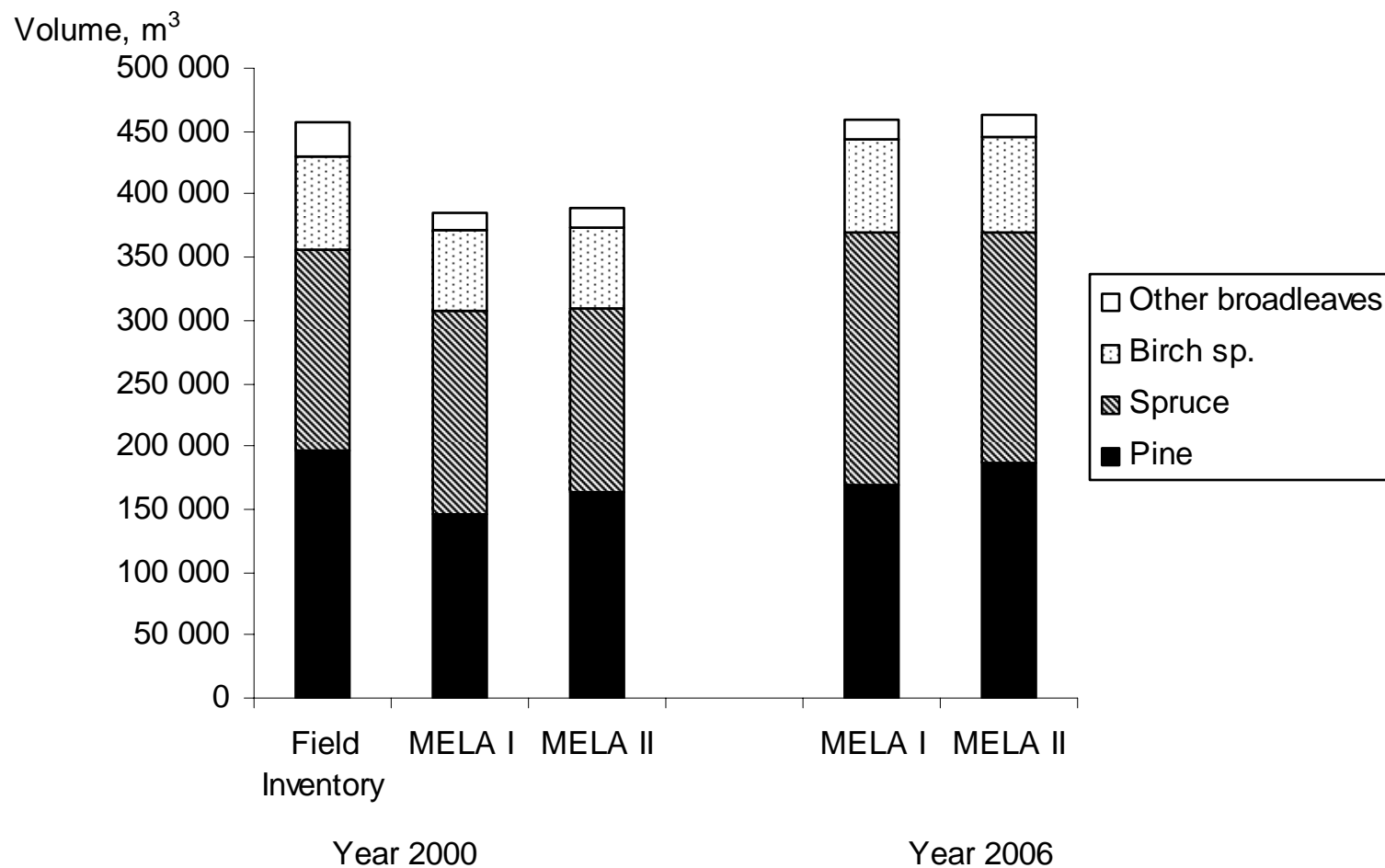
1) Pixel values



2) Segment averages

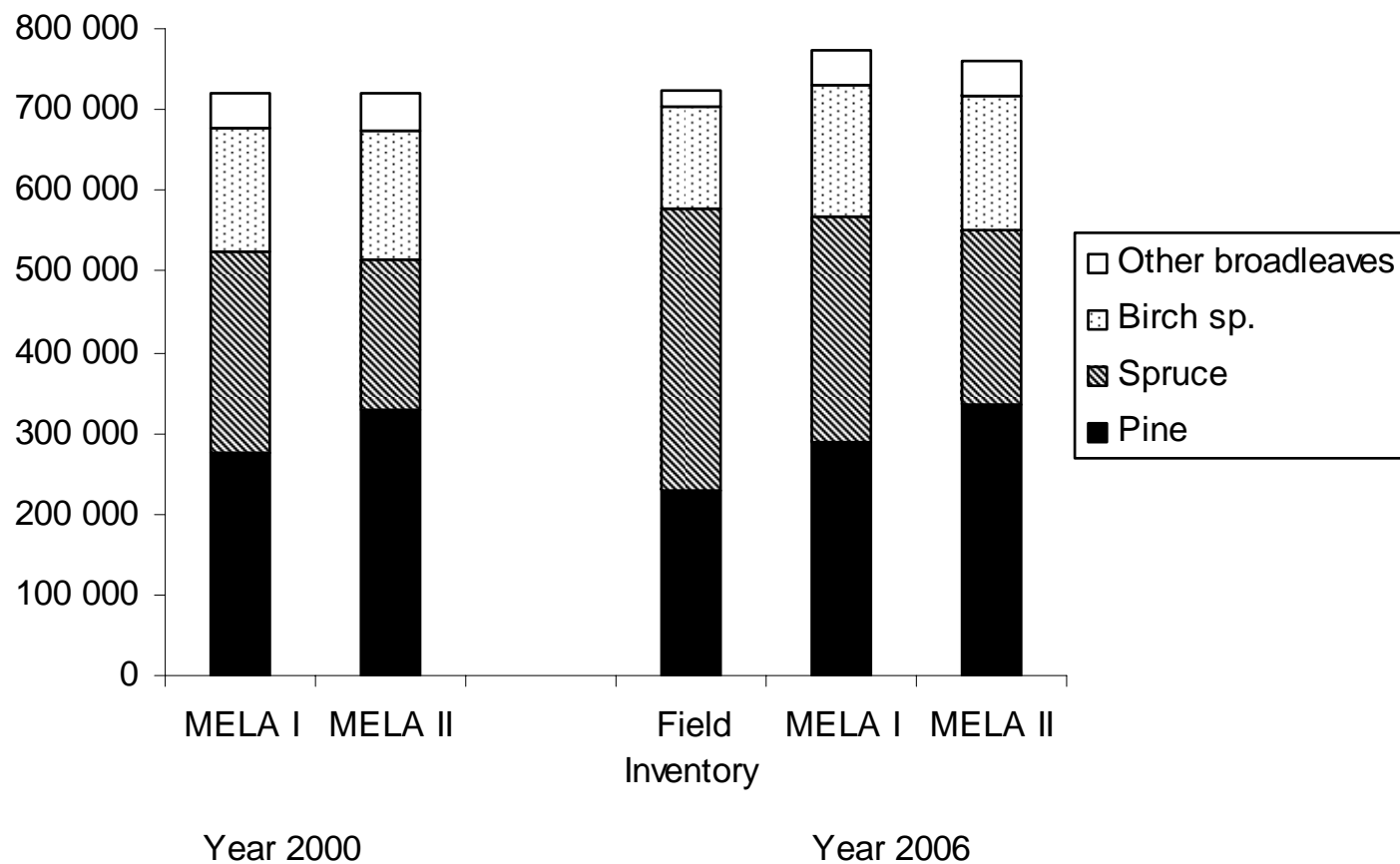


# Results: Forest resources in the national park



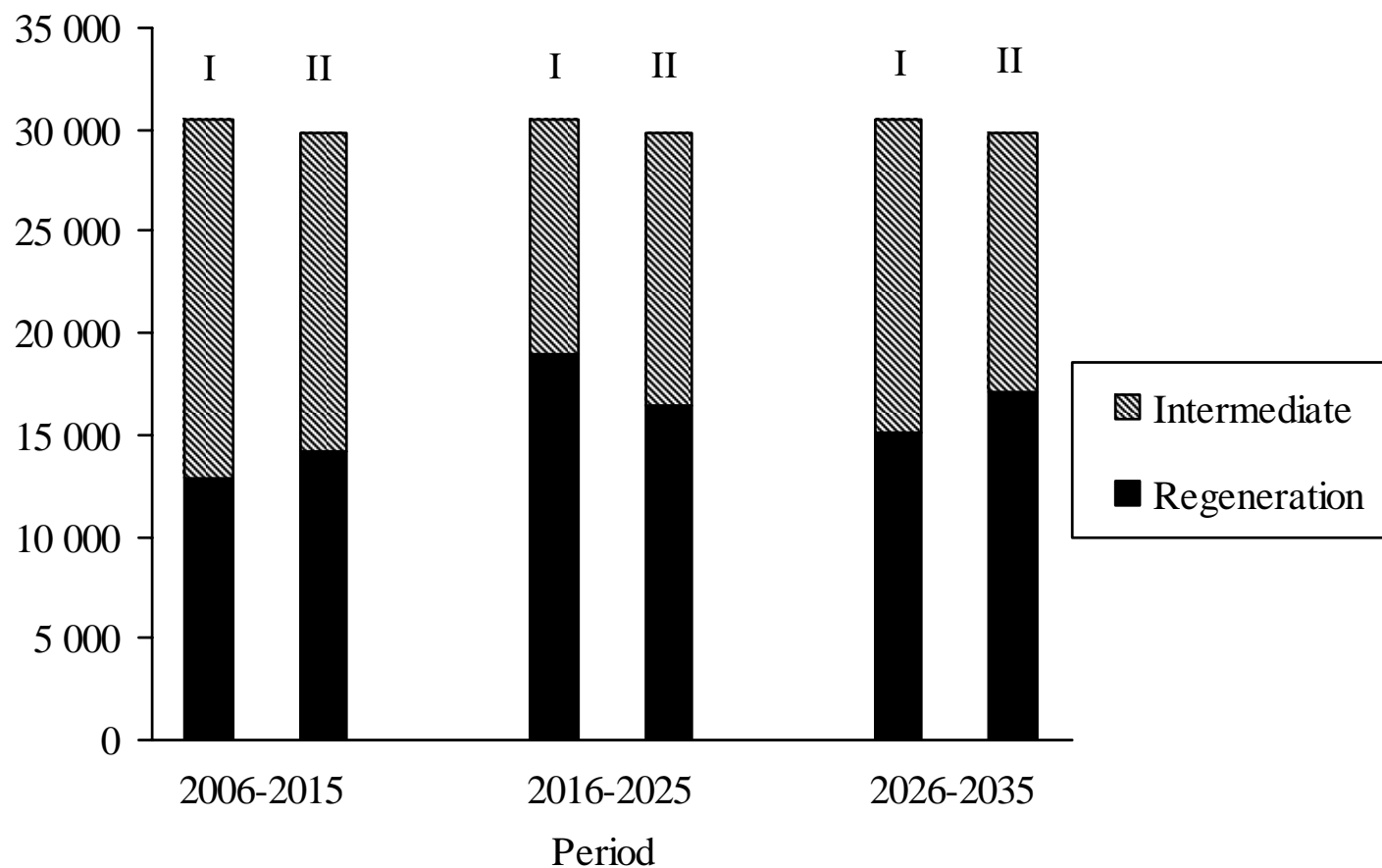
# Results: Forest resources in managed forests

Volume, m<sup>3</sup>



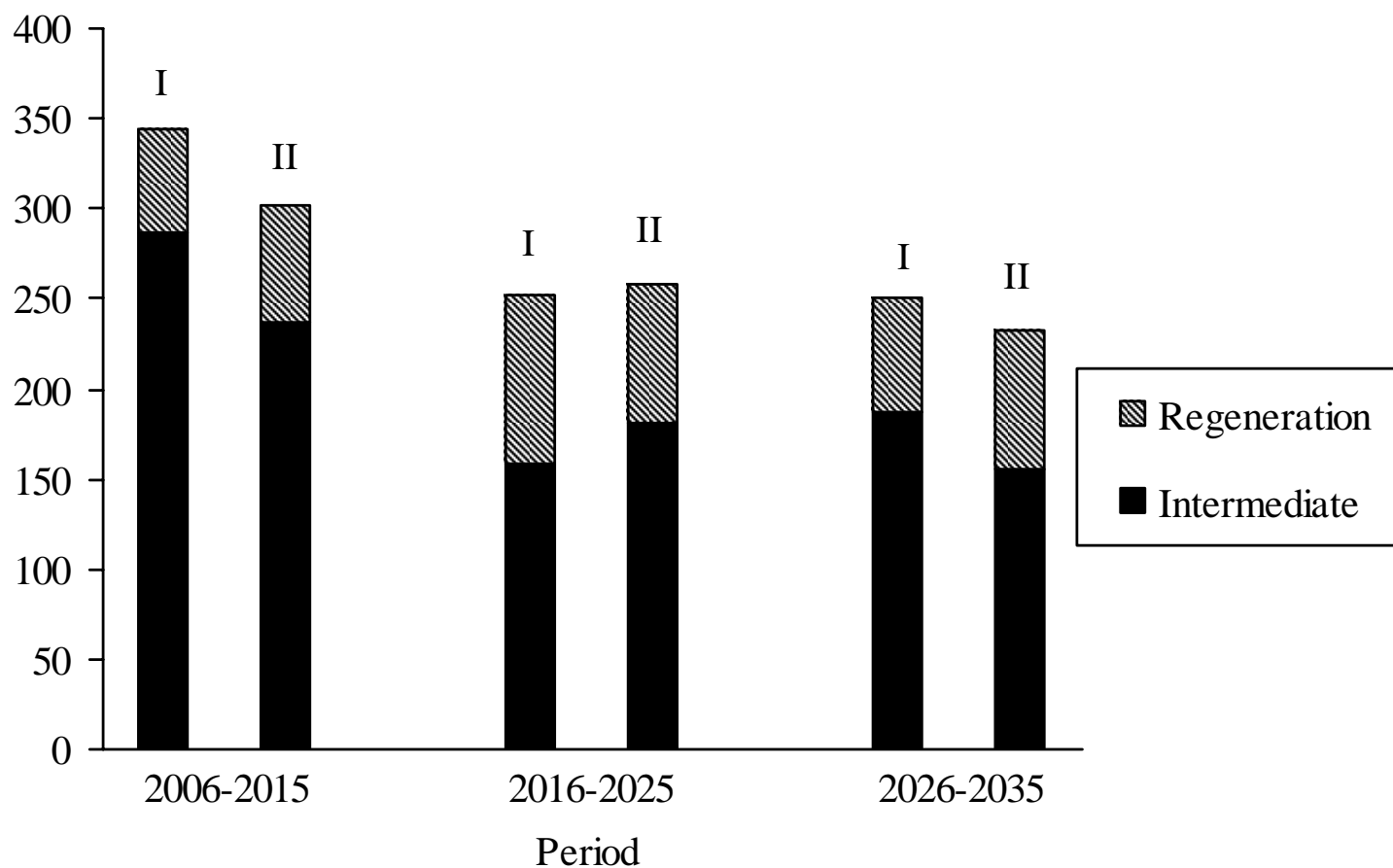
# Results: Cutting possibilities

Maximum sustainable removal, m<sup>3</sup>/a

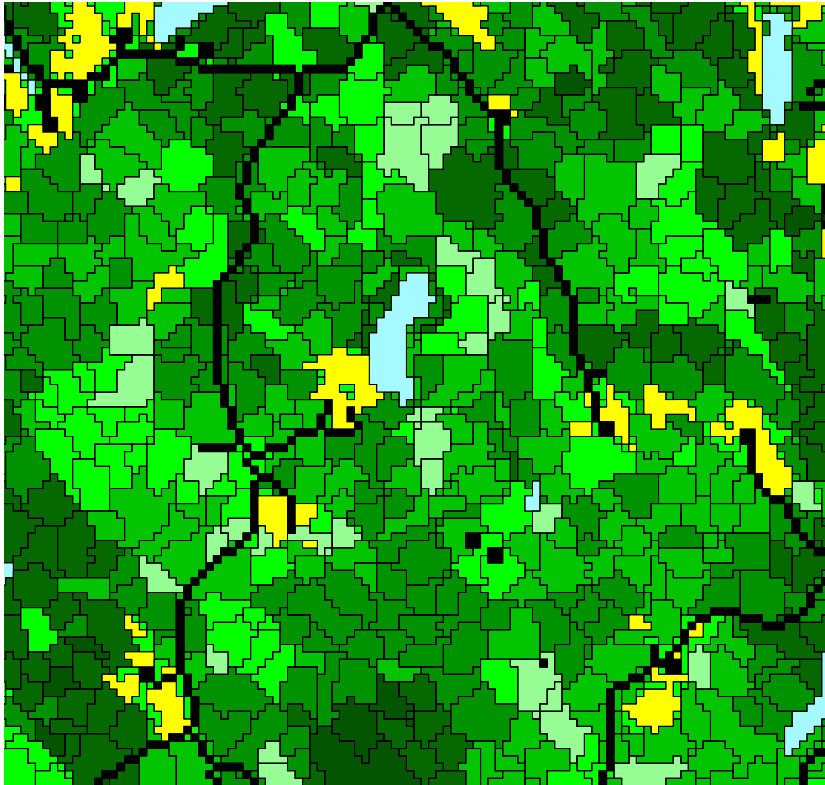


# Results: Cutting possibilities

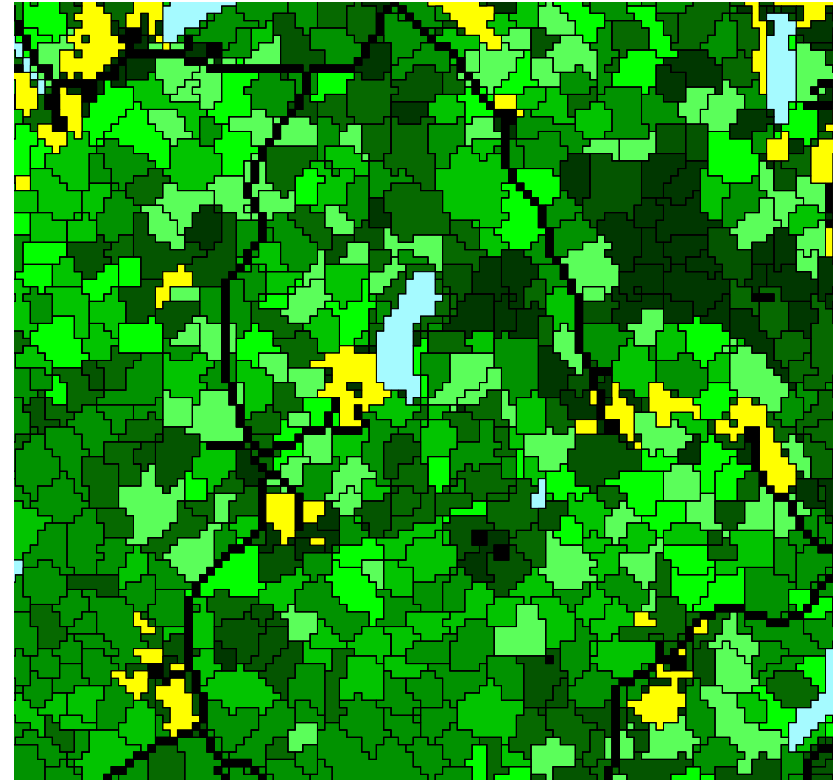
Cutting area, ha/a



# Results: Volume of the growing stock (m<sup>3</sup>/ha)



in 2000



in 2056

# Publications

- Nuutinen, T., Kärkkäinen, L. & Kettunen, L. (toim.). 2006. Forest planning in private forests in Finland, Iceland, Norway, Scotland and Sweden. Proceedings of ELAV seminar, 23-24 March 2006, Koli, Finland. Metlan työraportteja 38. 88 p.  
<http://www.metla.fi/julkaisut/workingpapers/2006/mwp038.htm>.
- Nuutinen, T., Kärkkäinen, L., Niinistö, S., Hassinen, K. ja Lukkarinen, E. 2007. Kolin ja Hattusaaren paikallinen metsäohjelman. 49 s.  
<http://www.metla.fi/julkaisut/muut/koli-hattusaari.pdf>.
- Kärkkäinen, L., Nuutinen, T., Hirvelä, H. and Mäkelä, H. 2008. Analysing impacts of land-use and land-form constraints on cutting potential at landscape level using remote sensing data, GIS and forestry model. Manuscript.
- Mäkelä, H., Hirvelä, H., Nuutinen, T. and Kärkkäinen, L. 2008. Generating forest data for analysis of production and utilization possibilities at village-level by means of multi-source national forest inventory. Manuscript.
- Nuutinen, T. et al. 2008. Local Forestry Programme for multiple-use planning – Case Koli-Hattusaari in Finland. Manuscript.