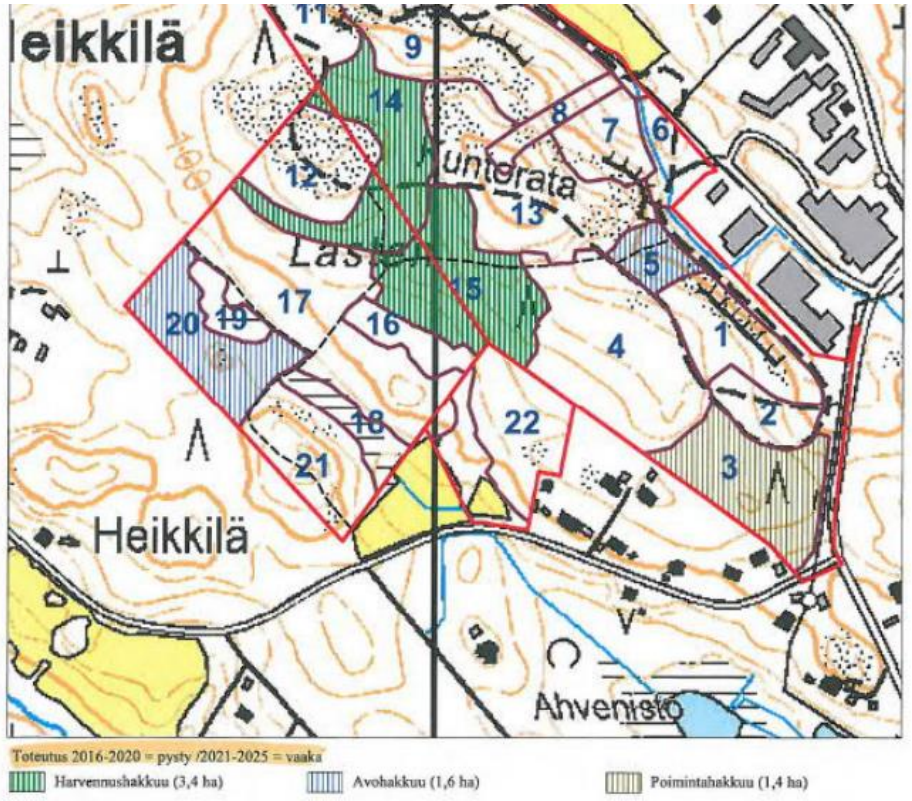
Playing with forest plans:

thoughts on integrating playful data into operational plans

Kyle Eyvindson

10 April 2025

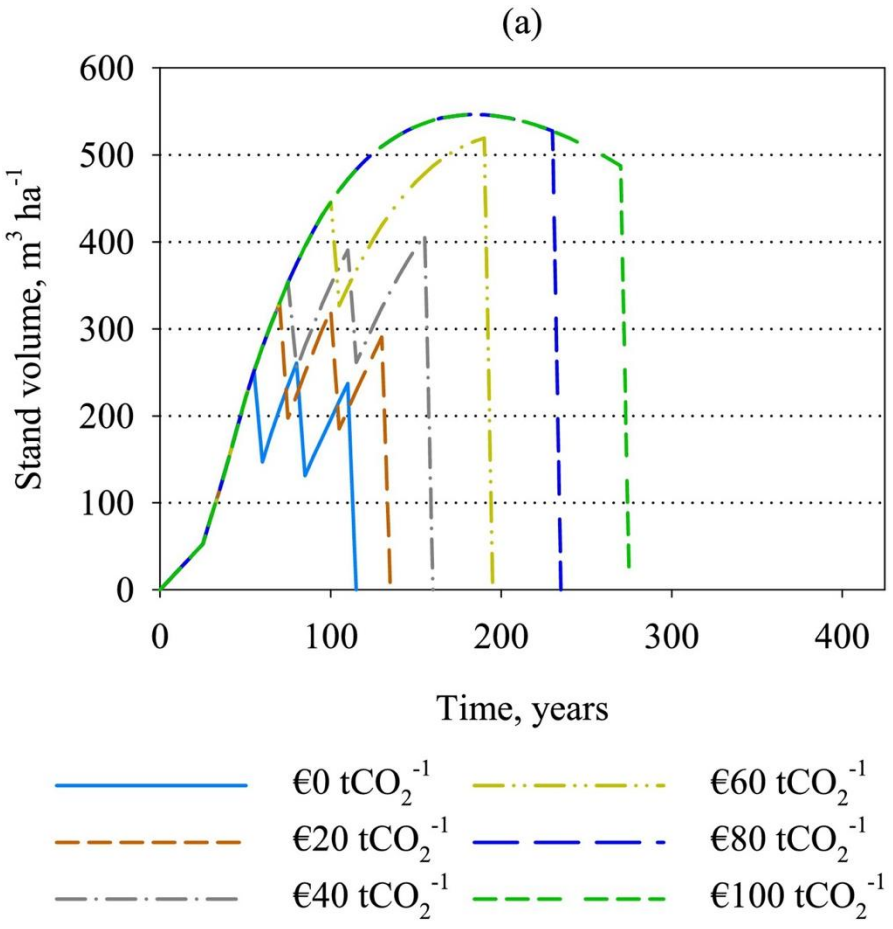
What are forest plans.



- Scheduled management actions in the forest over time
- Reflect objectives and priorities of owner.
  - Can be intensive and difficult to extract preference information
- Describes what the forest will be, and resources extracted - according to models & simulations

Forest Planning

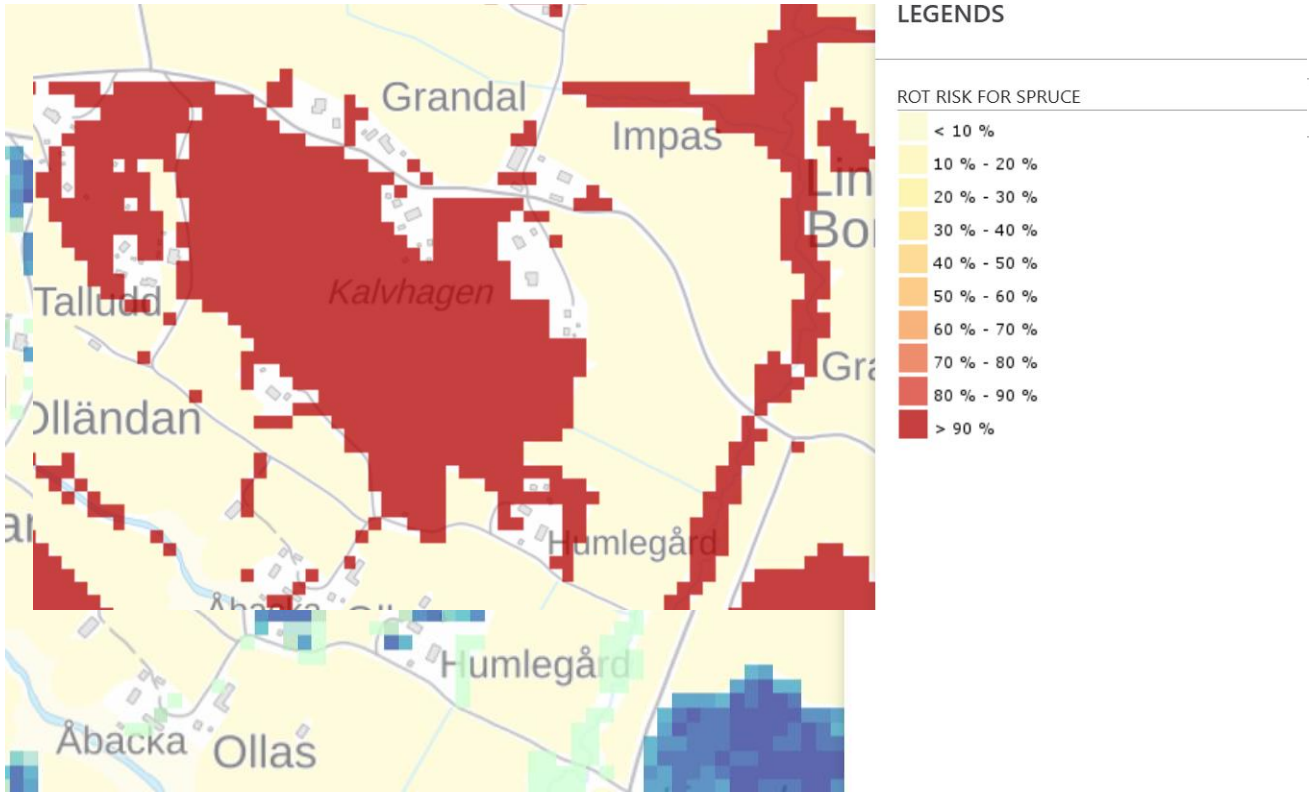
- Stand level:
  - When to manage – according to what conditions
- Landscape level:
  - May be willing to accept less money for improvement in other aspects.



Parkatti, V. P., Suominen, A., Tahvonen, O., & Malo, P. (2024). Assessing economic benefits and costs of carbon sinks in boreal rotation forestry. *Forest Policy and Economics*, *166*, 103249.

Potential for games in Forest Planning

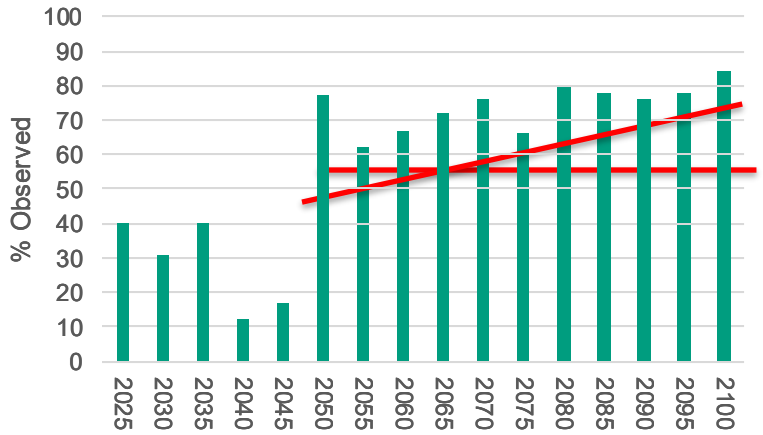
- Information presentation:
  - Gamification of data presentation
  - ’What do you know of your forest’
    - Do you know where your forest has the larges wind risk?
    - Risk for rot?



Interactive Forest Planning

- Gamifying preference elicitation:
  - Constructing / revealing preferences
    - Target value (at what time)
    - How to reach target?

- Example:



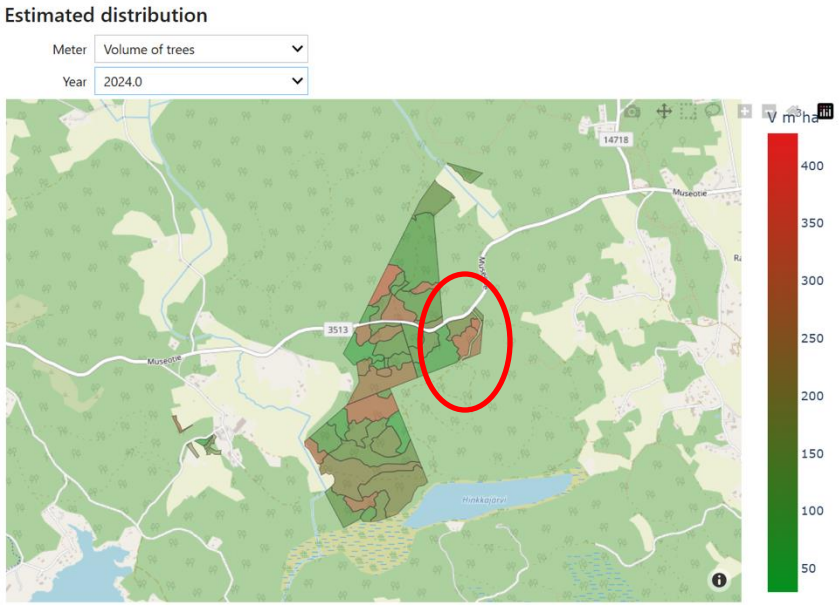
Minimum value steadily increasing

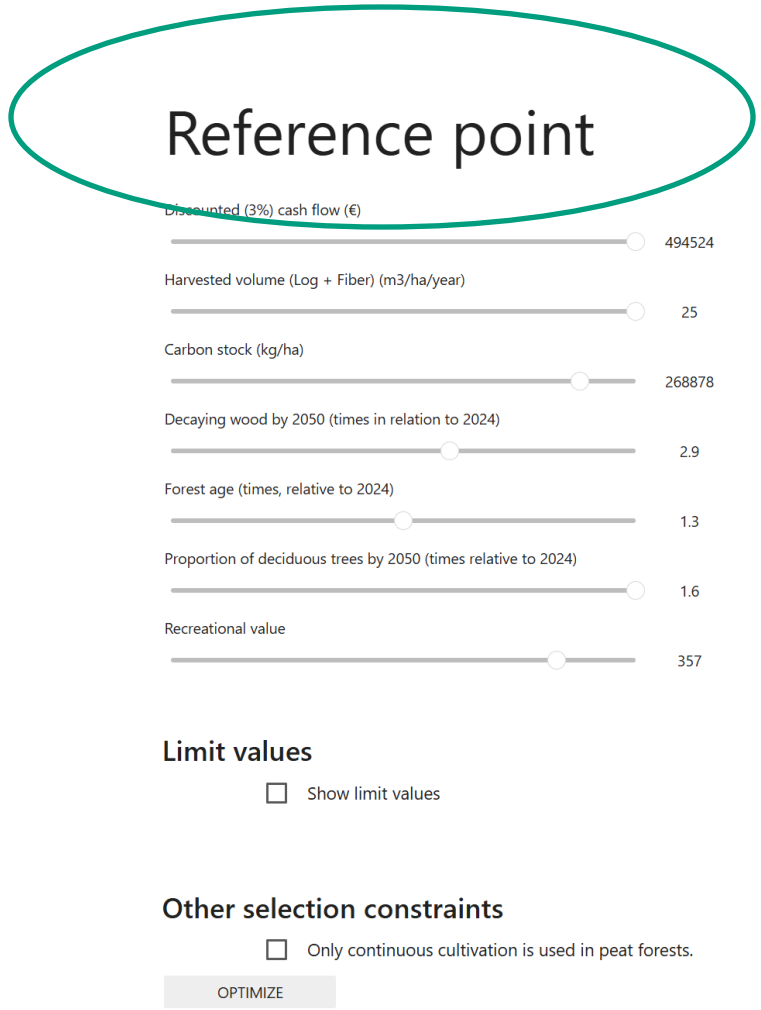
Minimum value after 2050

Can we create a game that enables construction of objectives?
Enables an understanding of what the objective

Interactive Forest Planning:

- Tools exist to construct plans interactively –
  - Can we make it more playful?





Interactive Forest Planning:

- Online tool:
- http://128.214.253.167/voila/render/TUOMO.ipynb

  – Example applied in South eastern Finland – however applications span Nordic & Central European countries.

Landscape preferences:

- Data from Philip's LUP article:

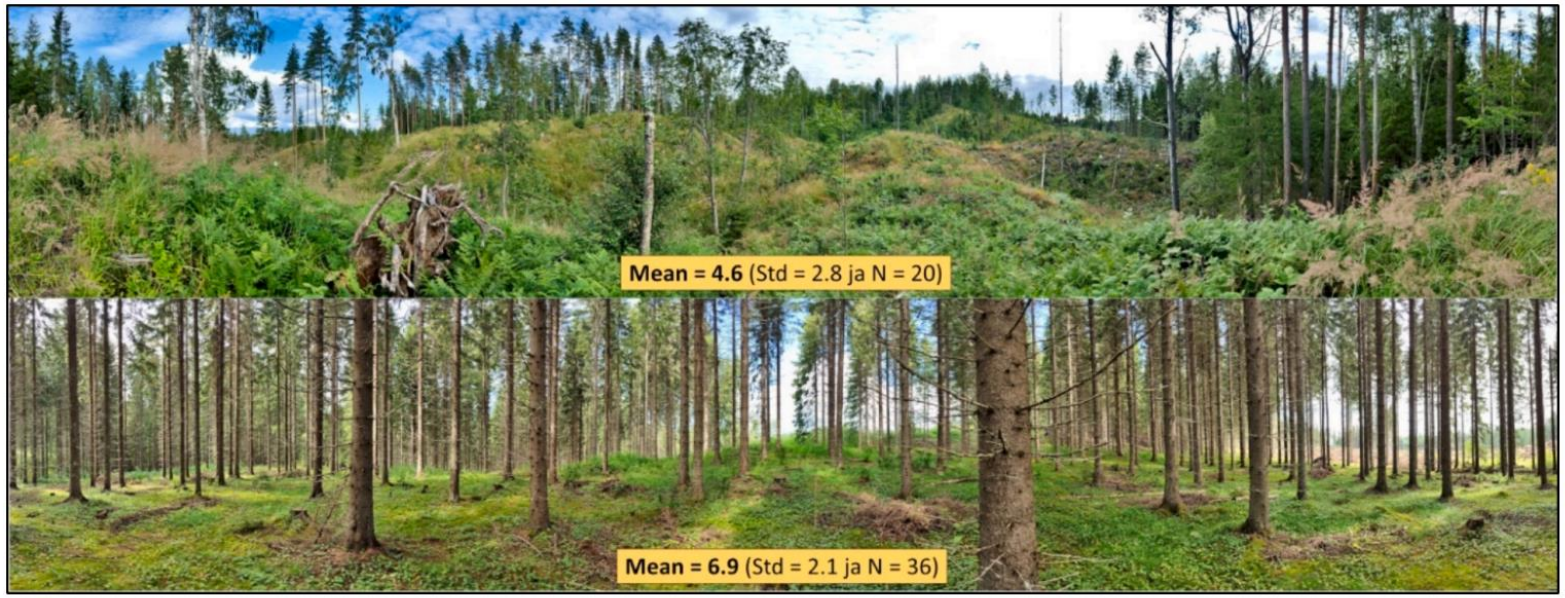
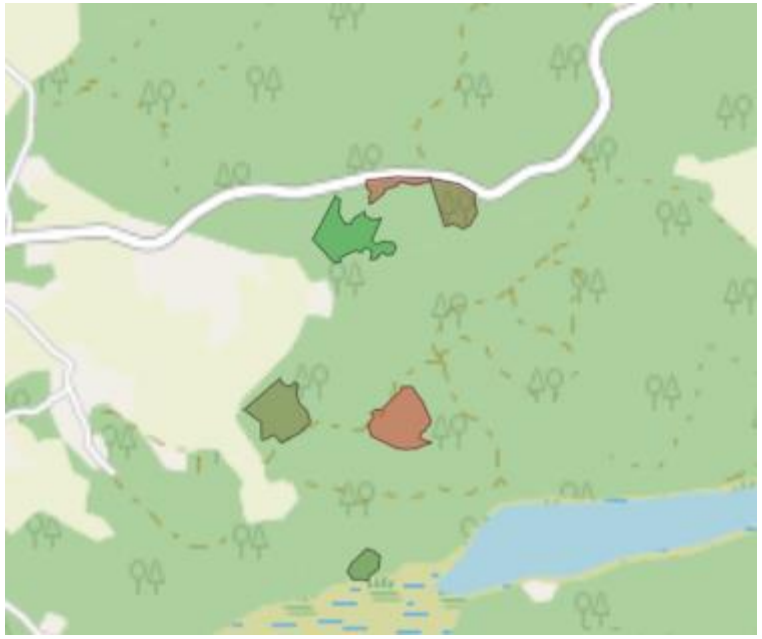


Fig. 11. Example of how answers to landscape preference questions can vary in different settings: "How well does the environment around geocache meet hopes and expectations for nature? Answer on a scale of 0–10 (0 = not at all … 10 = completely)."

- Local preferences of specific locations.
  - Can we use the frequency of opinons

Opportunities to improve data:

- Plans could identify where data could be improved:



- Enable identification of stands that would benefit from improved data
- Perhaps use of hand held lidar tools could gamify data collection

- **Value of Forest Information – depends on objectives of forest owner…**

References:

- Chambers, P., Halla, T., Silvennoinen, H., Hujala, T., & Tikkanen, J. (2024). Using a location-based game to collect preference information for urban and rural forest planning. *Landscape and Urban Planning*, *252*, 105195.
- Eyvindson, K., Burgas, D., Antón-Fernández, C., Hakanen, J., Emmerich, M., Klein, J., ... & Blattert, C. (2024). MultiOptForest: An interactive multi-objective optimization tool for forest planning and scenario analysis. *Open Research Europe*, *3*, 103.
- Kangas, A. S. (2010). Value of forest information. *European Journal of Forest Research*, *129*, 863-874.