How can Zonation support conservation planning of habitat networks

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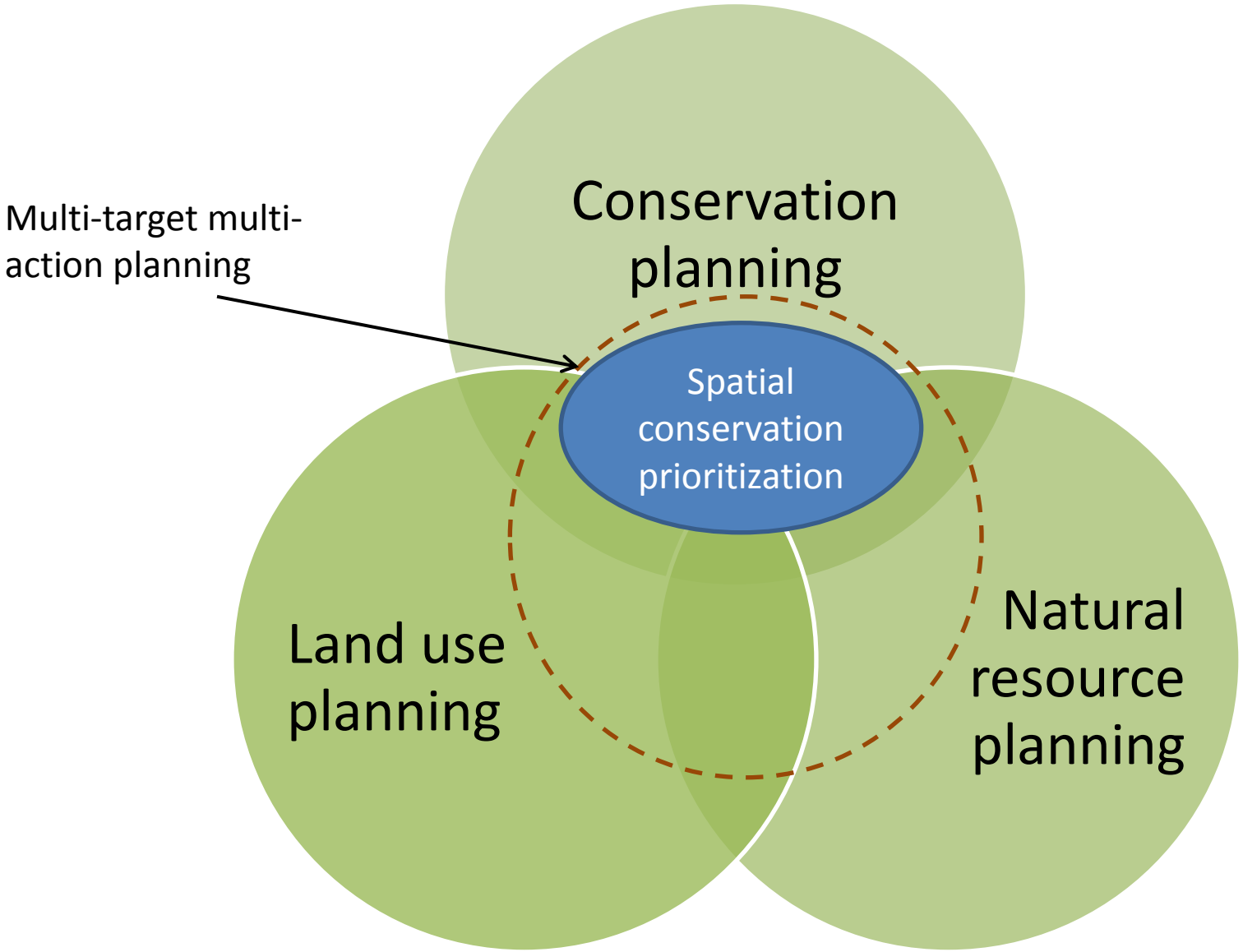
UNIVERSITY OF HELSINKI

SYKE

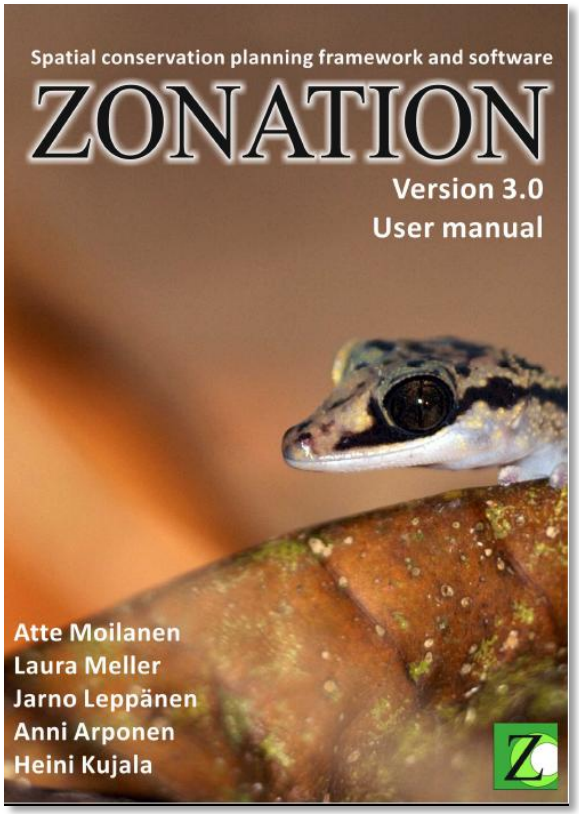
Spatial conservation prioritization

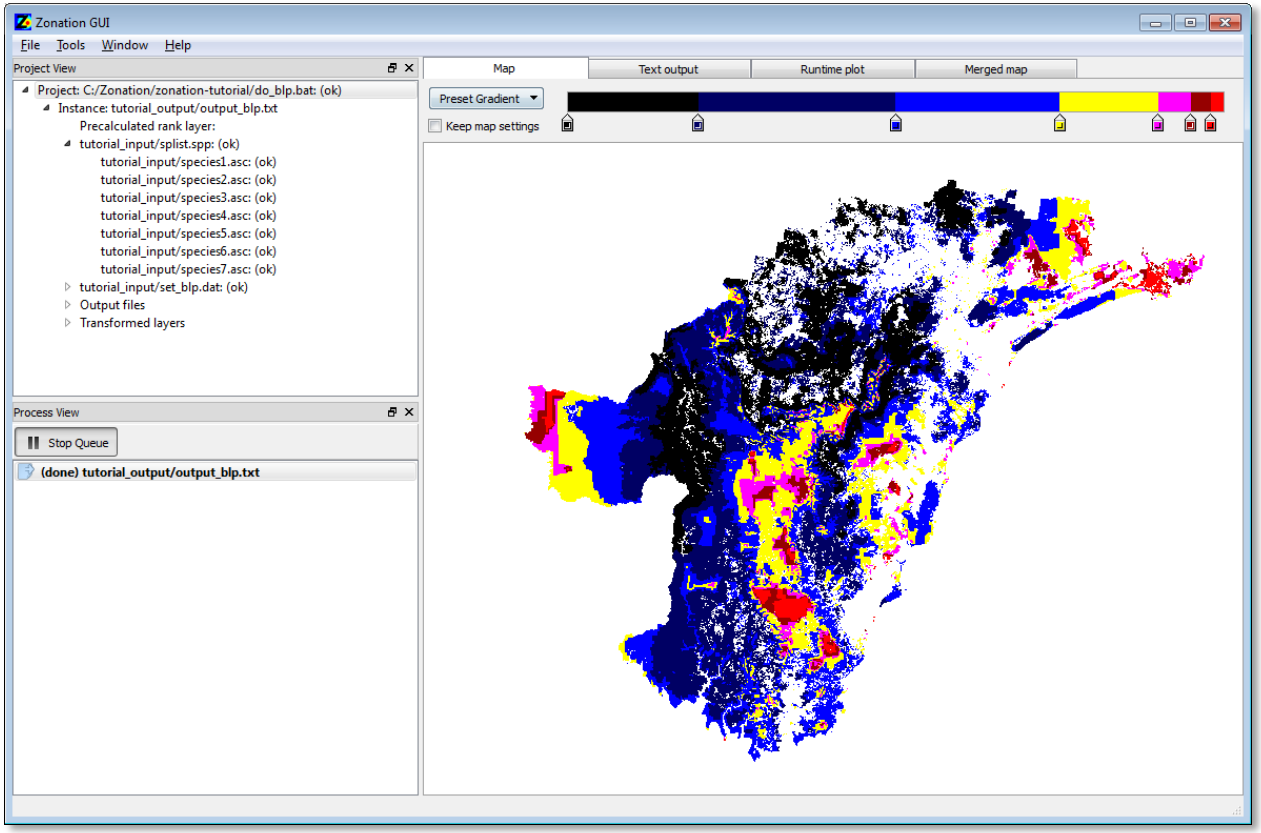
To identify the (spatial) allocation of conservation resources (actions) that will produce most beneficial long-term conservation outcome

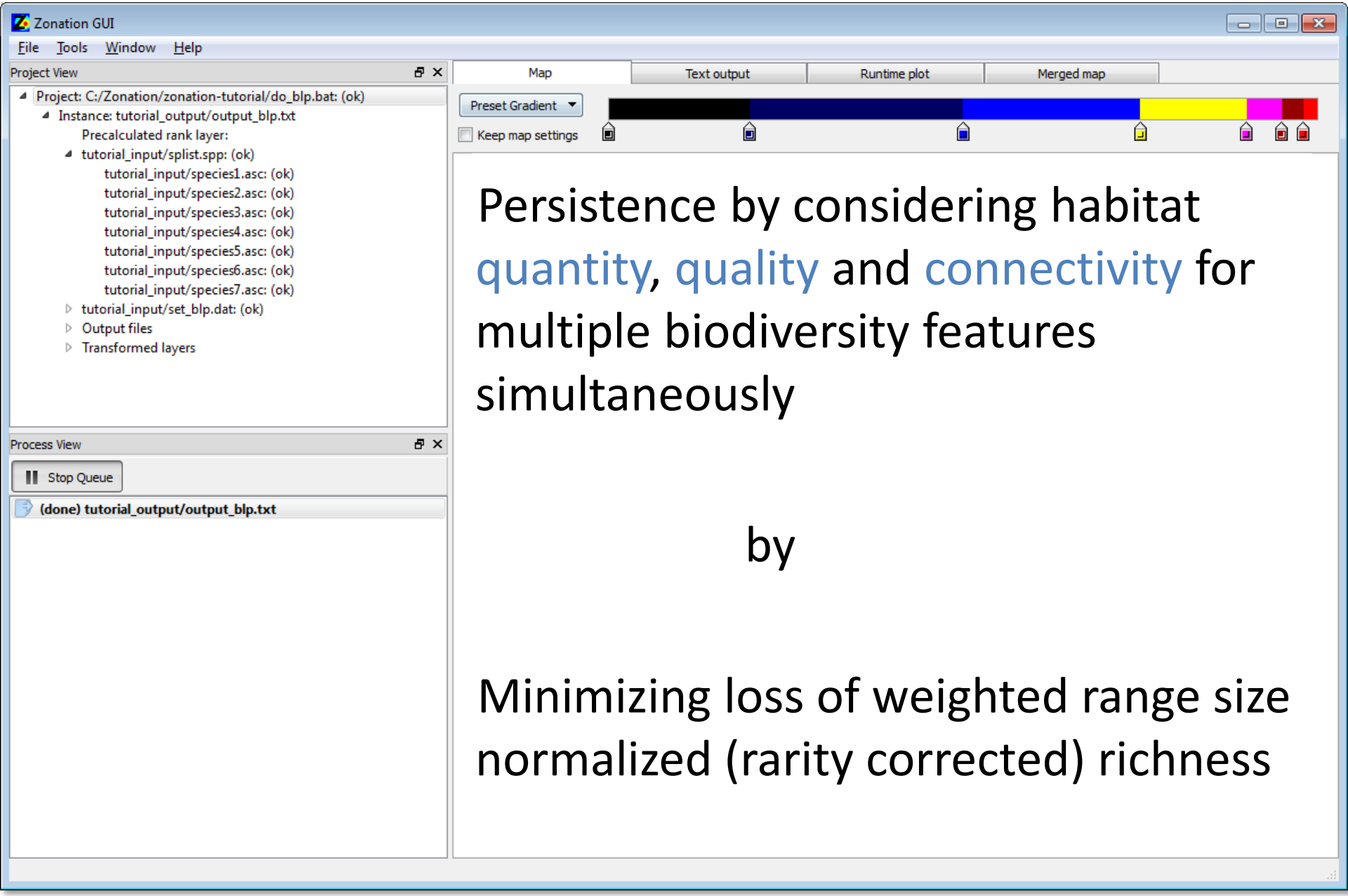


(Ferrier and Wintle 2009)

The Zonation framework and software for conservation prioritization






Zonation GUI
File Tools Window Help
Project View
Project: C:/Zonation/zonation-tutorial/do_blp.bat: (ok)
Instance: tutorial_output/output_blp.txt
Precalculated rank layer:
tutorial_input/splist.spp: (ok)
tutorial_input/species1.asc: (ok)
tutorial_input/species2.asc: (ok)
tutorial_input/species3.asc: (ok)
tutorial_input/species4.asc: (ok)
tutorial_input/species5.asc: (ok)
tutorial_input/species6.asc: (ok)
tutorial_input/species7.asc: (ok)
tutorial_input/set_blp.dat: (ok)
Output files
Transformed layers
Process View
Stop Queue
(done) tutorial_output/output_blp.txt
Map
Text output
Runtime plot
Merged map
Preset Gradient
Keep map settings
Persistence by considering habitat quantity, quality and connectivity for multiple biodiversity features simultaneously
by
Minimizing loss of weighted range size normalized (rarity corrected) richness

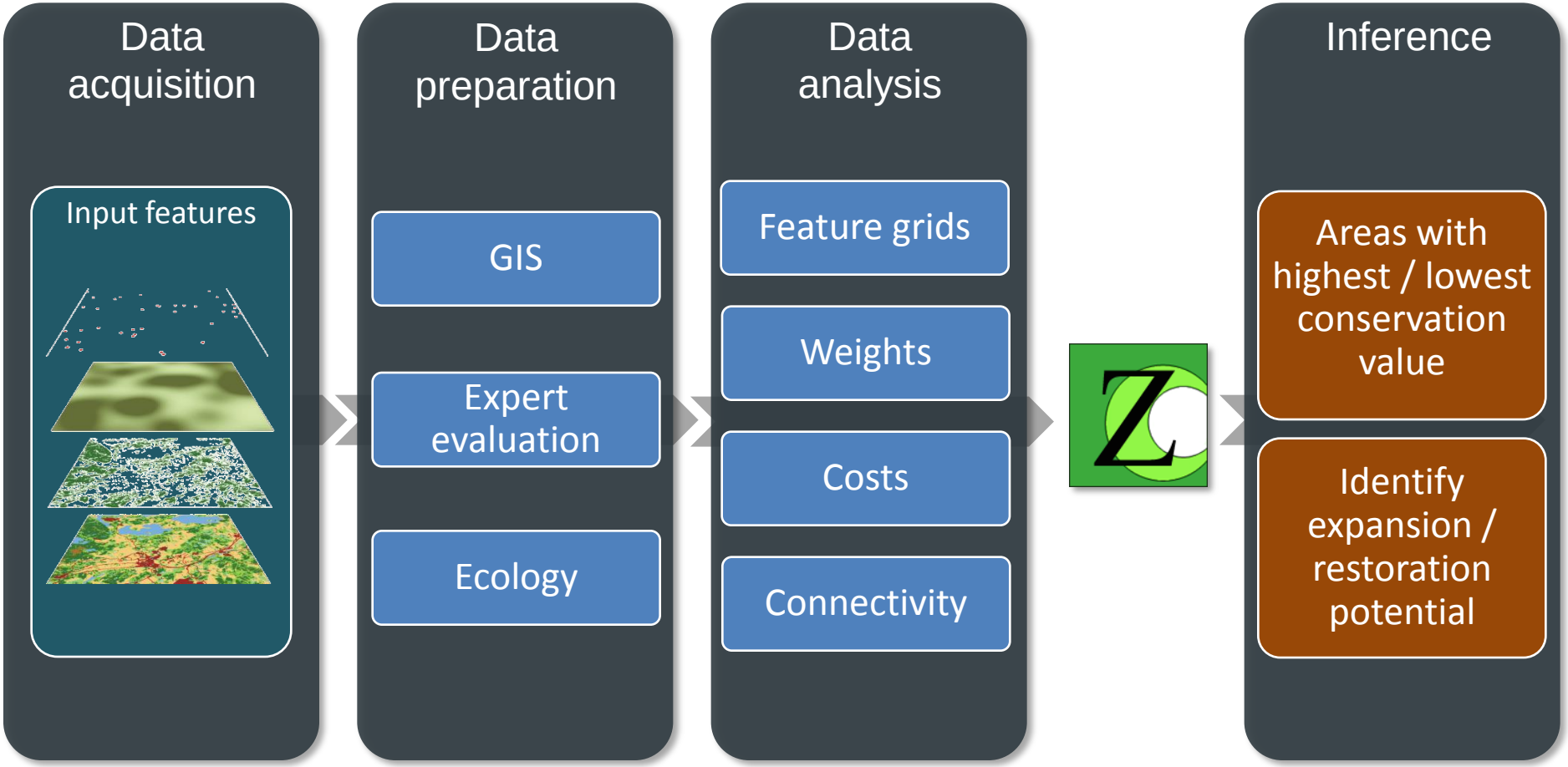
Major features

- Species feature weighting
- Species-specific connectivity
- Uncertainty analysis
- Combined species and community level prioritization
- Balancing alternative land uses
- Landscape condition and retention analysis
- Prioritization across multiple administrative regions
- GIS → distribution modeling → Zonation

Basic analyses

1. Identification of optimal reserve areas
2. Identification of least valuable areas
3. Evaluation of conservation areas
4. Expansion of conservation areas

Analysis setup

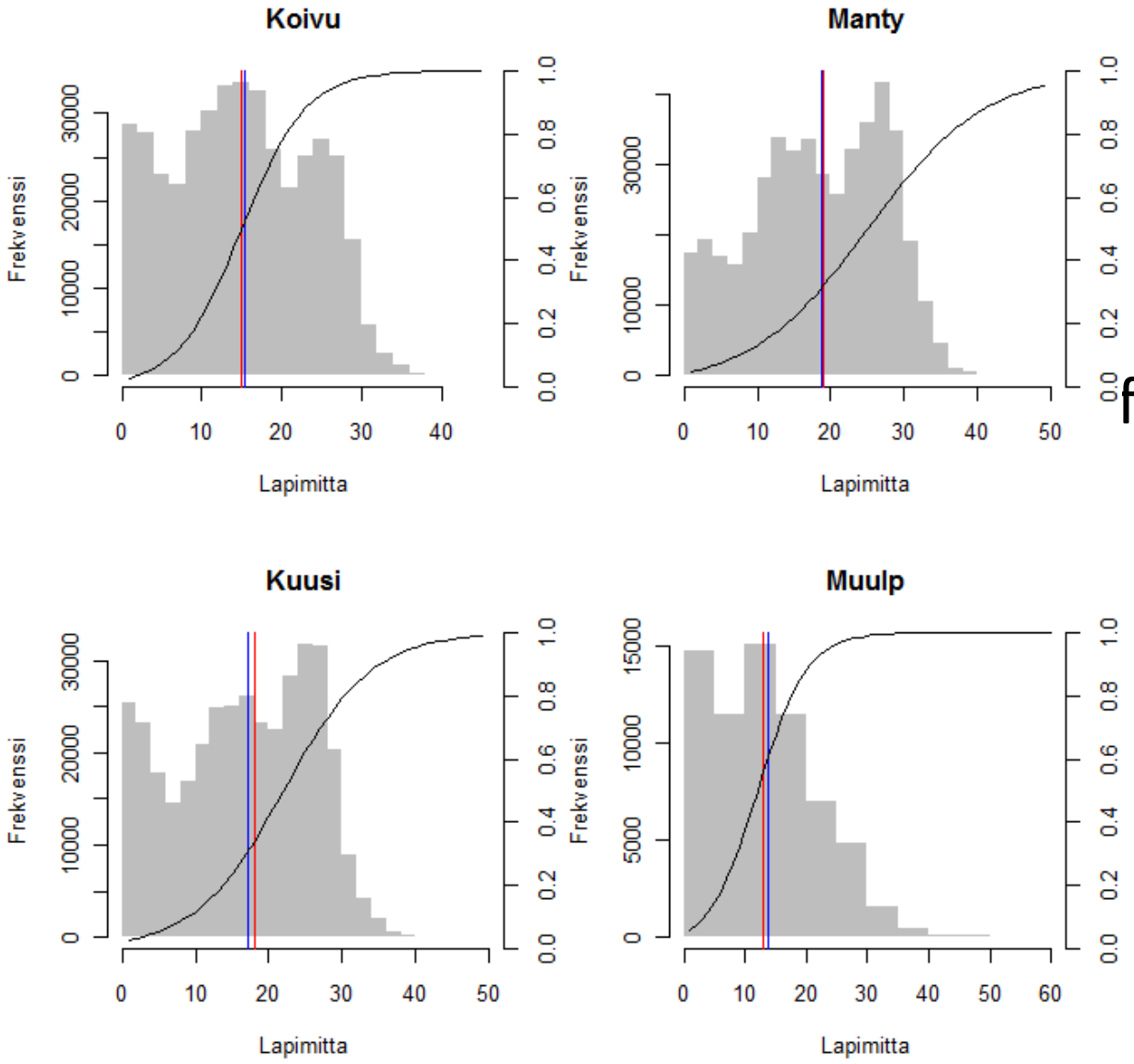


Data

- Wealth of data, but very little primary biodiversity data over large extents
- Remote sensing data often used
  - Resolution as fine as relevant for the conservation problem at hand (Arponen et al. 2012)
- All the typical problems of collating data from several sources

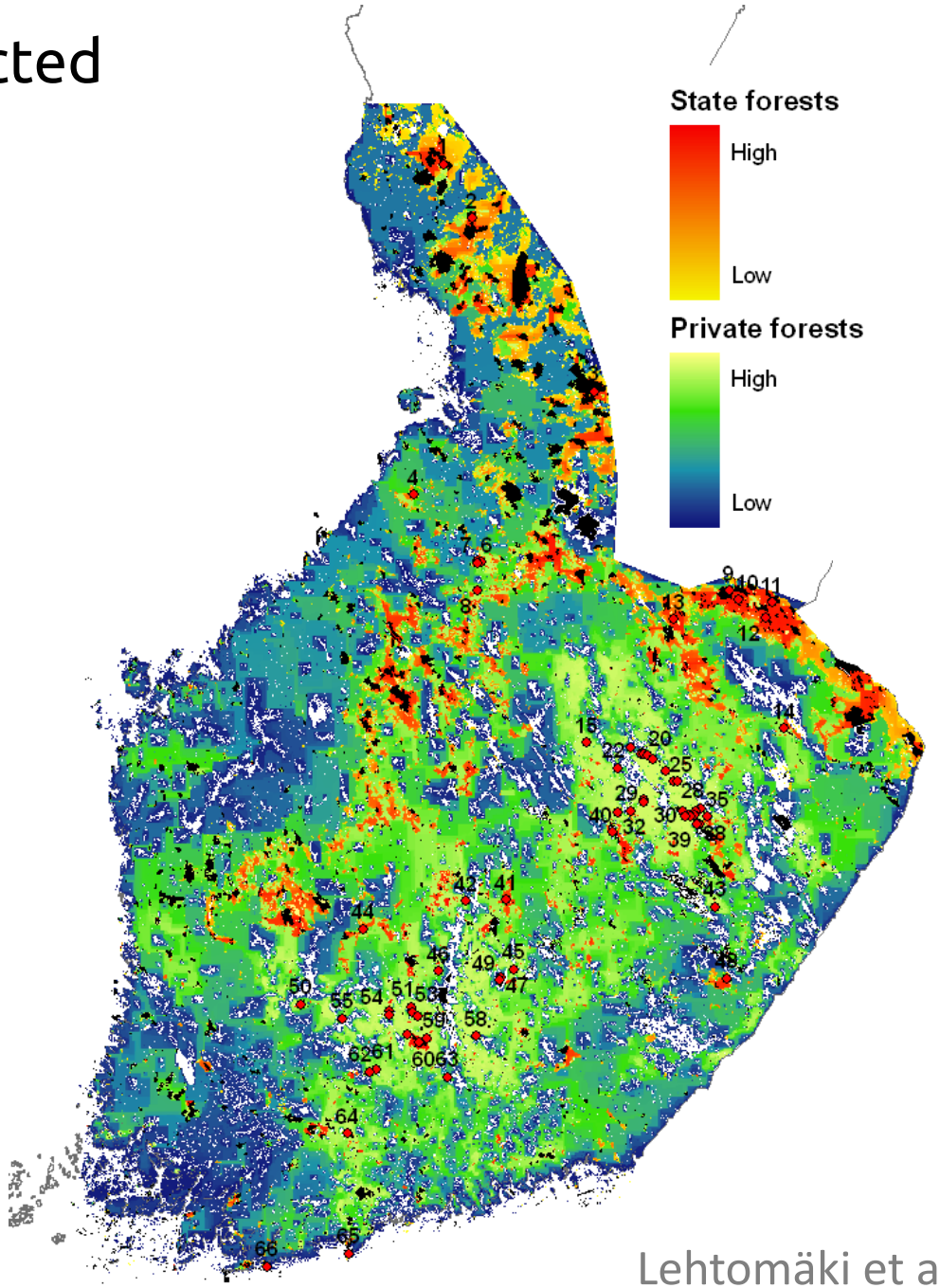
Data

Transform



fertility

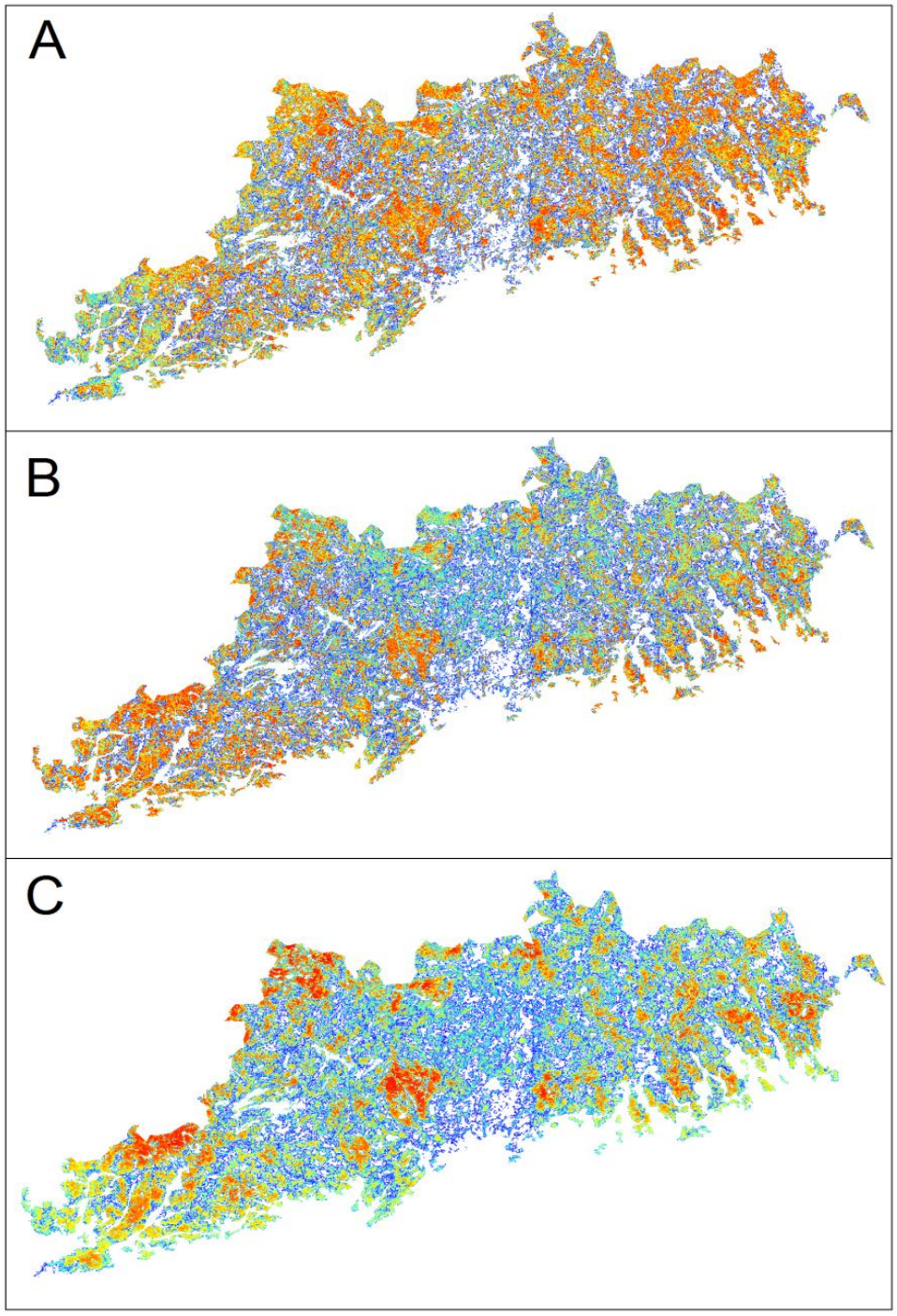
Expansion of protected areas on state land



METSÄHALLITUS

METLA

Lehtomäki et al.(2009)



Centre for Economic Development, Transport and the Environment

GAME AND FISHERIES RESEARCH

Priority rank value

High : 1

Low : 0

Sirkiä et al.(*in press*)

Km

0 20 40 80

Capercaillie (*Tetrao urogallus*) habitat prioritization

NATNET Life+

"Increasing the ecological connections and coherence of the Natura 2000 network in South-west Lapland"

Centre for Economic Development, Transport and the Environment

METLA

METSÄHALLITUS

metsäkeskus

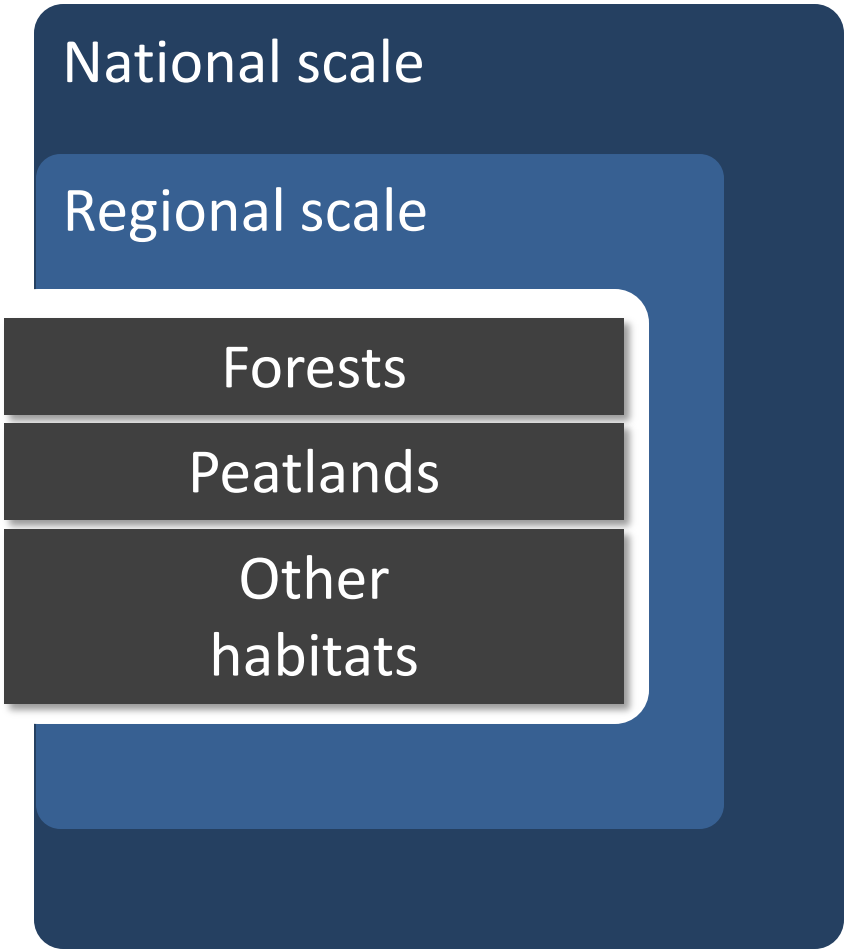
- Objectives
  - Increase connectivity
  - Establish green infrastructure
  - Increase biodiversity in commercial forests

- http://www.natnet.fi/8

Ecological Decision Analysis in METSO-implementation

2010 - 2014

1. Supportive information on conservation priorities
2. Targetting different land use and management actions
3. Research and development



Ministry of Environment

Steering Committee

Project Coordinator

Data owners

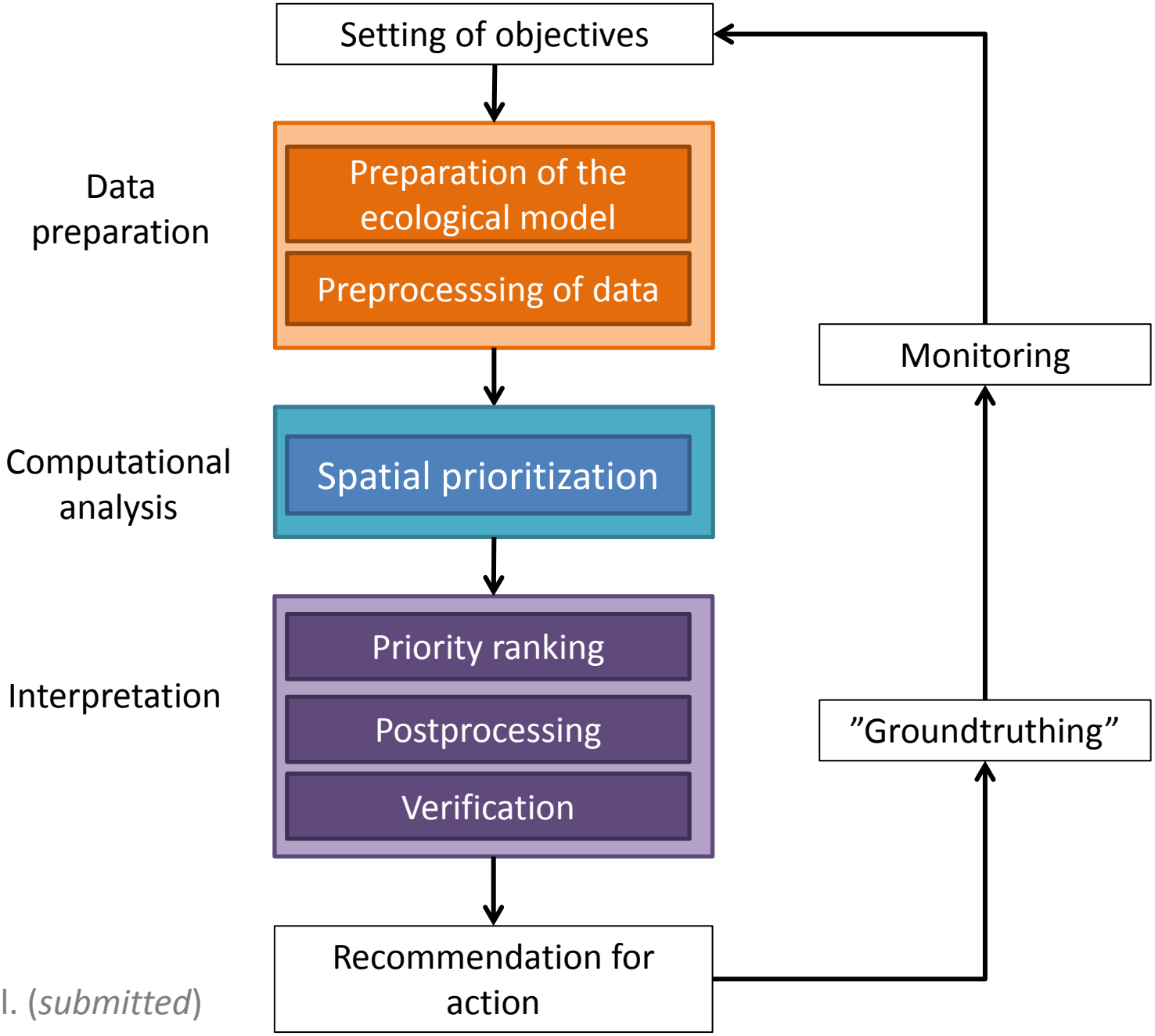
Analysis

End-users

Automation

Repeatability

Transparency



Lehtomäki et al. (*submitted*)

Conclusions

- Zonation can be used to analyse large data sets while accounting for connectivity
- Setting conservation priorities still takes a lot of expertise and subjective decisions – as it should
- Operational tools still need more attention

Thank you