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Integration of Ecosystem Services into Close-to-Nature Forestry - EU Policy or Working Practice?

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Integrated Forest Management for Environmental, Social and Economic Balance

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Concepts by EU

Voit lisätä alaotsikon

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- **Ecosystem**, as defined by the Convention on Biological Diversity, is 'a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit'.
- **Ecosystem services** are the range of benefits provided to humans by healthy ecosystems. Services include provisioning (such as food and wood), regulating (for example climate, flood and water regulation) and cultural services (for example, spiritual, recreation, educational).

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Provisioning, Regulating and Cultural services

- Crops, soil fertility
- Livestock
- Timber
- Fiber
- Wild foods (e.g. mushrooms, berries, etc.)
- Fisheries
- Genetic resources, medicines
- Fresh water
- Clean air

- Pollination
- Temperature regulation
- Carbon sequestration and storage
- Pest regulation
- Erosion regulation
- Flood regulation
- Water purification
- Air purification

- Recreation (e.g. swimming, hiking, skiing etc.)
- Aesthetic (e.g. sceneries)
- Cultural identity

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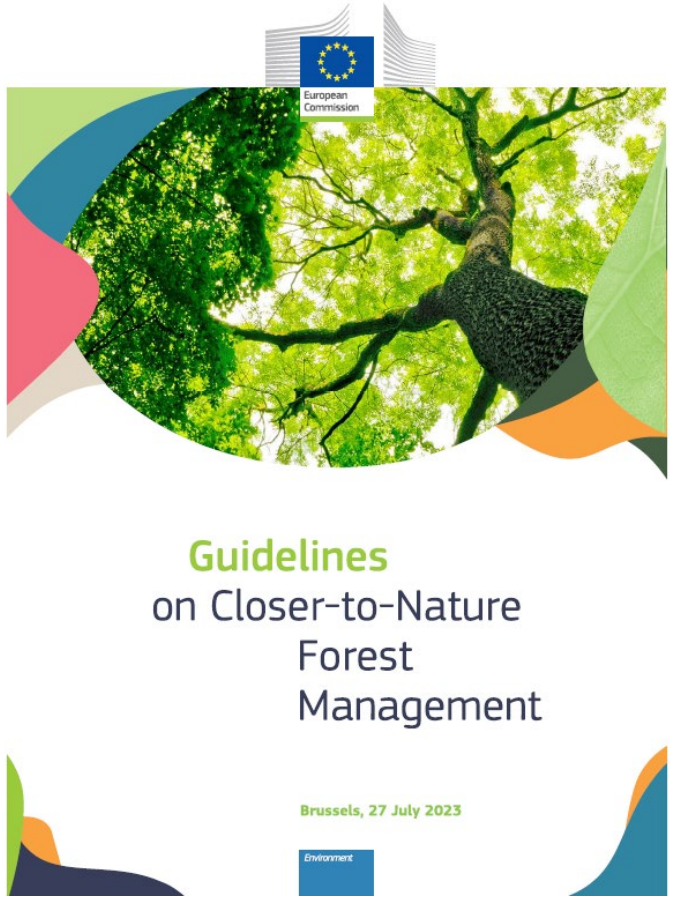
Close-to-Nature Forestry

- “Serves as an accelerator for biodiversity restoration, biodiversity conservation and forest resilience to climate change based on two main objectives: (i) increasing structural complexity; and (ii) promoting natural forest dynamics.”



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Close-to-nature forestry

Other perspectives

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Second Nature

- ”We saw the corn and plant the trees. We fertilise the soil by irrigation. We dam the rivers, to guide them where we sill. One may say that we seek with our human hands to create a second nature in the natural world. Cicero (The nature of Gods)
- Changes are possible only within the dynamics of the first nature.
- Policymaking: a problem has to be defined, the cause recognized, and guilt attributed.
- Distinction naturalness and unnaturalness defines the context where the whole issue is addressed

Photo: Anni Pylvänäinen

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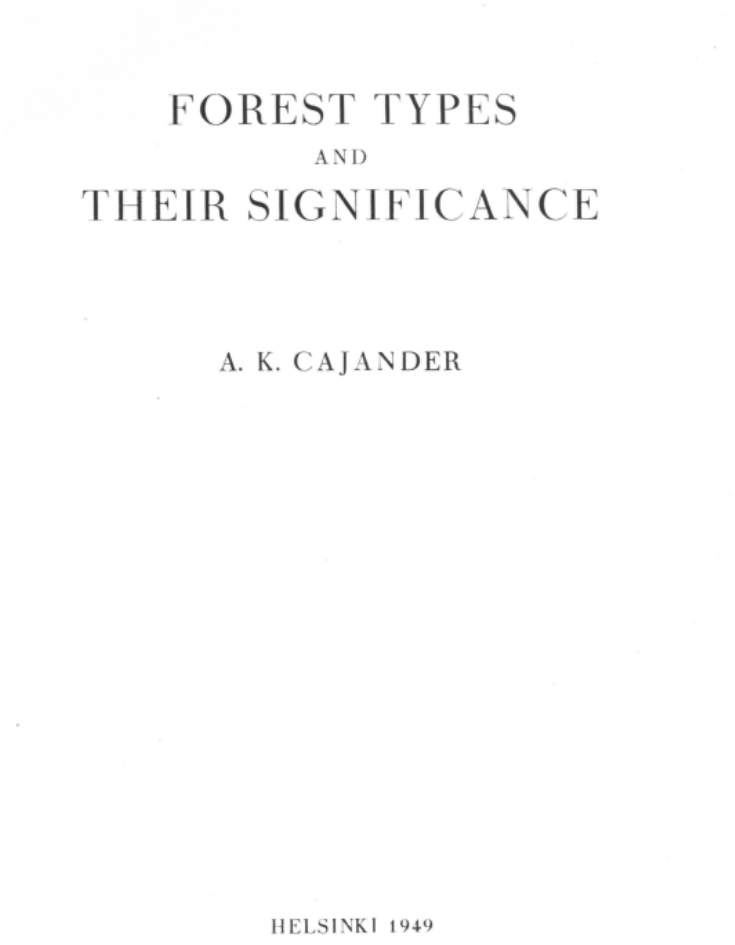
A.K.Cajander: forest types and their significance

Ueber Waldtypen, 1909, Acta Forestalia Fennica 1.

- Site classification carried out for silvicultural purposes must strive after the establishment of natural quality classes as far as possible, and at the same time after such quality classes as can be distinguished actually in the forest. The classification must be one which combines sites biologically near together but keeps apart those which differ biologically. One of the main requirements of the silviculture will be that the ***silviculture applied on a certain site should achive the best economic results on that site, due to consideration being paid to the natural possibilities on the site.***



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Imitating natural processes and succession such as forest fire

Photos, Juha Tuononen, FFC

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Imitating natural processes and succession such as forest fire

Photos, Juha Tuononen, FFC

Not so much ”Close to nature”

- Photos Jani Salomaa, Juha Tuononen, Johanna Kleemola, FFC

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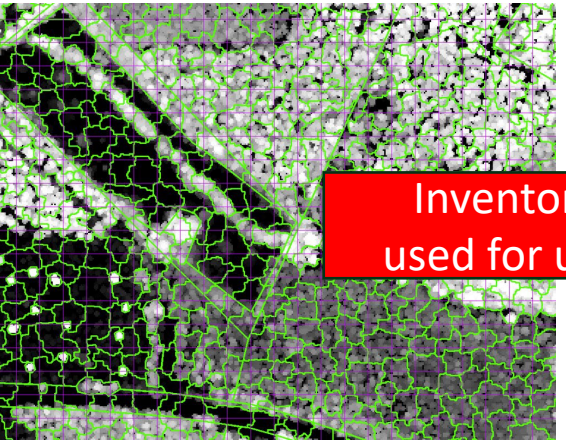
Digital perspective

Technology and data for optimizing: Producing and updating forest data on stand level

Data produced in the inventory

1) Sample plots
2) Grid cell and crown units
   - Growing stock aggregation
3) Micro stands
   - Automated stand delineation
4) CHM, aerial images



Grid cell vs. crown units

Forest stands

The most important dataset! Data covers the whole country in privately owned forests. Information in total and by tree species.

1) Soil and forest site
2) Growing stock, mean height, mean diameter, basal area or number of stems, volume, age
3) Forest management proposals (e.g. tending of seedling stand, harvests)
4) Environmental values (e.g. habitats of special importance)

In mature, advanced and young thinning stands, the standard error (RMSE) of the total volume (m^3), basal area (m^2) and diameter (cm) is about 10 %, and height (m) 5 %.

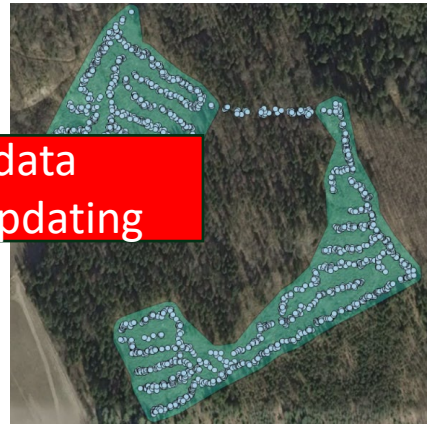
Inventory data used for updating

Forest stands (compartments), average size 0.5-5 ha

Other data used for updating

Data sources used for automated updating

1) Official notifications (e.g. forest use declaration and subsidy application)
2) Forestry operators' information on forest management (interfaces)
3) Forest owners' information (Metsään.fi service)
4) Cadastral changes, nature protection areas etc. (co-operation with other authorities)
5) Aerial and satellite images
6) Forest growth modelling in each year



Harvester's GPS-points and logging area.

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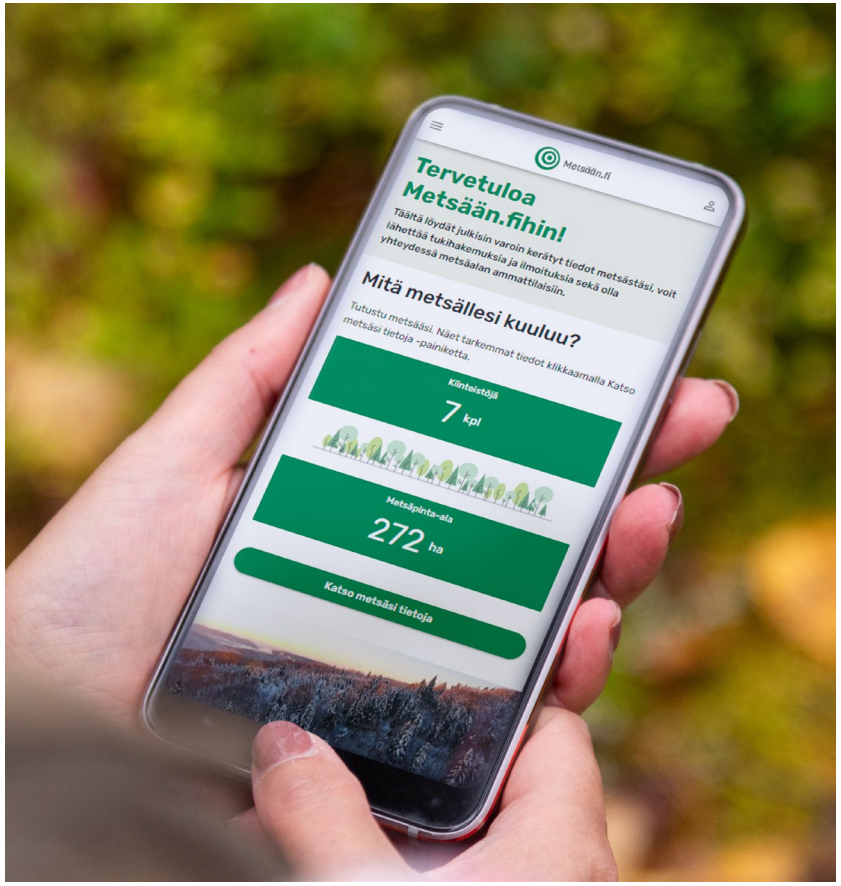
Metsään.fi service



- A service for forest owners and companies.
  - Over 60 000 forest owners use Metsään.fi each year.
  - Over 1 000 registered company users.
- Includes information on natural values, silvicultural work, fellings, as well as maps and aerial photographs.
  - 12.7 million hectares of forest and nature data is available in the service.
- The service is easy to use.
  - Forest information can be found in one place by both forest owners and companies.
- The Metsään.fi service is provided by the Finnish Forest Centre, funded by the Ministry of Agriculture and Forestry.
- Find more information online.

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In Metsään.fi forest owners can...

- Get an overview of their forests.
- See recommendations on silviculture and fellings.
- Get information on natural values and habitats of special importance.
- Find maps, aerial photographs and numerical data on their forests.
- Find service providers for e.g. silvicultural work.
- Report on silvicultural work and forestry work sites.
- Share their forest information with companies.
- Apply for grants and submit forest use declarations and other applications.

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In Metsään.fi companies can...

- Find new customers.
- Find and plan new work sites.
- Get access to maps and forest information on properties they are licensed to.
- Submit forest use declarations and grant applications on behalf of customers.

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Ecosystem services?

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Second Nature

- ”We saw the corn and plant the trees. We fertilise the soil by irrigation. We dam the rivers, to guide them where we sill. One may say that we seek with our human hands to create a second nature in the natural world. Cicero (The nature of Gods)
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Photo: Anni Pylvänäinen

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Policies & Bureaucracy

- Criteria
- Indicators
- Monitoring
- Reporting
- Certification

Technology

- Remote sensing
- Models
- AI & ML
- GIS
- Digital interfaces

Locally adapted solusion with people

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References & more information

- European Commission: Directorate-General for Environment, *Guidelines on closer-to-nature forest management*, Publications Office of the European Union, 2023, **https://data.europa.eu/doi/10.2779/731018**
- Yrjo Haila, Chuck Dyke. 2006 How Nature Speaks. The Dynamics of the Human Ecological Condition. DOI: https://doi.org/10.1215/9780822387718
- Ueber Waldtypen, 1909, Acta Forestalia Fennica 1.
- Cajander, A.K. 1949. Forest types and their significance. Suomen metsätieteellinen seura. http://hdl.handle.net/10138/17982

- Open forest and nature information | Finnish Forest Centre
- Services | Finnish Forest Centre

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Kiitos mielenkiinnosta!