Understanding the relations between past land uses, soil and biodiversity for future nature management around Hov Vig

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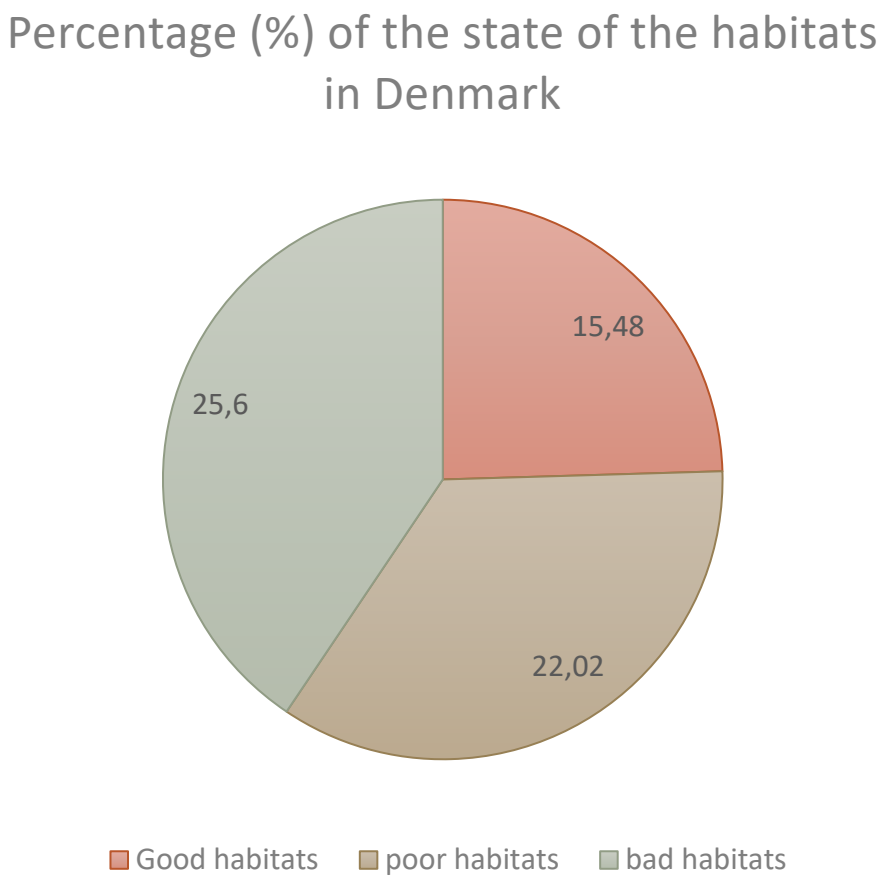
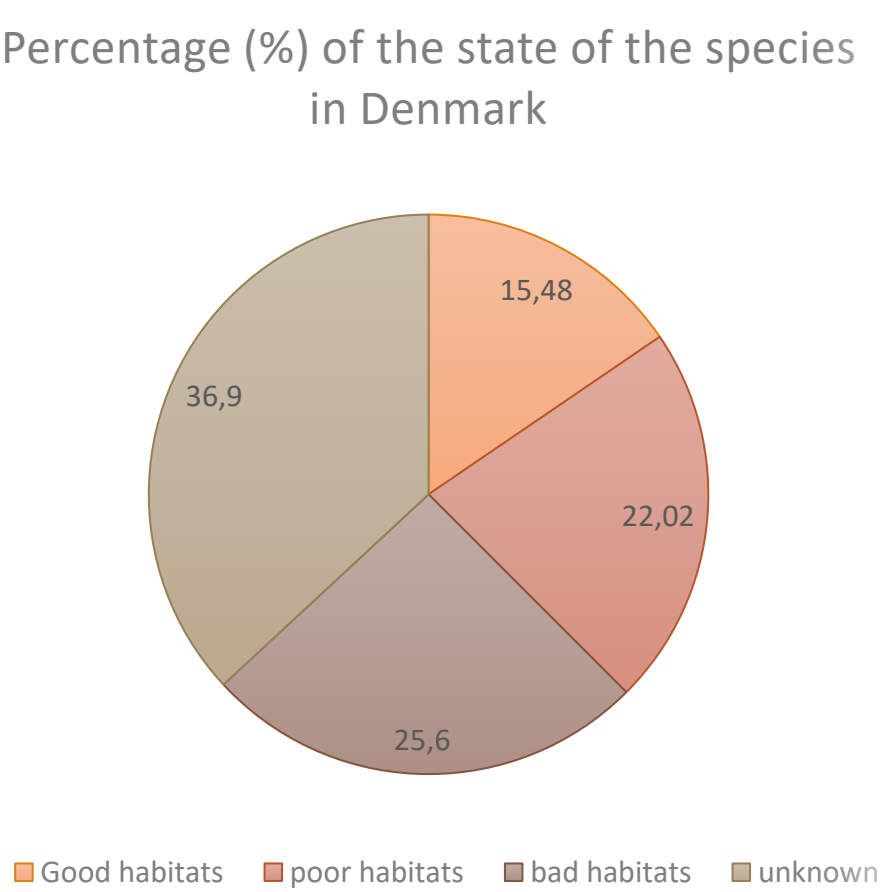
Importance


Percentage (%) of the state of the habitats in Denmark
15,48
25,6
22,02
Good habitats
poor habitats
bad habitats


Percentage (%) of the state of the species in Denmark
15,48
36,9
22,02
25,6
Good habitats
poor habitats
bad habitats
unknown

Research area

Hov Vig and surroundings

- North: summer houses
- West: buildings of Nykøbing
- South and East: water

Landscape genesis

Landscape genesis

Landscape genesis

Landscape Genesis

1870	1902	1979	
Fjord	Area is dammed up	Flood and breakthrough dam	Natura 2000

Researched questions

- **What is the relation between the past land use, soil and biodiversity for future nature management around Hov Vig?**
- What are the landscape trajectories of the area explaining its landscape genesis?
  - To get insights from the past land use based on historical maps
  - To analyse the changes since 1840 until present
- Which soil types are characteristics?
  - To analyse soil profile based on a stratified sample
- What are the current characteristics of biodiversity?
  - To identify the vegetation types and their ecological characteristics.
  - To assess the ecological value of the vegetation types
- How can the insights in landscape from the past land use, soil and biodiversity improve the future nature management objectives?
  - To reflect on current management decisions

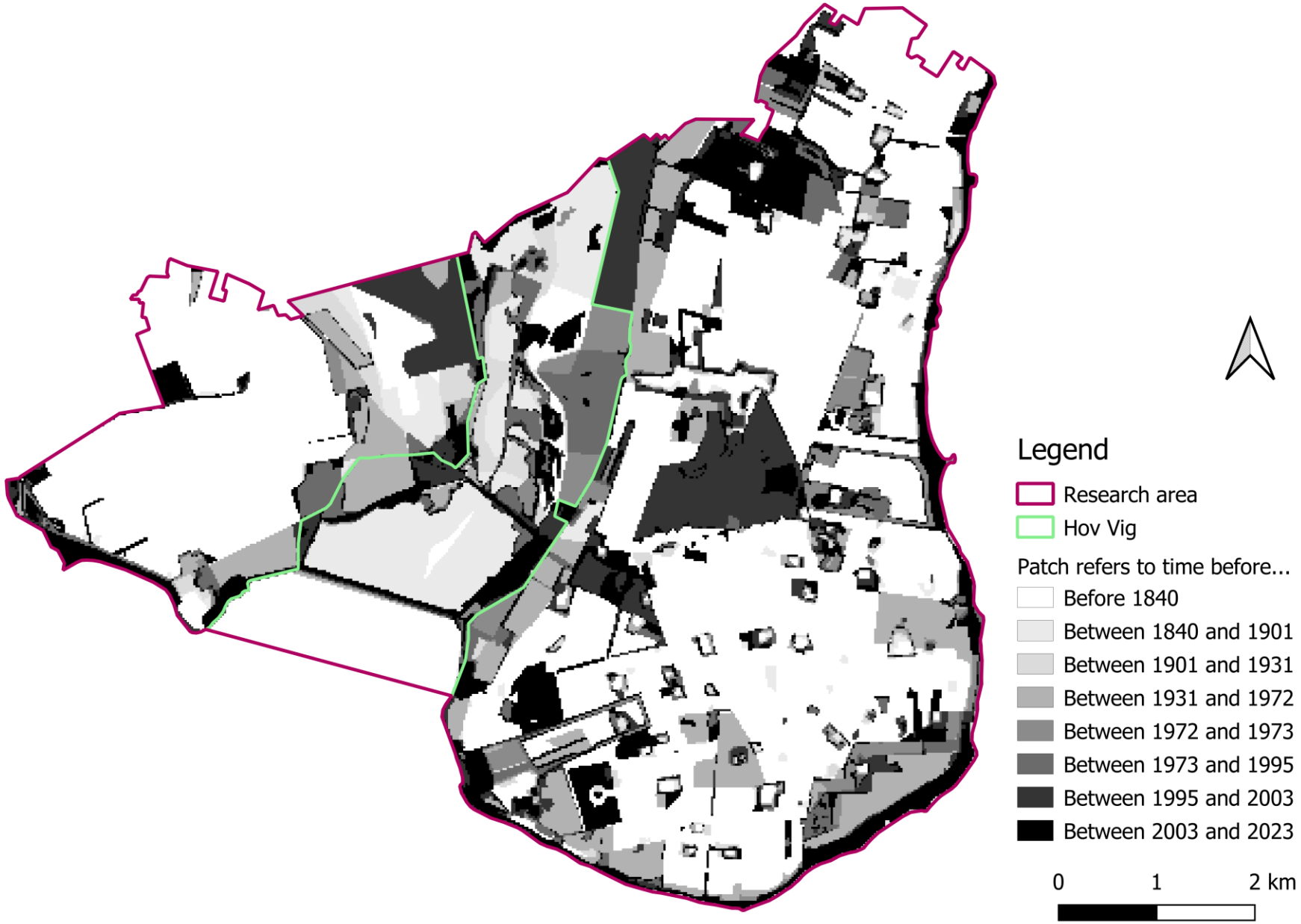
Method

Connections between land use, soil and biodiversity

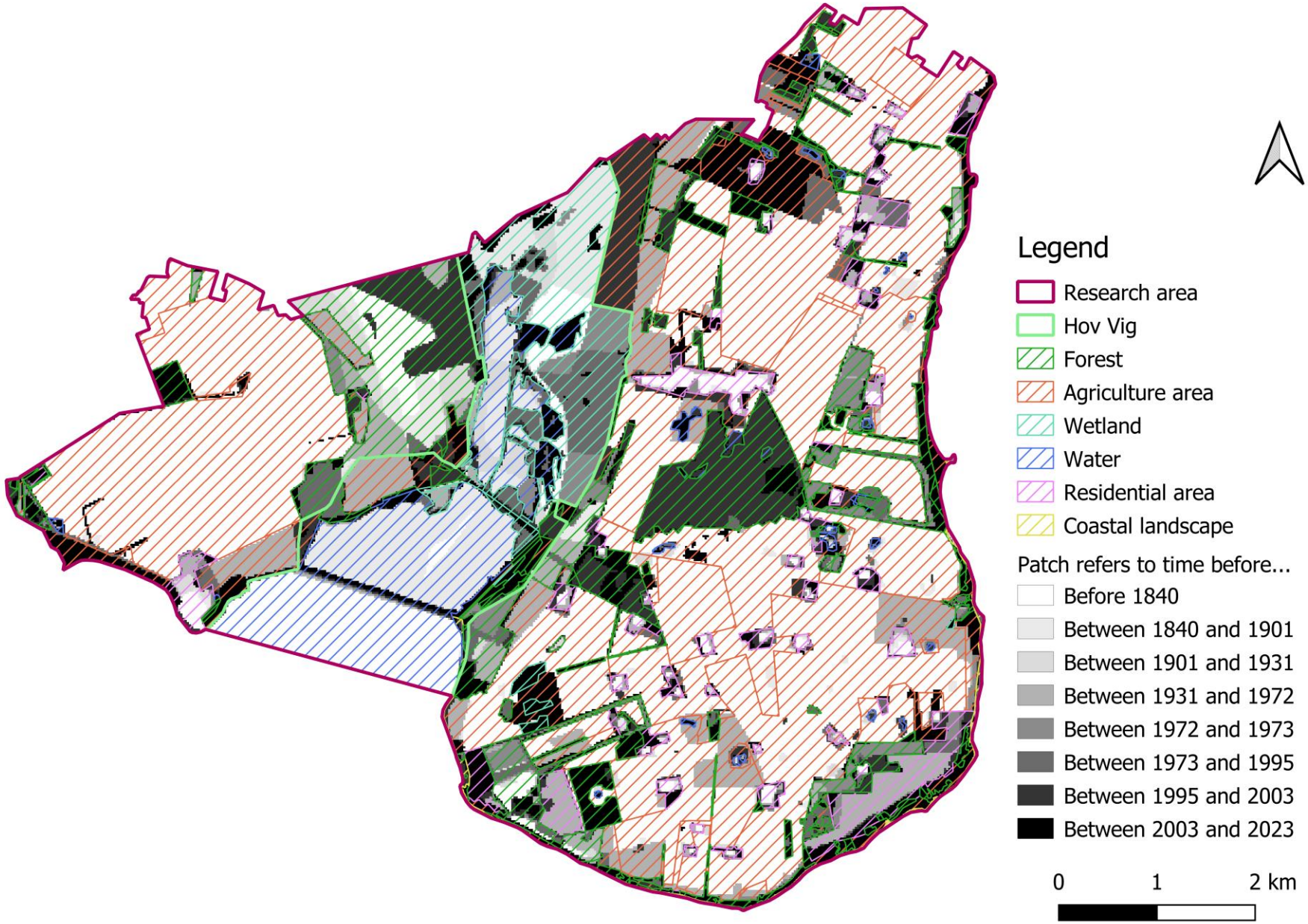
1. Historical analysis

- Visualize the land use of eight historical maps
- Time depth map

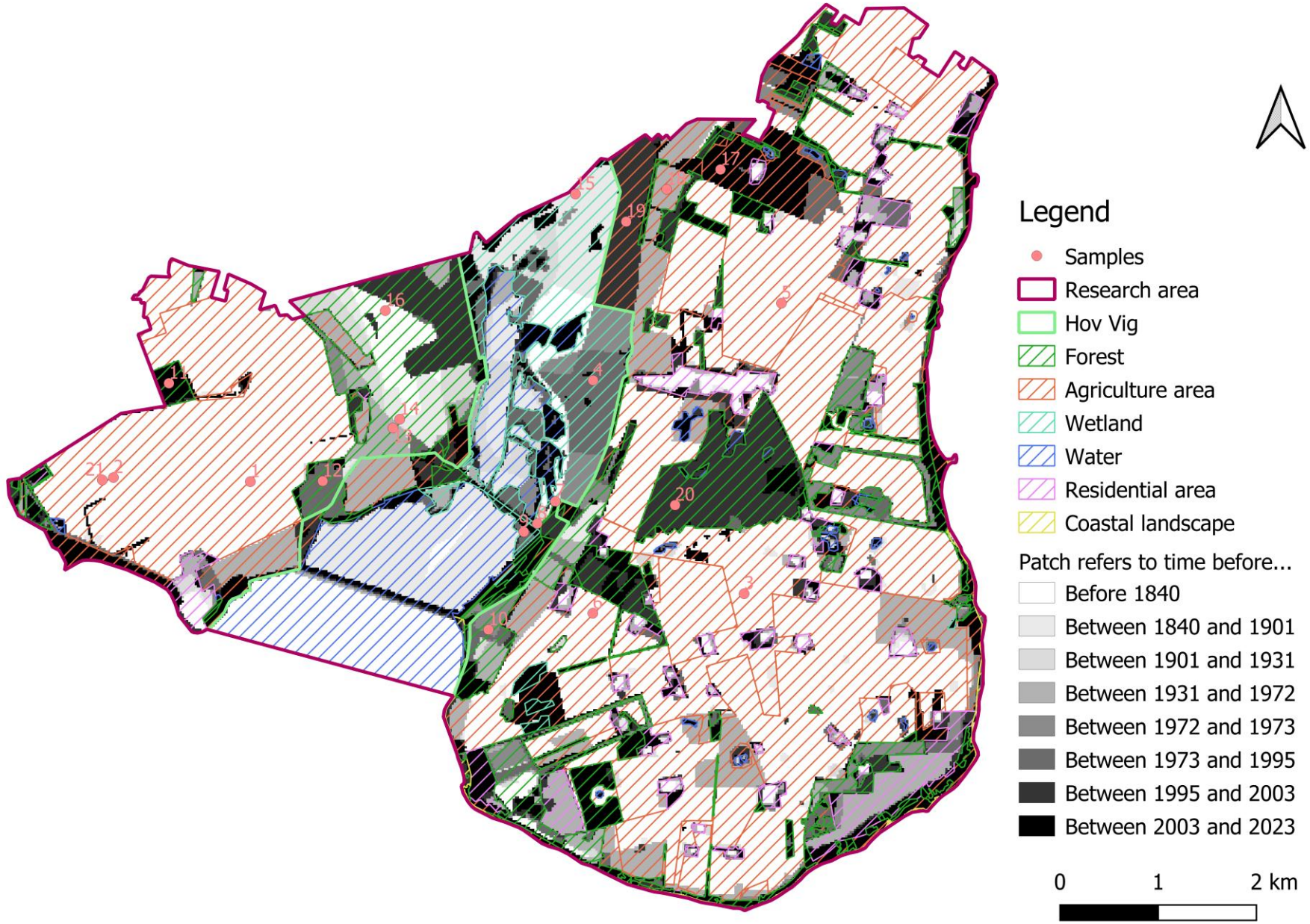
Time depth map



Time depth map



Time depth map



Method

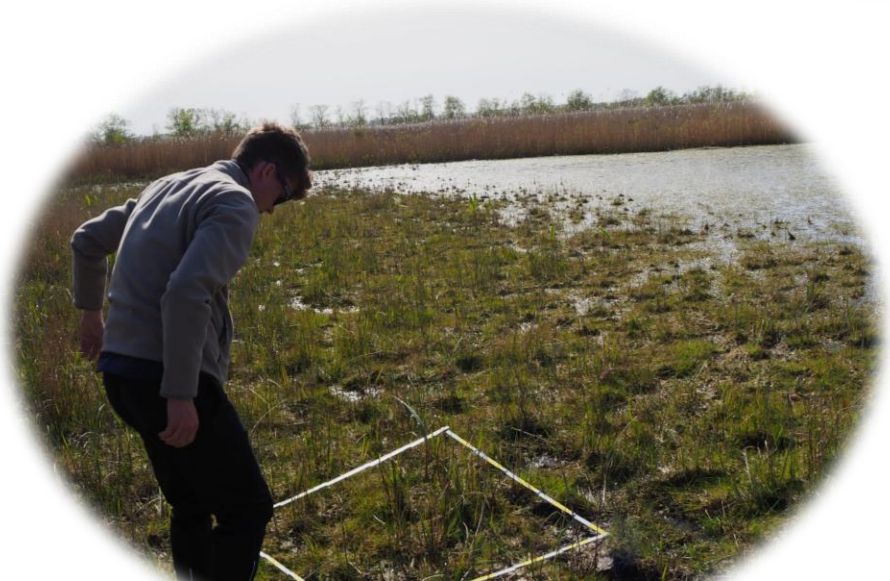
2. Soil samples

- 21 soil profiles
  - Stratified sampling
  - Describe the depth, texture, moisture, groundwater, other material for each layer
- Determine soil types depending on the results of the samples

Method

3. Biodiversity

- Square of 1m²
- Counting amount and identify of species
- Determine vegetation types
- Evaluation of value of biodiversity



Method

4. Landmanagement

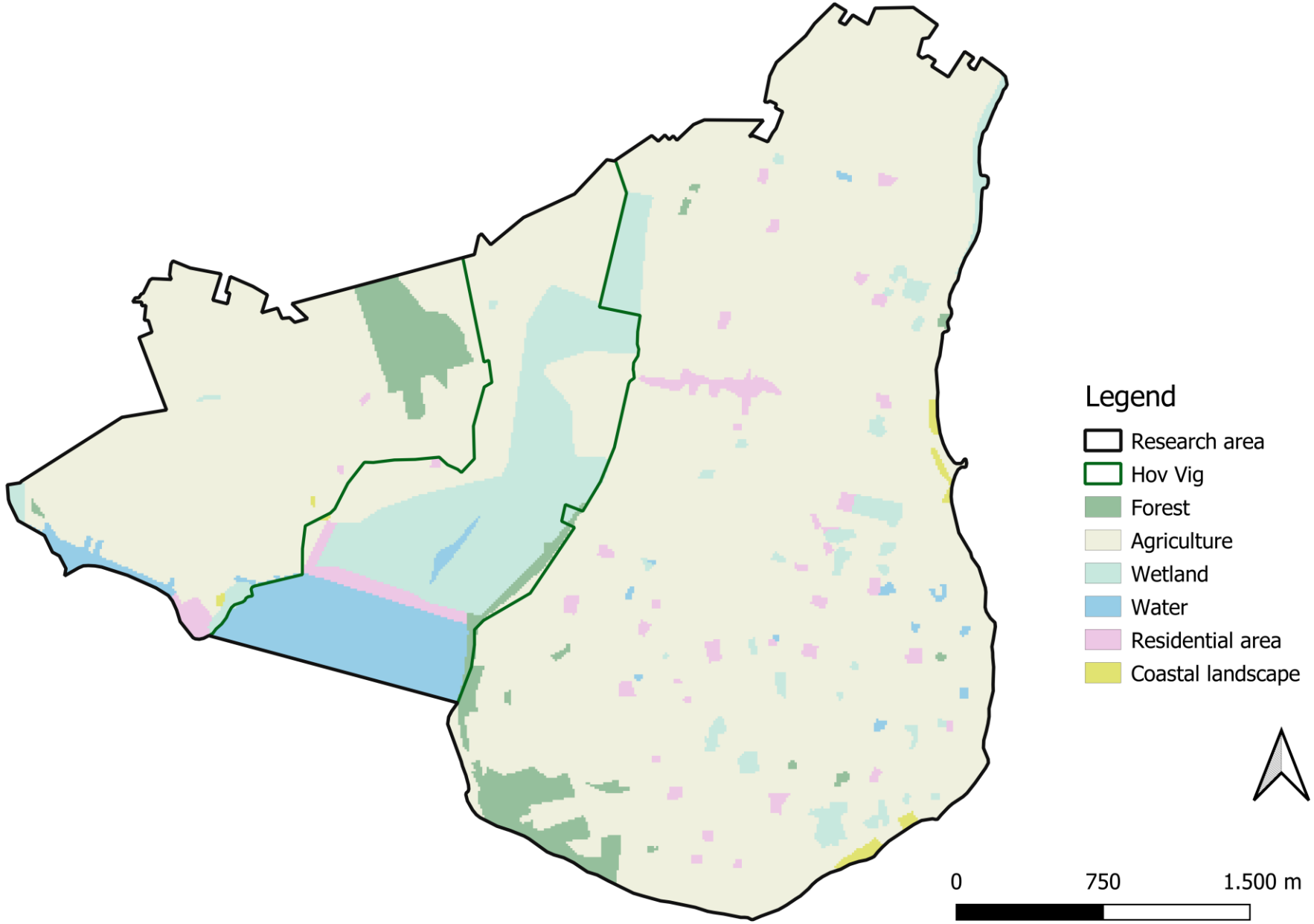
- Interview with the forestry
- Information
  - Past, present and future
  - Landscape genesis
  - Struggles with farmers and inhabitants

Method

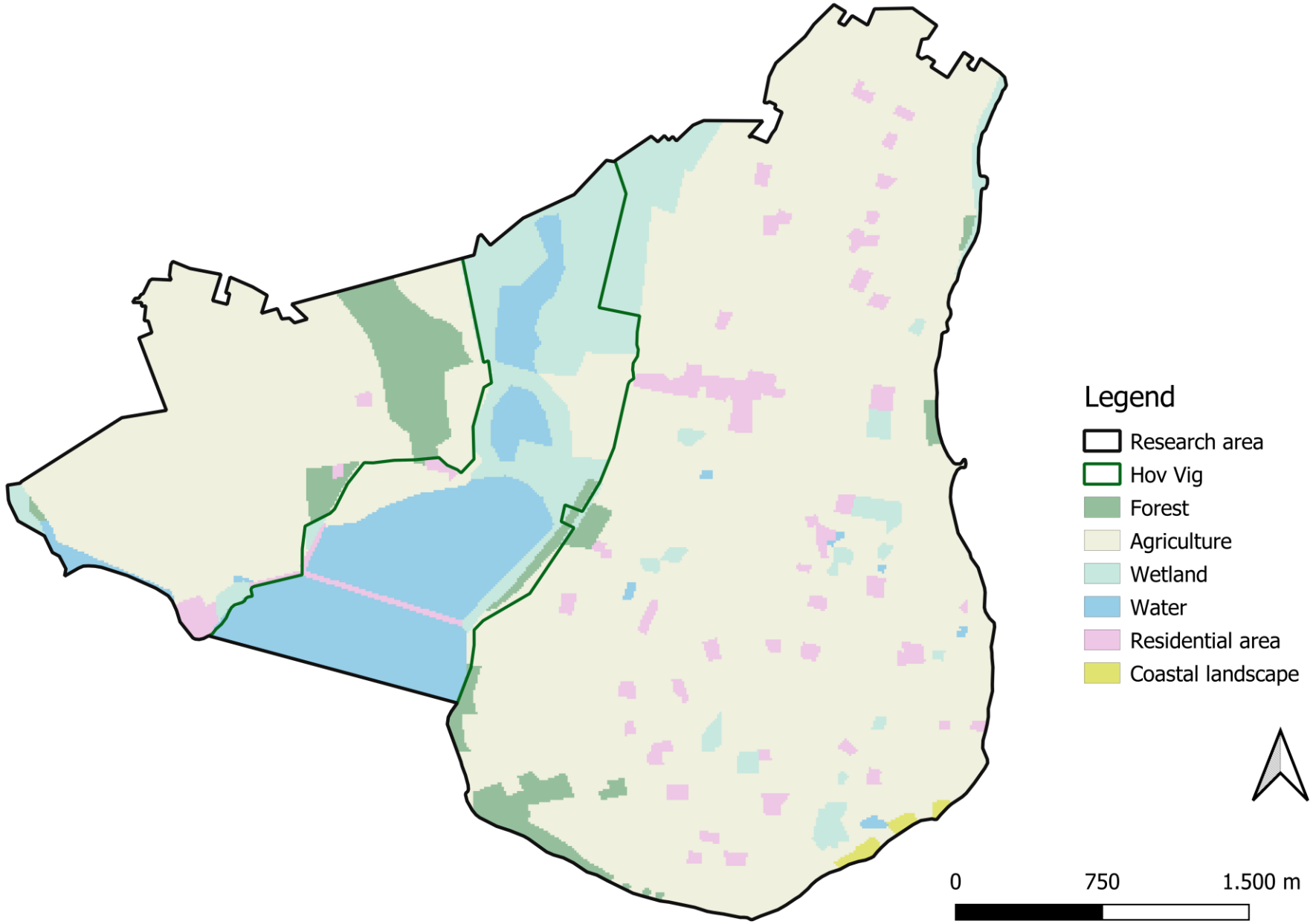
Comparing soil and vegetation types, evaluation of the biodiversity value with each other

→ Qualitative, not quantitative

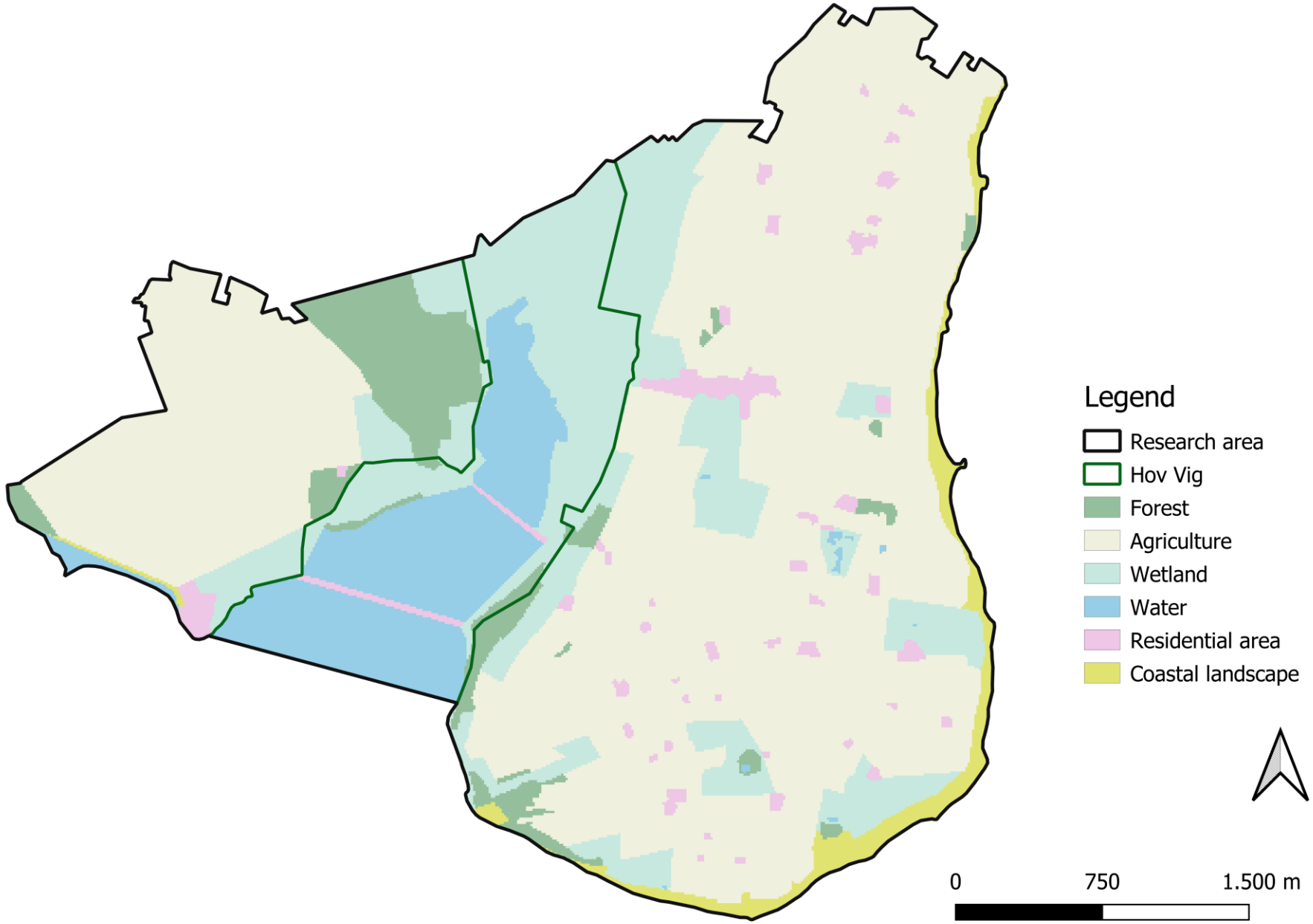
Land use 1840



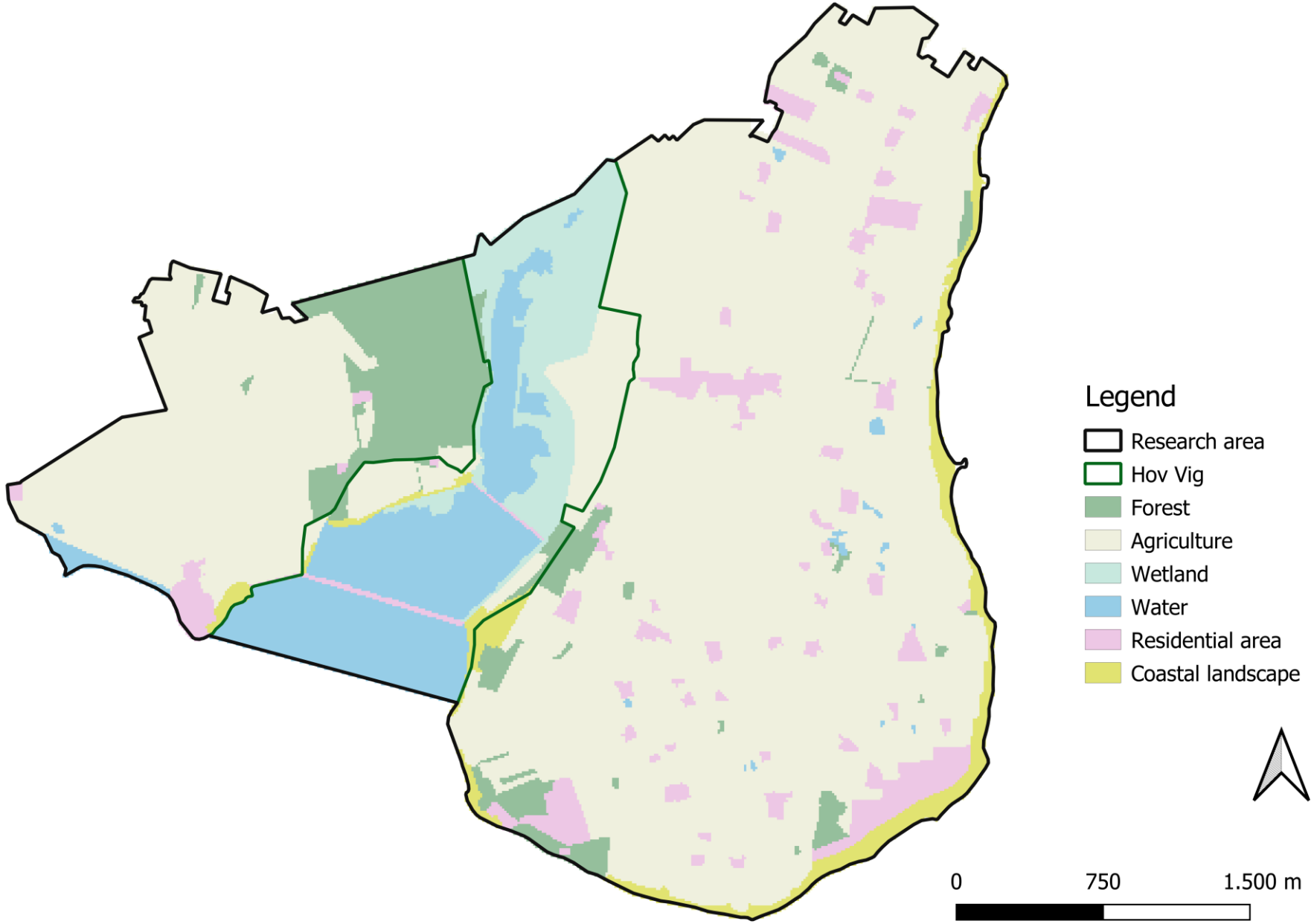
Land use 1901



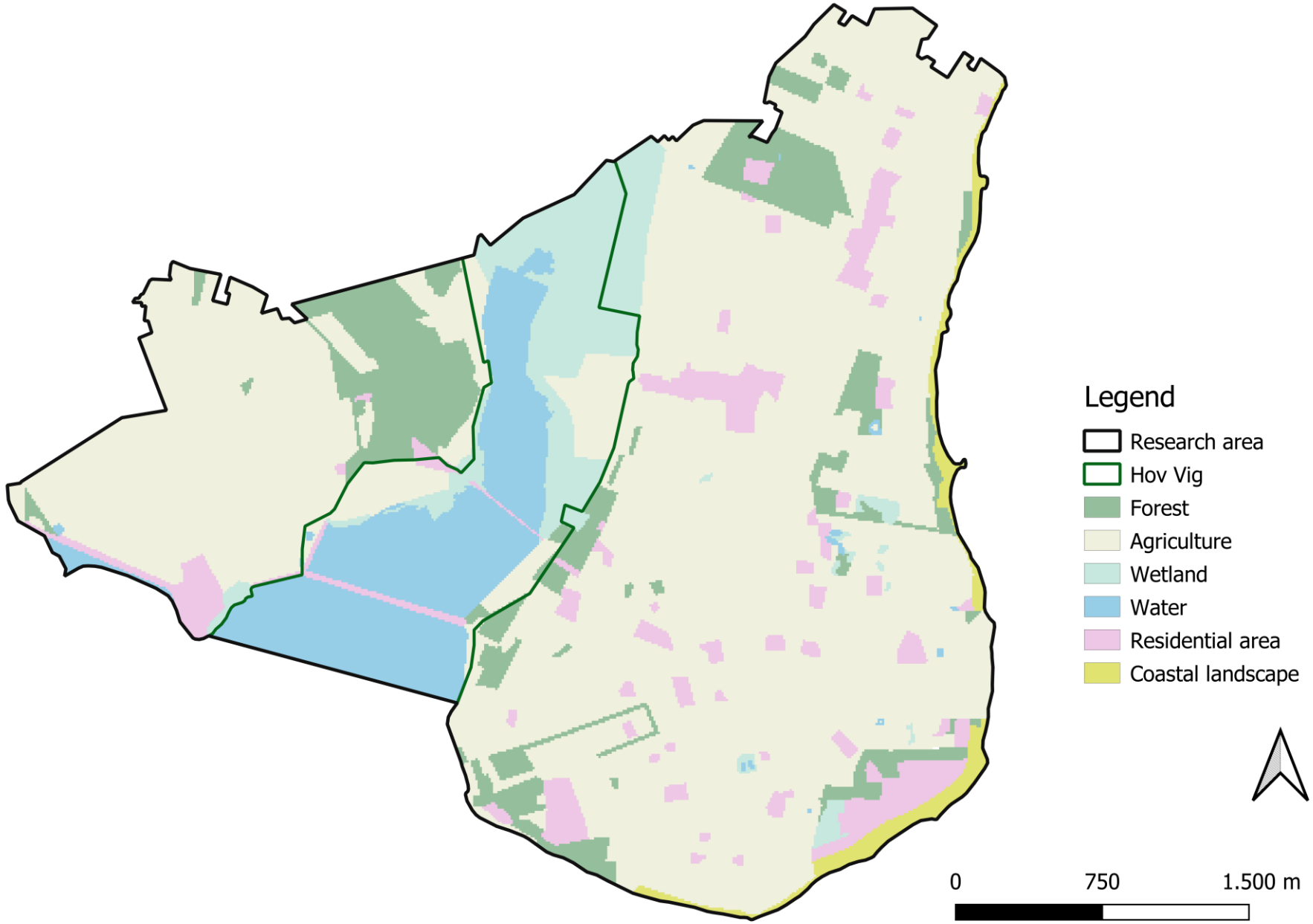
Land use 1931



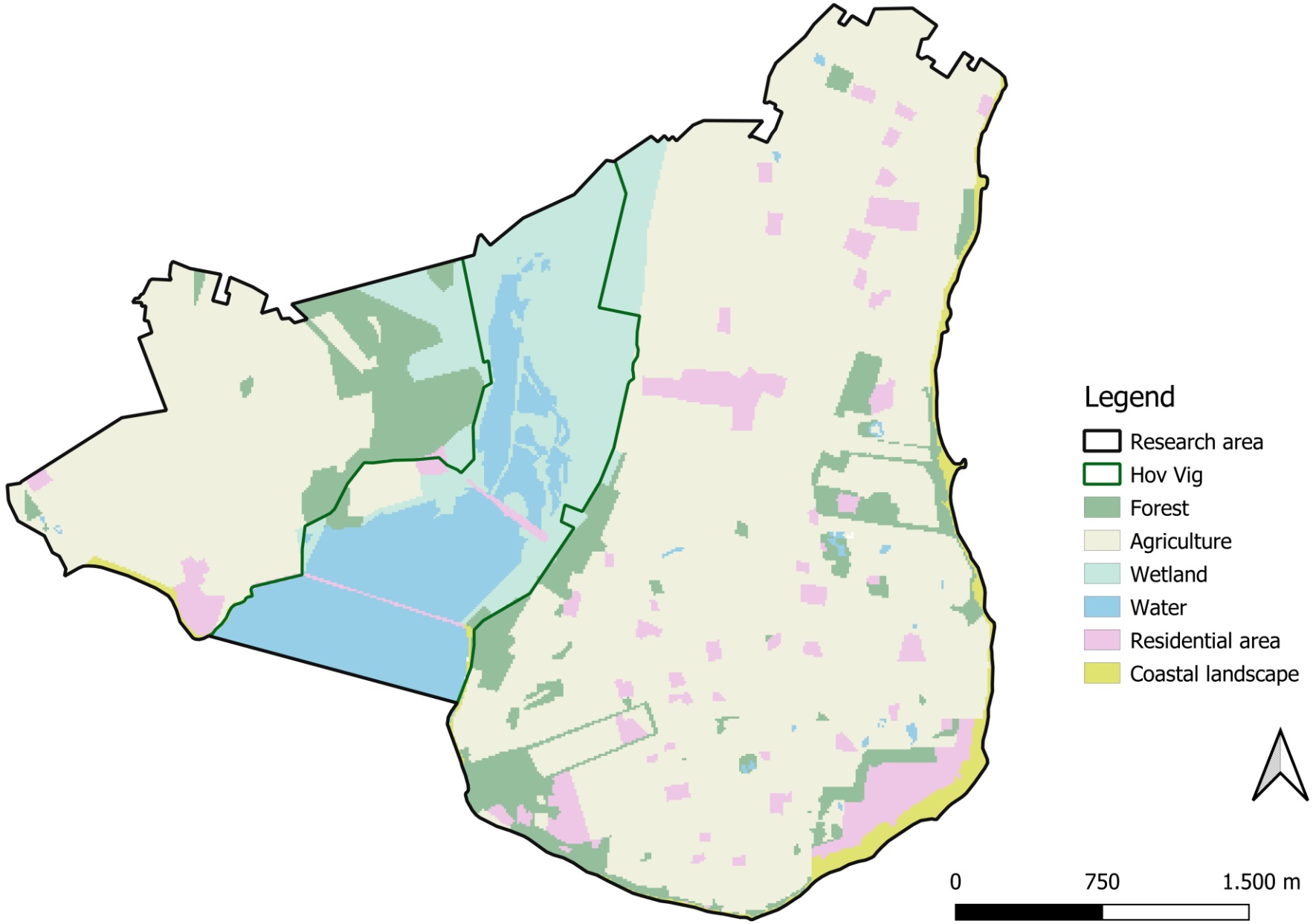
Land use 1972



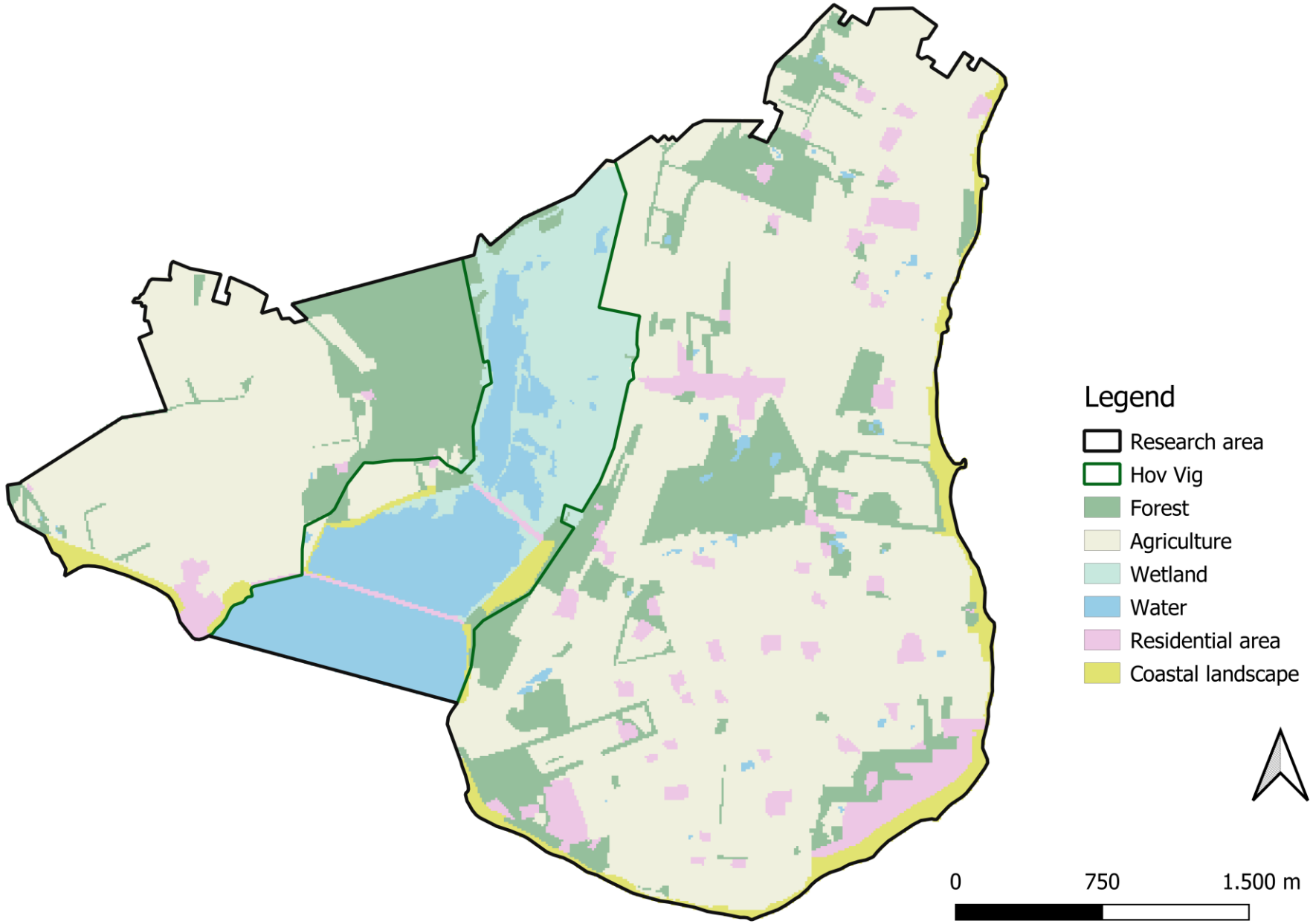
Land use 1973



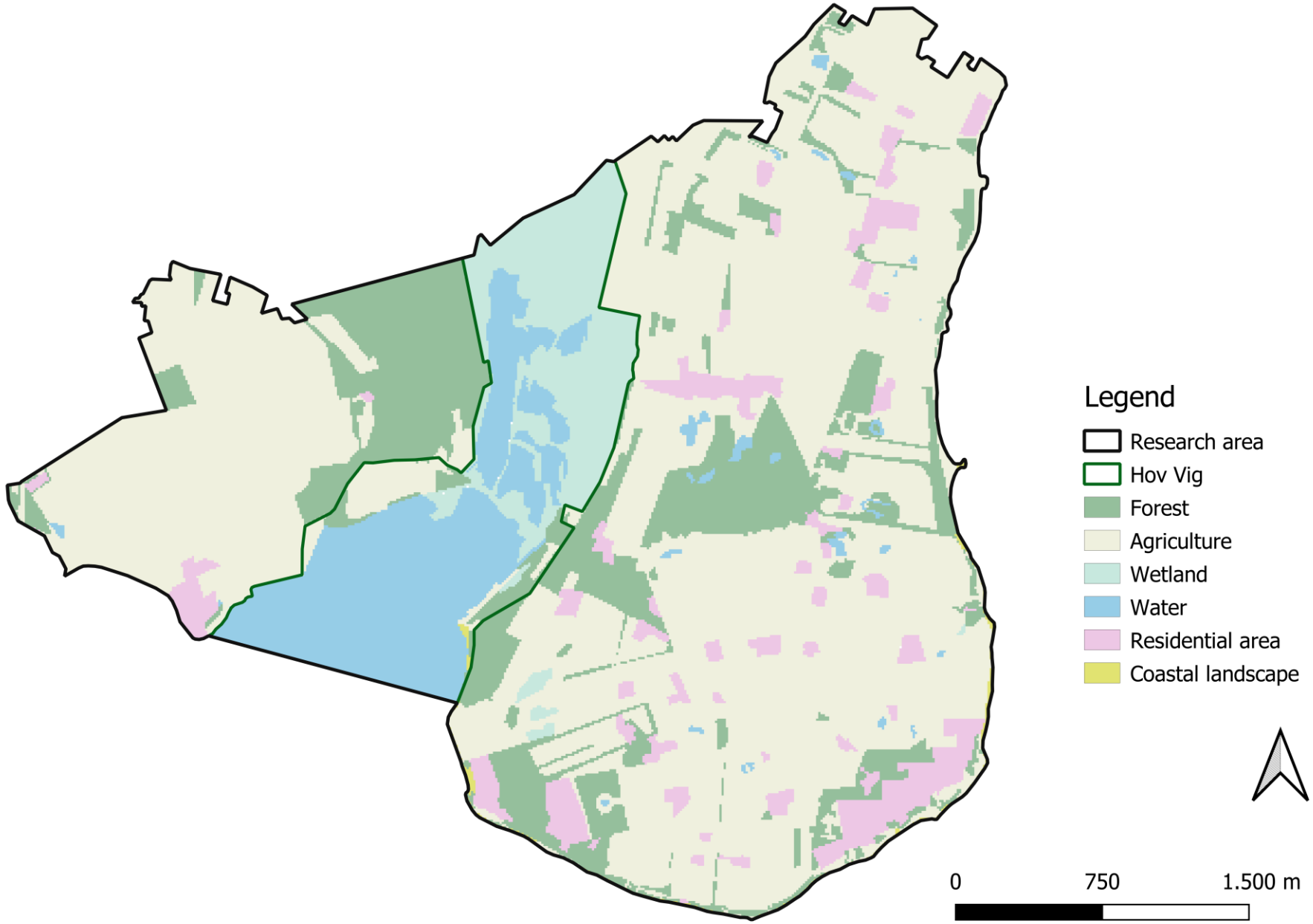
Land use 1995



Land use 2003



Land use 2023



1840

Forest Agriculture
Wetland Water
Residential area Coastal landscape

1901

Forest Agriculture
Wetland Water
Residential area Coastal landscape

1931

Forest Agriculture
Wetland Water
Residential area Coastal landscape

1972

Forest Agriculture
Wetland Water
Residential area Coastal landscape

1973

Forest Agriculture
Wetland Water
Residential area Coastal landscape

1995

Forest Agriculture
Wetland Water
Residential area Coastal landscape

2003

Forest Agriculture
Wetland Water
Residential area Coastal landscape

2023

Forest Agriculture
Wetland Water
Residential area Coastal landscape

Results

point	time-depth	vegetation type	soil type	evaluation
1	0	agriculture	loam-clay	not valuable
2	0	agriculture	loam-clay	not valuable
3	1973	open grassland	sand-loam	less valuable
4	0	open grassland	loam-sand-clay	less valuable
5	0	open grassland	sand-clay	very valuable
6	0	open grassland	clay-sand	valuable
7	0	watery landscape	sand	valuable
8	1901	watery landscape	sand	less valuable
9	1973	watery landscape	sand	less valuable
10	1972	closed grassland	sand	valuable
11	2003	closed grassland	sand-clay	less valuable
12	1973	closed grassland	sand-loam	valuable
13	1931	closed grassland	sand-loam	valuable
14	1840	closed landscape	sand-loam	very valuable
15	1840	watery landscape	sand	less valuable
16	0	closed grassland	sand	valuable
17	2003	closed landscape	loam-clay	valuable
18	1931	open grassland	clay-sand	less valuable
19	1995	open grassland	sand with boulders	valuable
20	1995	closed landscape	loam-clay	less valuable
21	0	agriculture	loam-clay	less valuable

Biodiversity evaluation in function of time depth

Conclusion?

Interpretation errors:

- Maps are no objective representation.
- Definitions of land use can change
- Interpretation map vs. Interpretation image
- Different mappers can cause different results

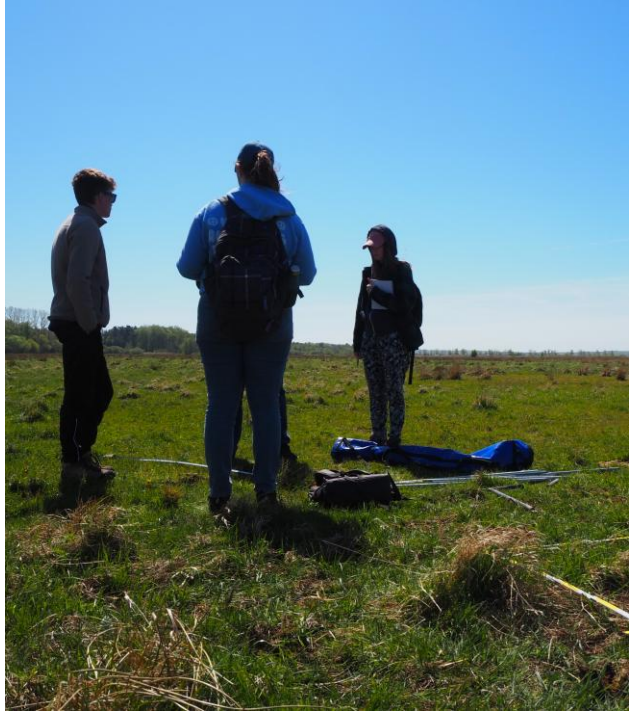
Problems with accessibility

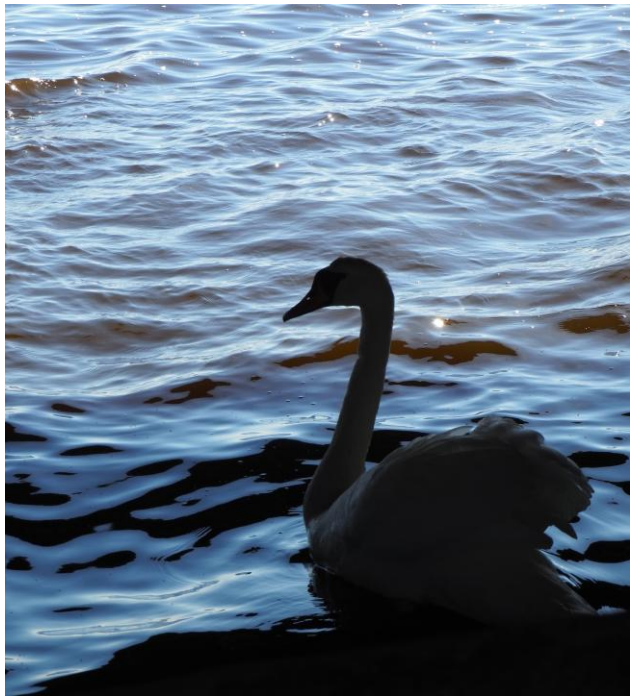
- Water
- Nature reserve with forbidden areas
- Disturbing fauna

Conclusion?

Low number of measuring points. So difficult to find correlations

Method can work but more samples is important





Are they any questions?

Thanks for the support!!