URBAN GRASSLANDS

Surveys, management and role in spatial planning

LOkala NAturvårds satsningen

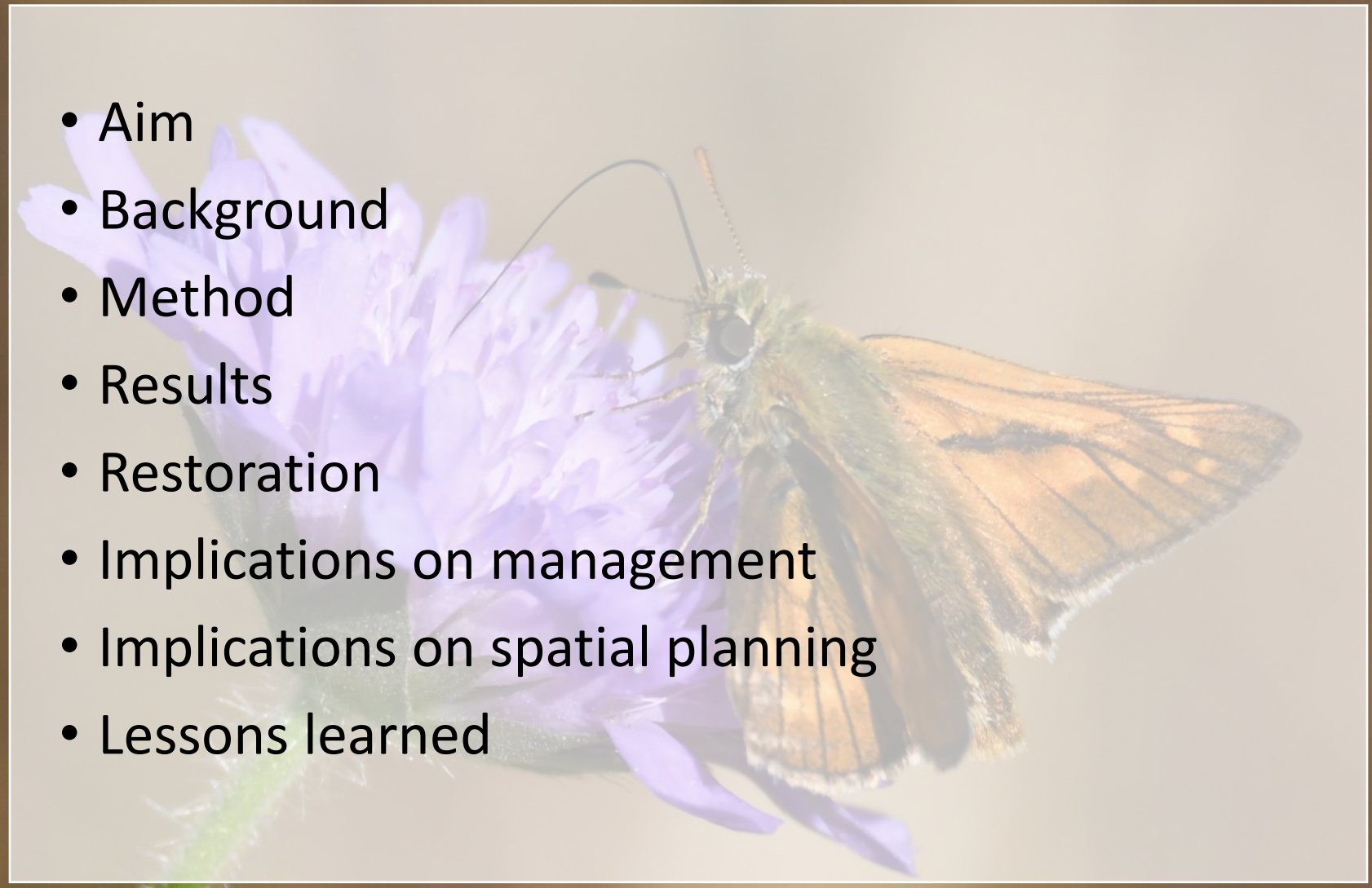
Hallands Botaniska Förening

Naturskyddsföreningen Varberg

VARBERGS KOMMUN

Outline

- Aim
- Background
- Method
- Results
- Restoration
- Implications on management
- Implications on spatial planning
- Lessons learned



Background

Aim

- To increase awareness of urban grasslands in management and spatial planning
- To prioritize and initiate long-term biodiversity-focused management
- To reduce biodiversity loss through fragmentation
- To restore meadows and pastures
- To initiate monitoring programme

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Focal areas

- Surveys
- Restoration
- Knowledge
- Management
- Spatial planning

Background

Why grasslands?

Background

Why grasslands?

- Important for urban ecosystem services, especially pollination
- Host a high number of red listed and threatened species (Swedish Red List 2020)
- Shift in agricultural practice throughout the 19th and 20th centuries has reduced the amount of pastures and hay meadows by appr. 95%

Background

- Urban areas – Important complementory habitats for traditional grassland species
- Infrastructure habitats, gardens, brownfields, parks and open grasslands
- Often negatively affected by fragmentation, poor management and at risk of exploitation

Photo: Magnus Stenmark

Background

Grasslands – What qualities do we strive for?

- High diversity of flowering plants and shrubs
- Low grass vegetation (by grazing or mowing)
- Continuous removal of nutrients (by removal of hay)
- Habitat variability
- Proximity to forest habitats
- Variable forest edges

Background

Project period

2018-2020

Organization

- Ecologists from the municipality
- Municipal management staff
- Landscape architects
- NGOs (restoration and surveys)
- Consultants (surveys and report)

Naturskyddsföreningen Varberg

Swedish Society for Nature Conservation, Varberg

Hallands Botaniska Förening

Halland Botanical Society

Pro Natura

Örnborg Kyrkander AB

VARBERGS KOMMUN

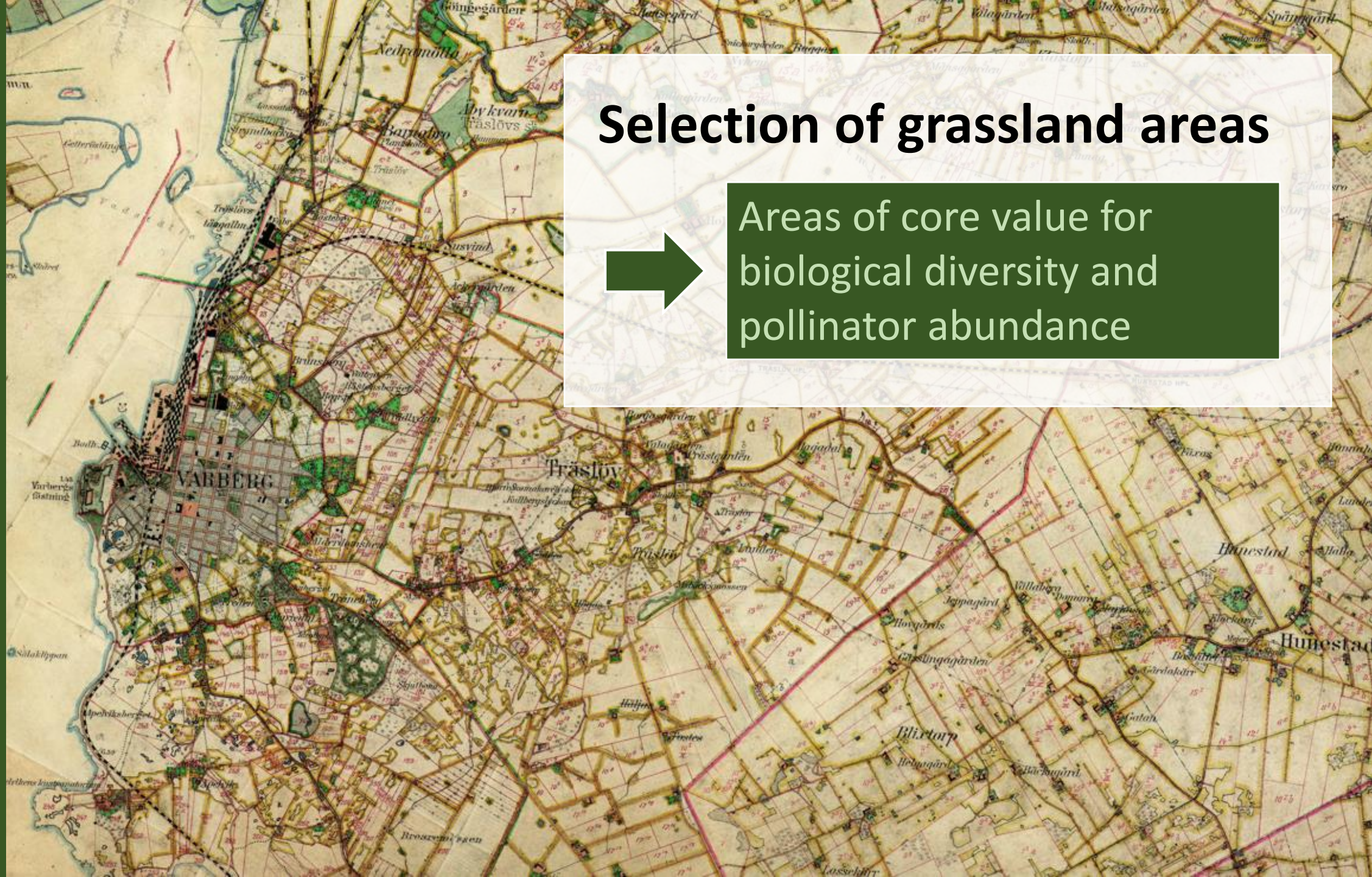
Background

Budget and funding

- Total budget 60 000 €
- LONA Local Conservation Grants - Designated governmental grants for conservation measures, surveys, protection and accessibility projects
- 50 % LONA funding
- 50 % Municipal funding and time

LOkala NAturvårds satsningen

Background



Selection of grassland areas

Areas of core value for biological diversity and pollinator abundance

Background

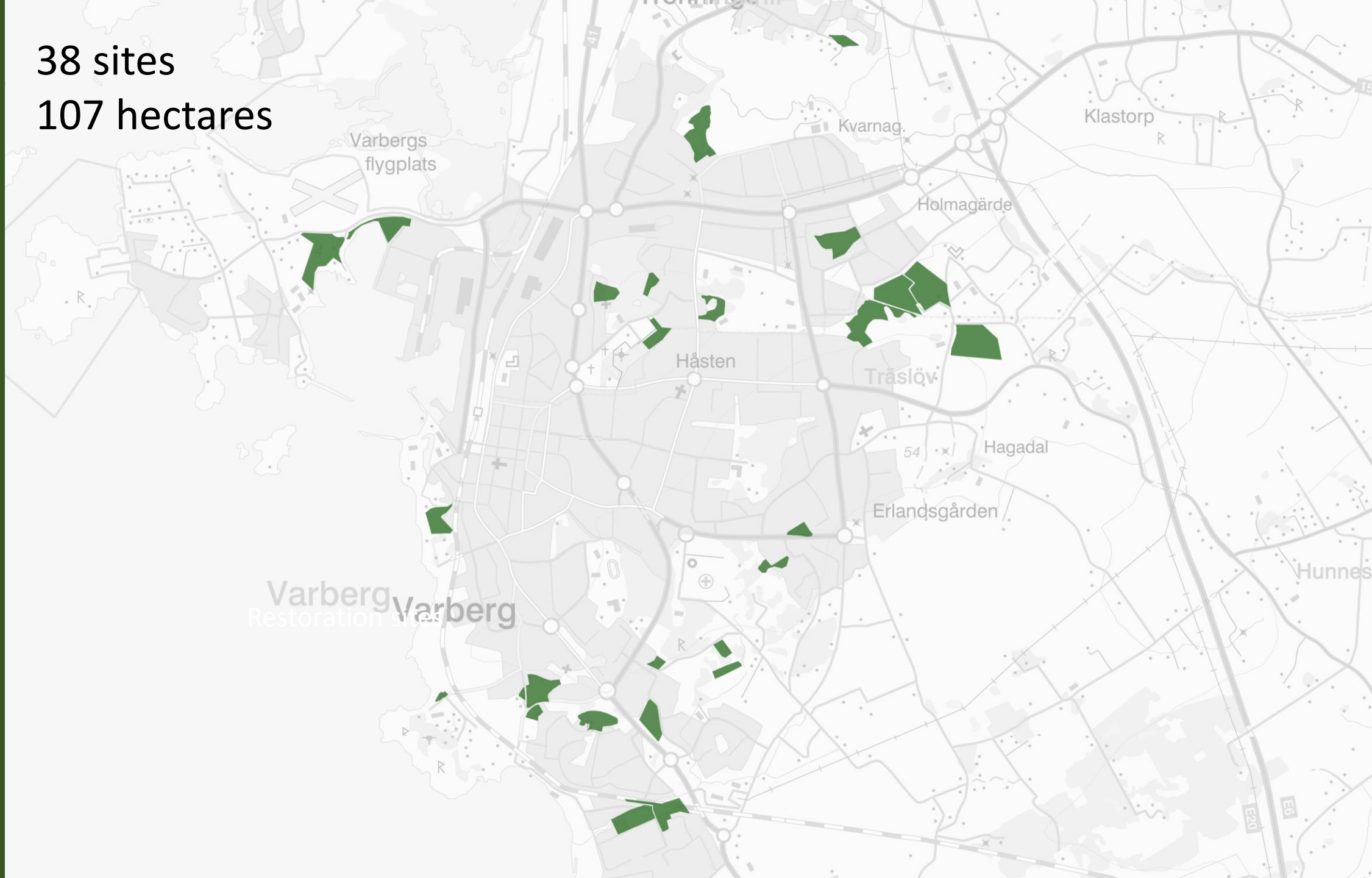
Selection of grassland areas

Areas of core value for biological diversity and pollinator abundance

- History of grazing or mowing
- High conservation interest
- Species values
- *Risk of exploitation*
- *Owned by the municipality*

Background

38 sites
107 hectares



Background

Characteristics

- From traditional hay meadows and pastures, to wasteland
- No, sporadical, yearly management
- No collection of hay
- Ceased or active grazing

Background

Unmanaged and grass-dominated

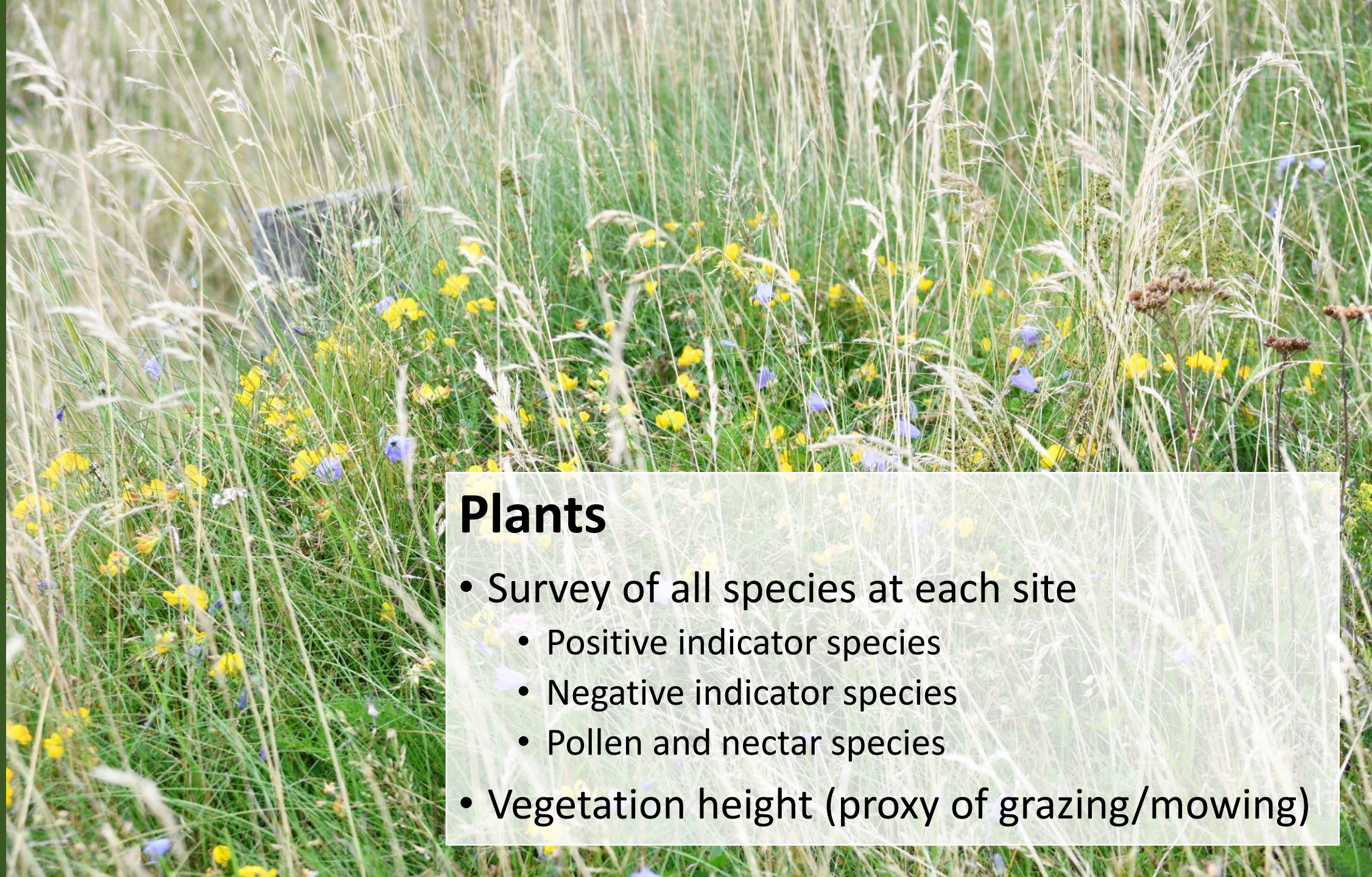
Grazed and diverse

Background

Isolated

Connected

Method



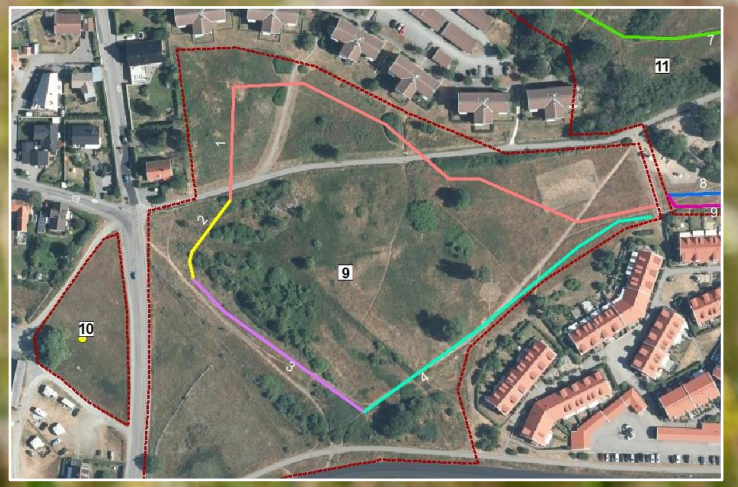
Plants

- Survey of all species at each site
  - Positive indicator species
  - Negative indicator species
  - Pollen and nectar species
- Vegetation height (proxy of grazing/mowing)

Method

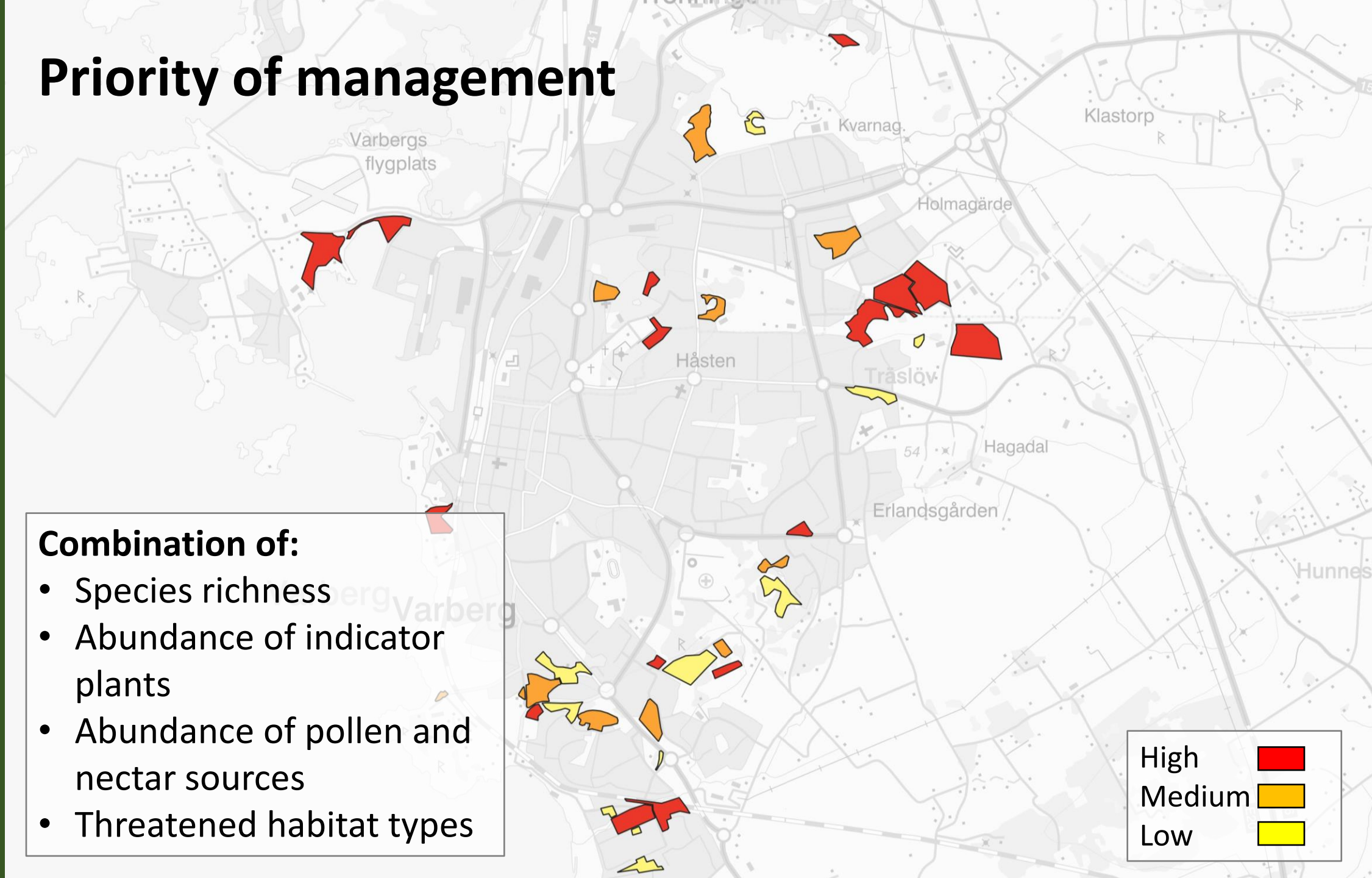
Butterflies

- Responds quickly to environmental change (12 times faster than their host plants, Erhardt & Thomas 1991)
- Transect (”walk-and-count”)



Results

Priority of management

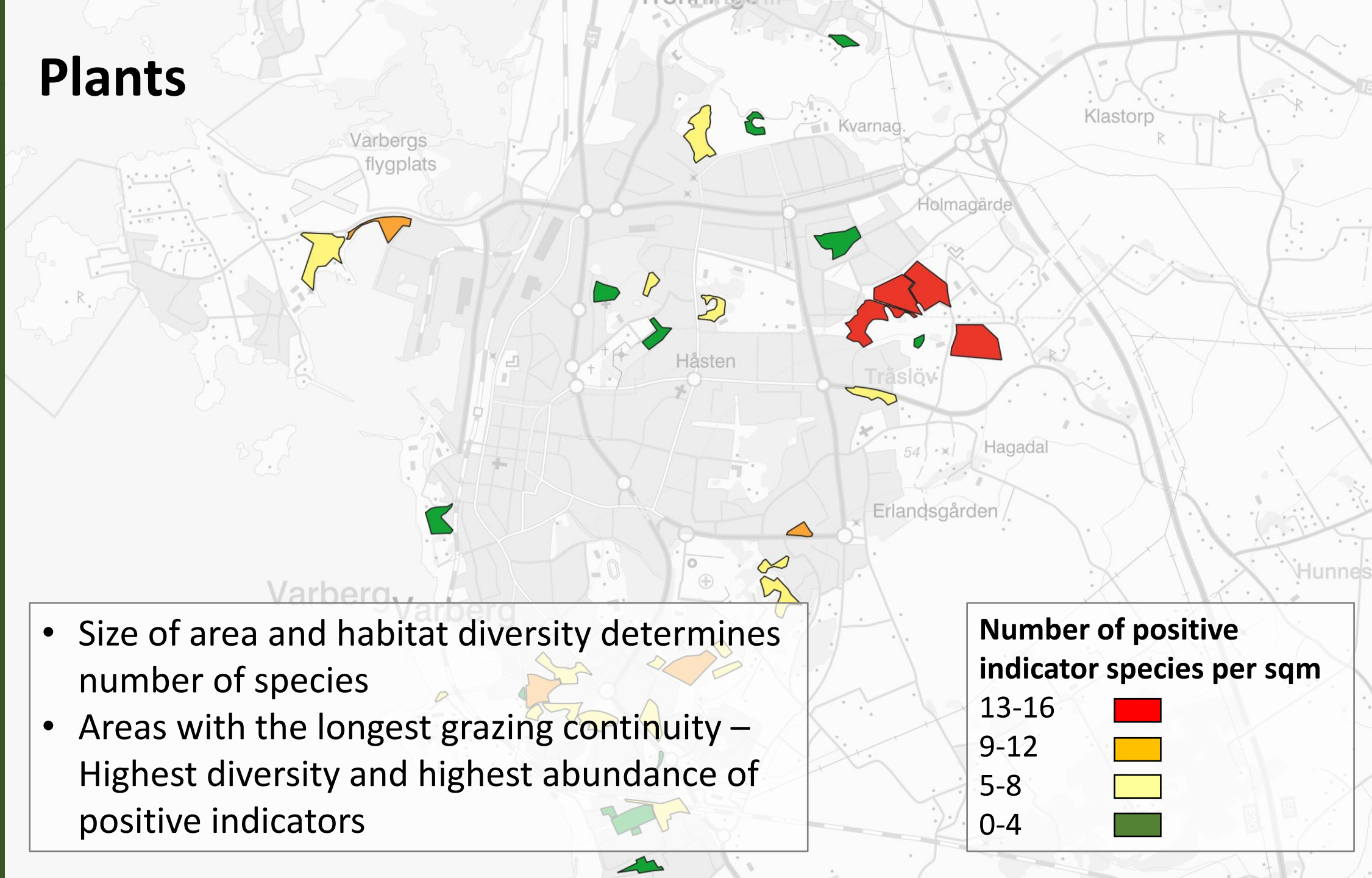


Combination of:

- Species richness
- Abundance of indicator plants
- Abundance of pollen and nectar sources
- Threatened habitat types

Results

Plants



- Size of area and habitat diversity determines number of species
- Areas with the longest grazing continuity – Highest diversity and highest abundance of positive indicators

Number of positive indicator species per sqm

13-16

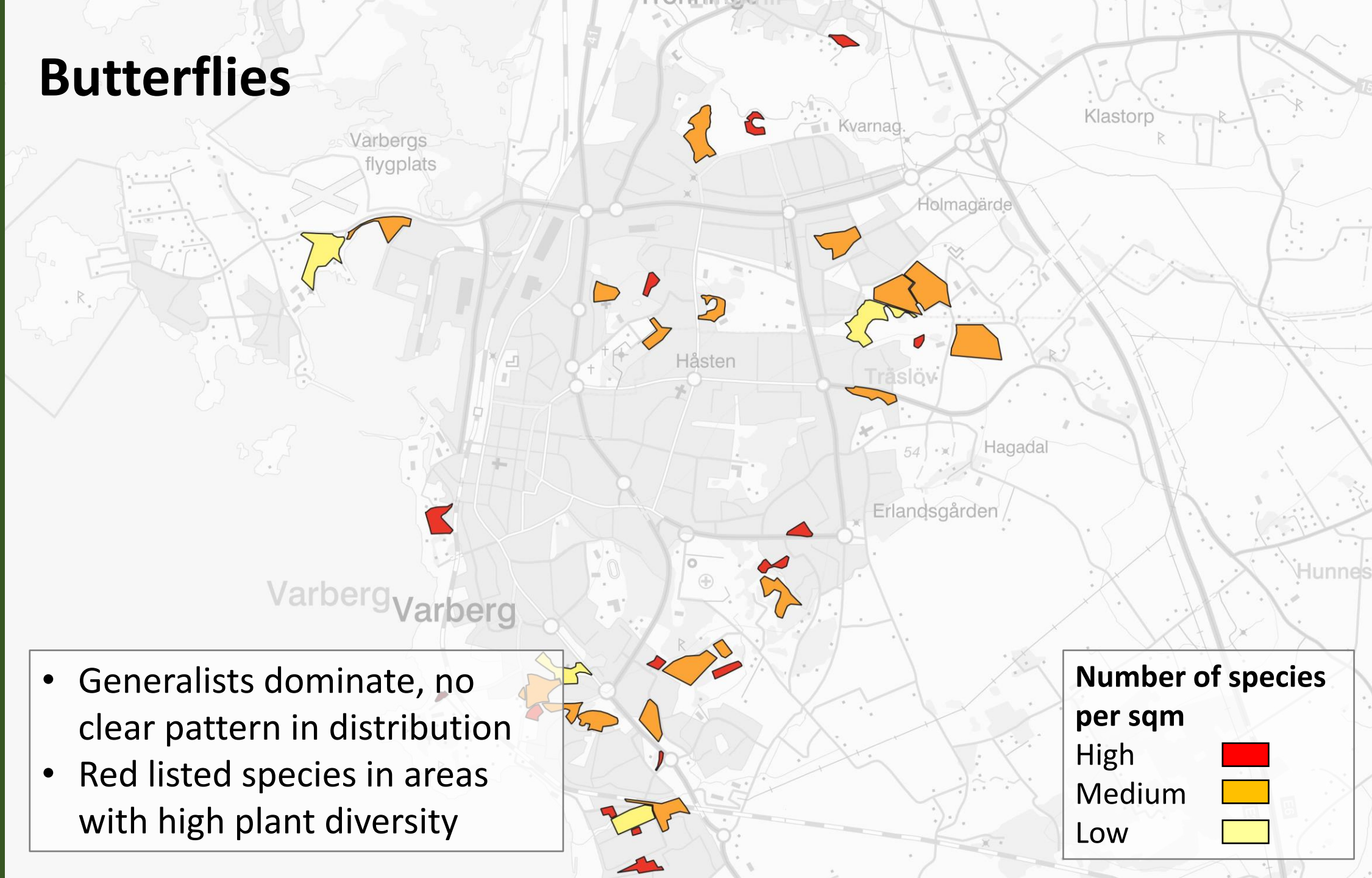
9-12

5-8

0-4

Results

Butterflies



- Generalists dominate, no clear pattern in distribution
- Red listed species in areas with high plant diversity

Results

Toolkit for grassland biodiversity (general and area specific)

Restoration

Grass cutting and hay removal

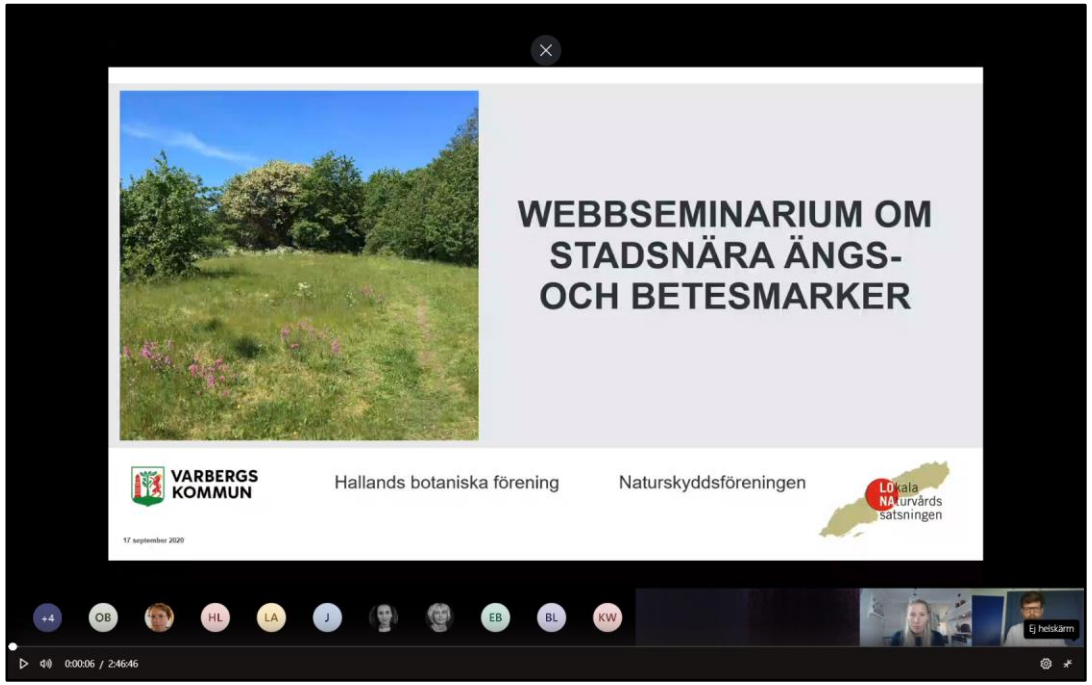
Restoration

Grass burning and clearing of overgrowth

Knowledge

Closing seminar

- Results from project
- Good examples
- Grasslands on a regional level
- Discussion and exchange of ideas
- Broad participation from within the municipality



Implications

Implications

Improved grassland management regime 2021

- 40 hectares of urban hay meadows (grass mowing, hay drying and harvest, september)
- Reduced frequency of mowing along road sides (once a year, september)

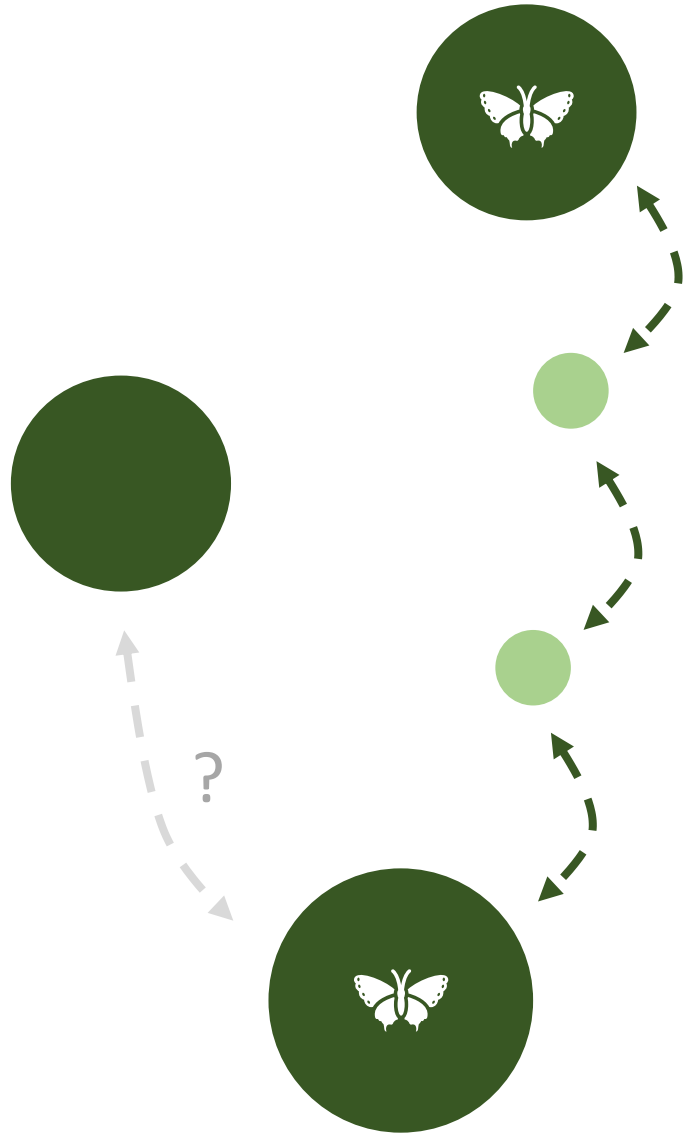
Implications

Higher quality of urban pastureland

- Dialogue with present animal keepers
- Campaign to increase grazing in urban pastureland

Spatial planning

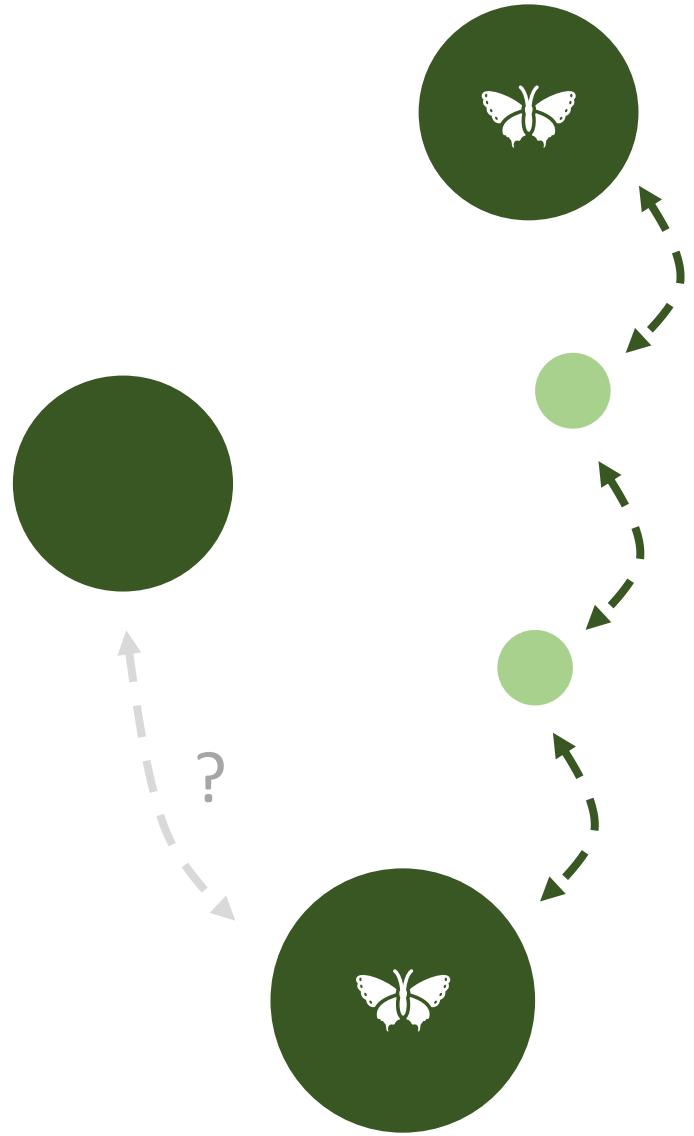
How can we use the result to increase urban grassland connectivity?



Spatial planning

How can we use the result to increase urban grassland connectivity?

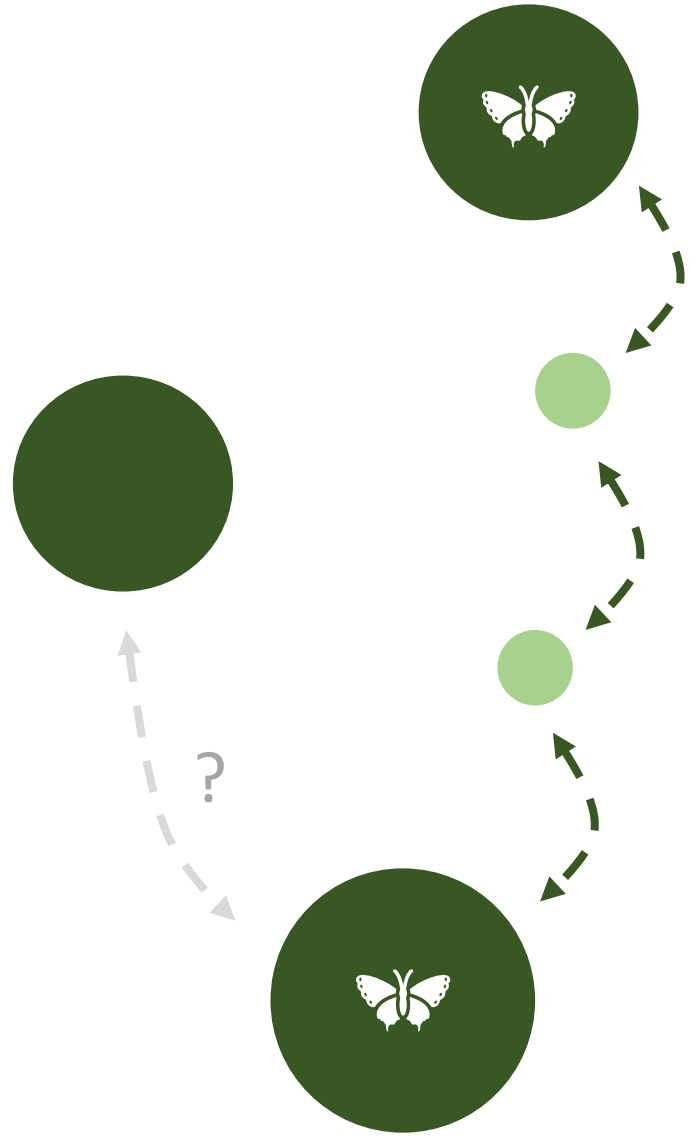
- Core habitats (average-high priority areas) from survey
- Simple and conservative analysis of dispersal of butterflies (300 m) and solitary bees (750 m)



Spatial planning

How can we use the result to increase urban grassland connectivity?

- Core habitats (high priority areas) from survey
- Simple and conservative analysis of dispersal of butterflies (300 m) and solitary bees (750 m)
- Identify barriers, stepping-stones and corridors
- As a motive for protection and management of dispersal habitats, *that appear to be of less value at first sight*
- Reduce risk of fragmentation



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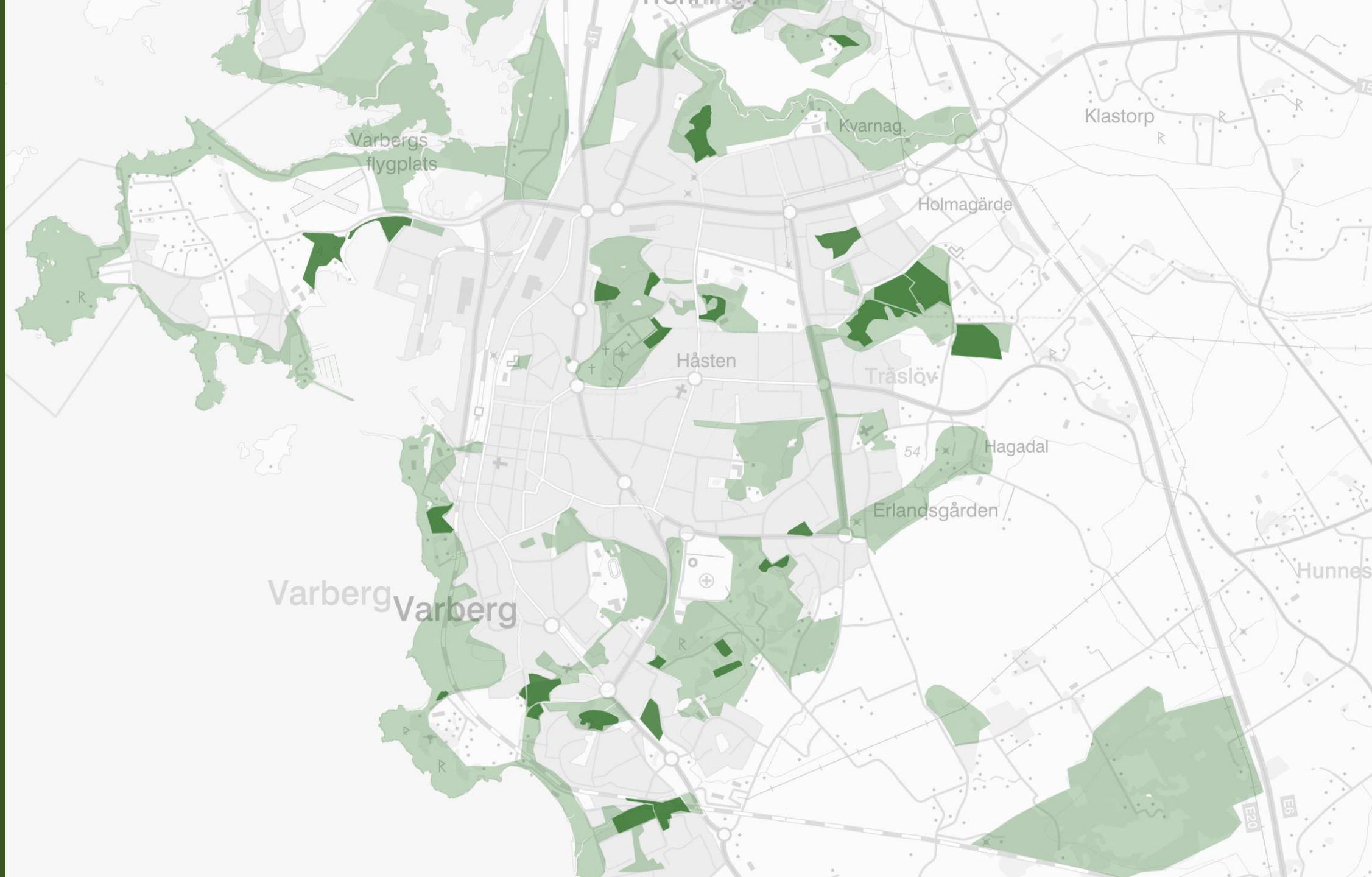

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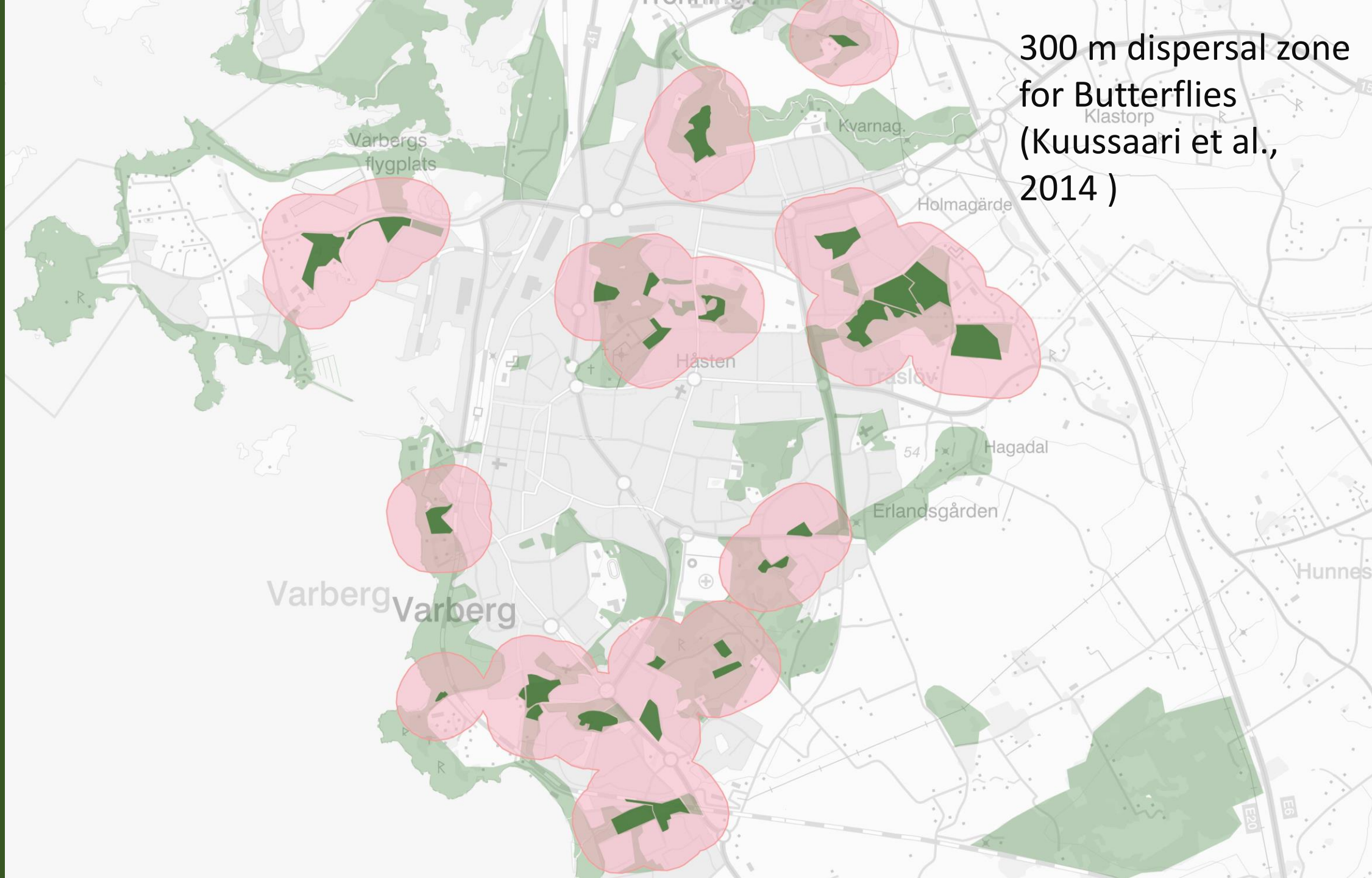
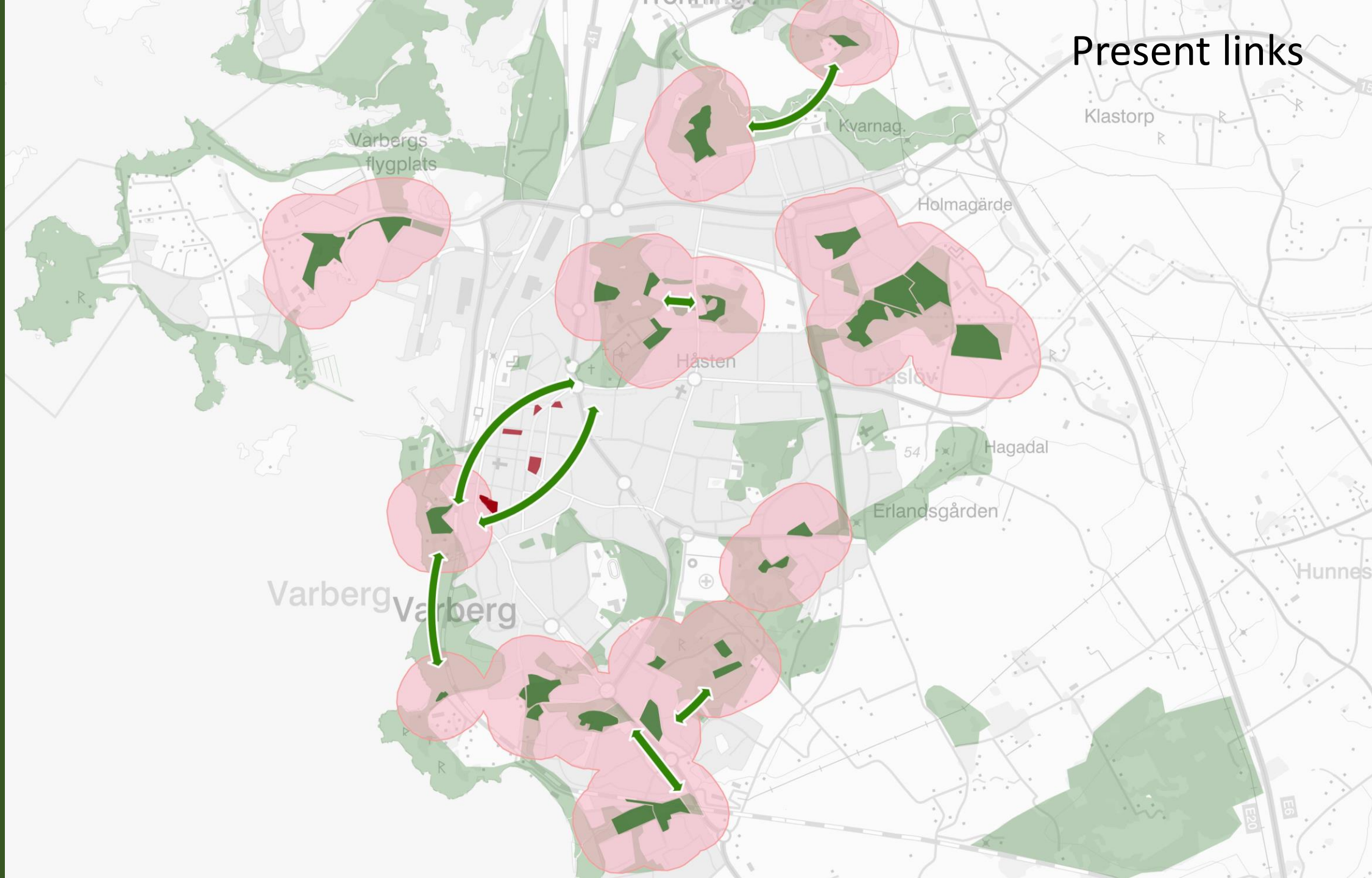


300 m dispersal zone for Butterflies (Kuussaari et al., 2014)

Spatial planning

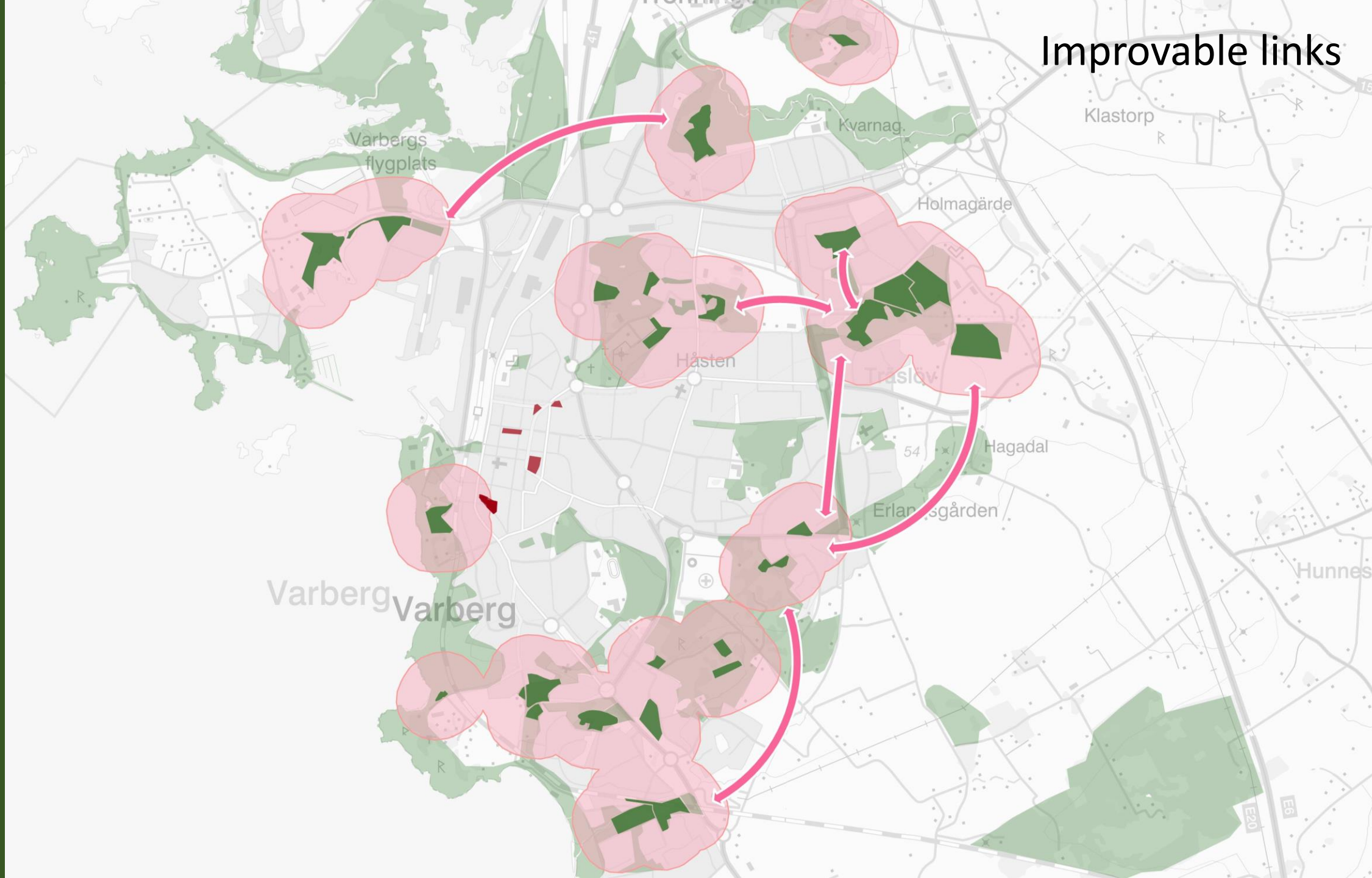


Spatial planning

Present links

Type: Stepping-stone habitats (park)
Focus: Protect and develop
How: Flower beds and flowering shrubs (nectar source, wind protection). Increase variability!

Spatial planning



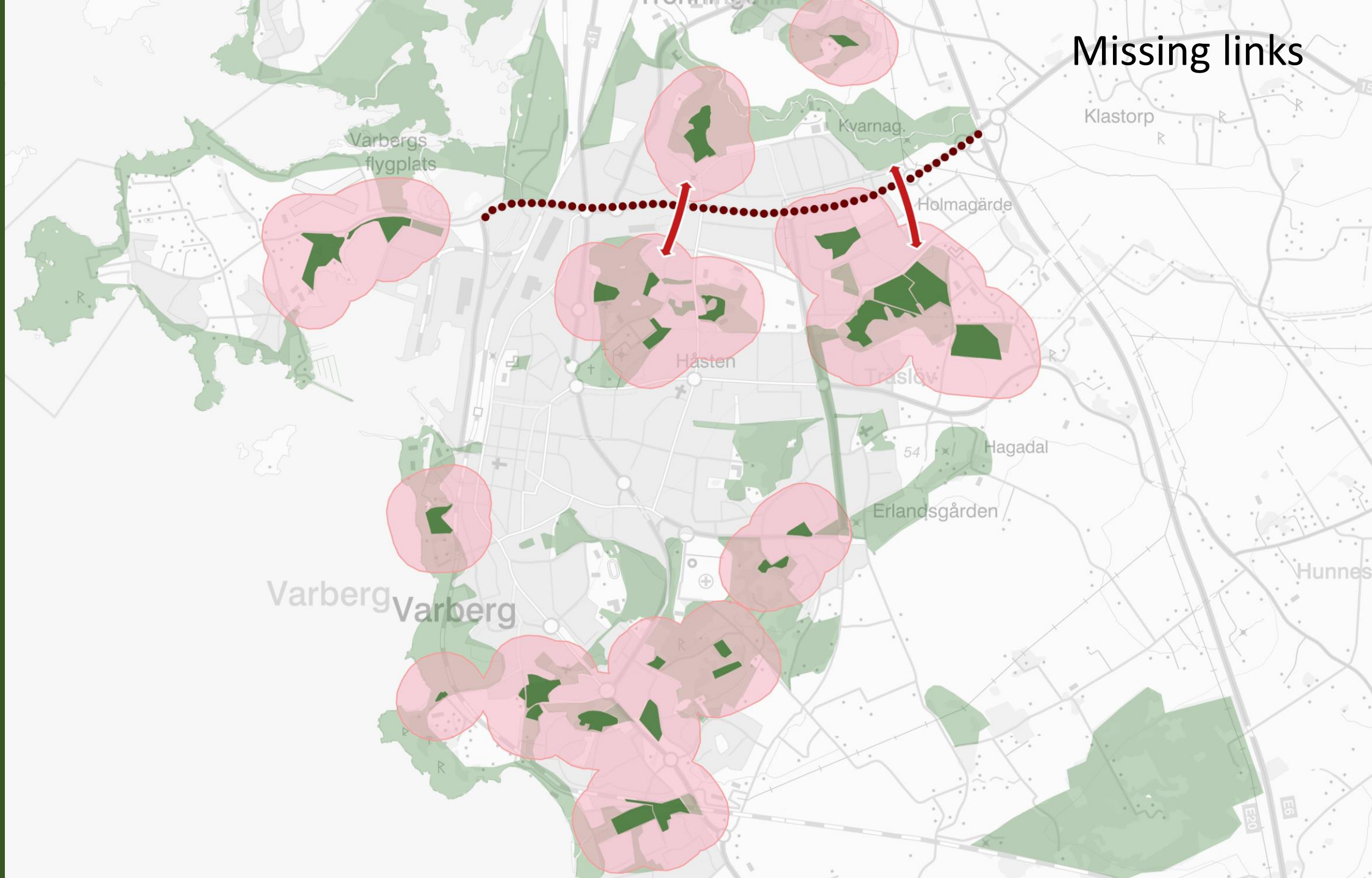
Spatial planning

Improvable links

Type: Corridor (open fields, grassland, forest)
Focus: Protect and develop
How: Grasslands, sand habitats, flowering shrubs, variable forest edges, reduced light pollution

Spatial planning

Missing links

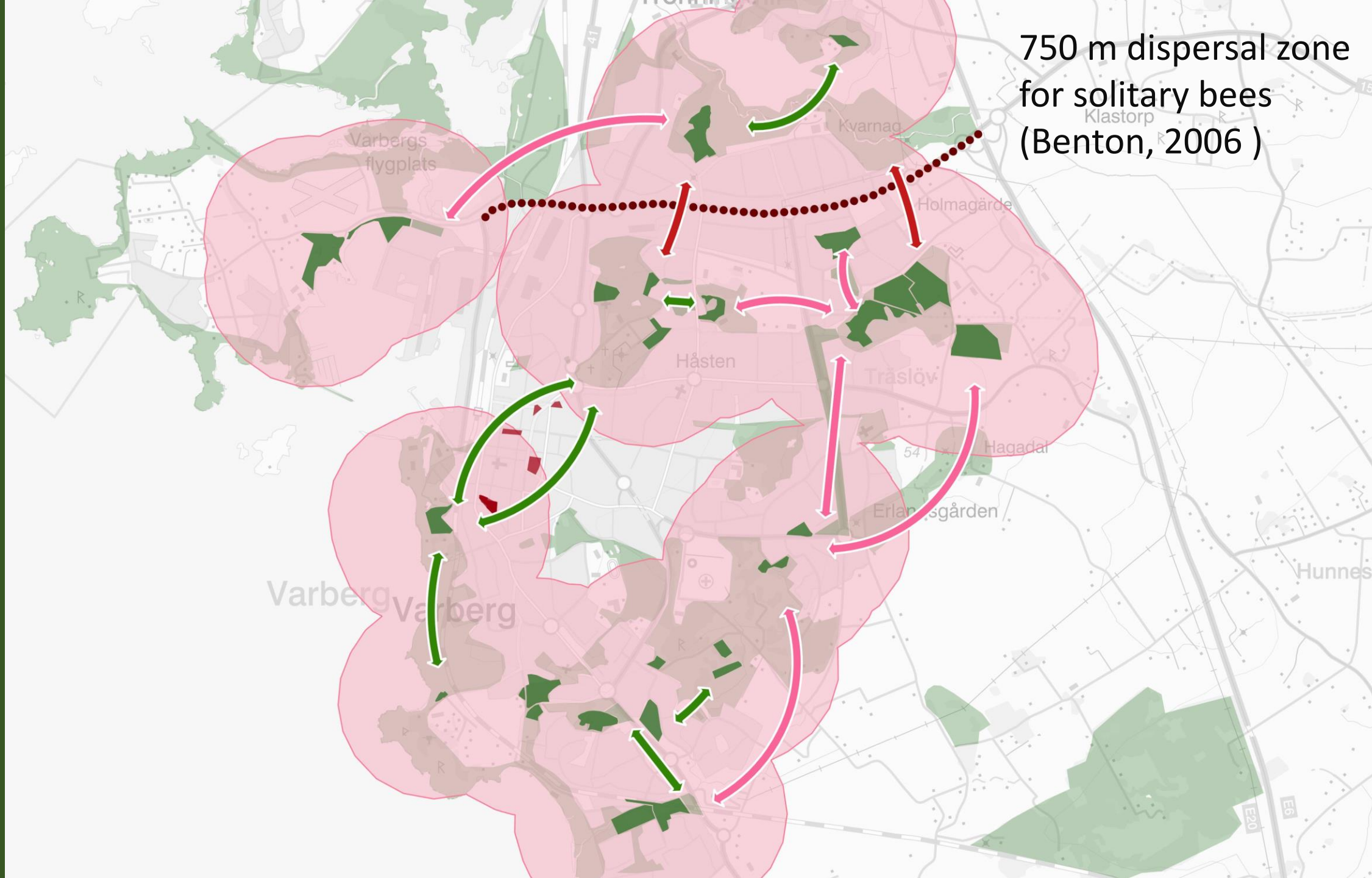


Spatial planning

Missing links

Type: Connectivity (road and industry)
Focus: Create
How: Flowering roadsides, flowering shrubs (nectar source, wind protection), reduce light pollution

Spatial planning



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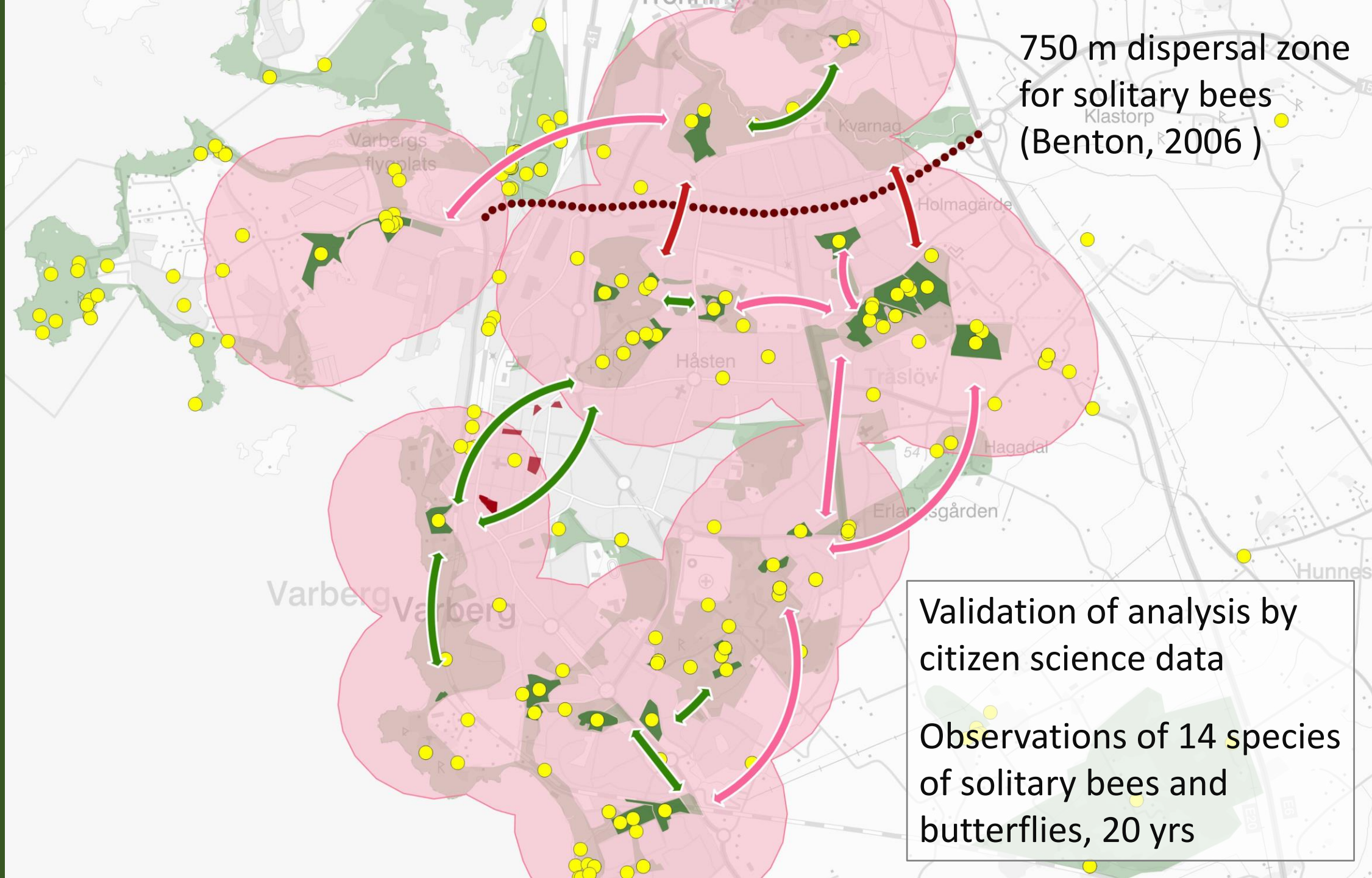

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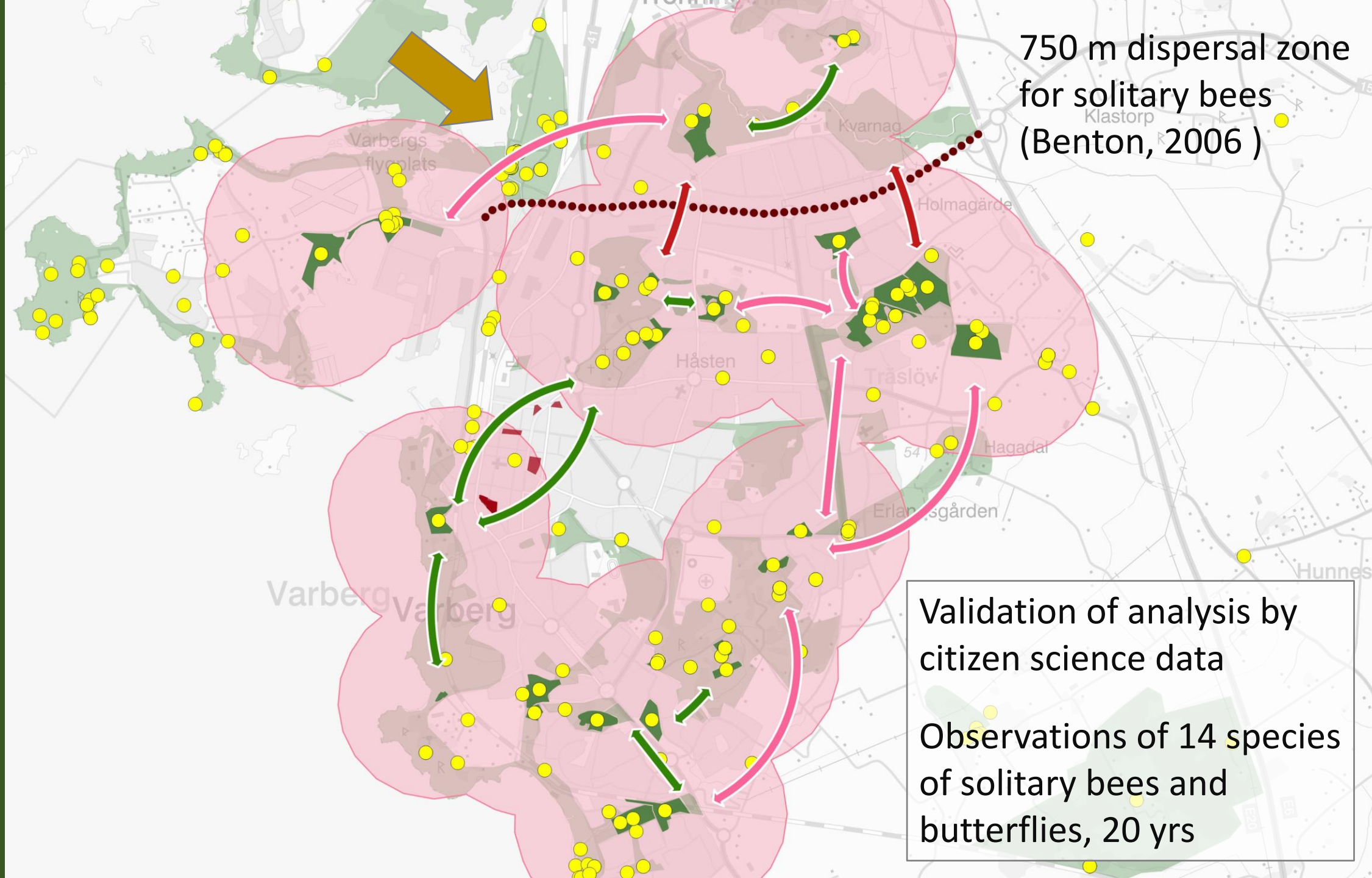

Lessons learned

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- High conservation gains by small shifts in mindset
- Important to gather and share information of natural values and ecosystem services

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- Use the local knowledge and the commitment of NGOs
- Structures for exchanging experience and knowledge within the municipality are fundamental

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- Important to gather and share information of natural values and ecosystem services
- Use the local knowledge and the commitment of NGOs
- Structures for exchanging experience and knowledge within the municipality are fundamental
- Good practices – ”If they can, so can we”
- Simple GIS-models – A starting point for including aspects of dispersal in spatial planning

Thank you!