Challenges in sampling sparse habitats

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LIFE+ MOTH

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Challenges and demands

- Demand of cost-effectiveness
  - Using data from ongoing nation wide programs
  - Why traditional random sampling just don't do it
  - Most habitats are rare! Or at least infrequent!
  - NFI and NILS are designed to survey common features!
- Necessary to survey the whole country
  - Most sites are located outside protected areas
  - But data also needed from protected areas
- A hope for a general survey
  - Became two –
- Choice of methods
  - Mapping versus sampling
  - Two-phase (first two-stage…)
  - Remote sensing. Automatic satellite or manual aerial images. Antropogenic land-use …
- Usefulness for other assessments (SEPA) and in other countries (EU)

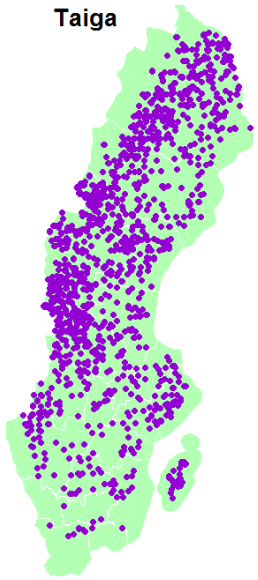
Challenges we faced 2010

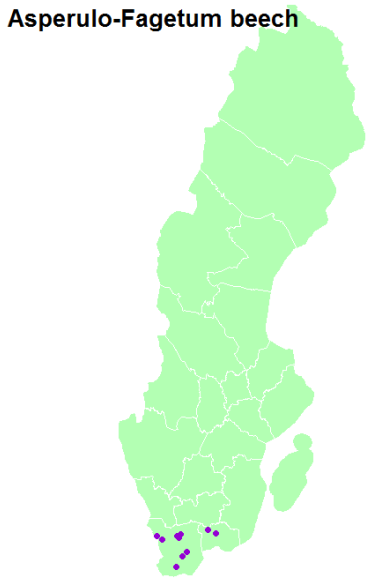
- Demand of cost-effectiveness
- Spatial scope
- Remote sensing or field survey
- A hope for a general survey
- Usefulness for others…

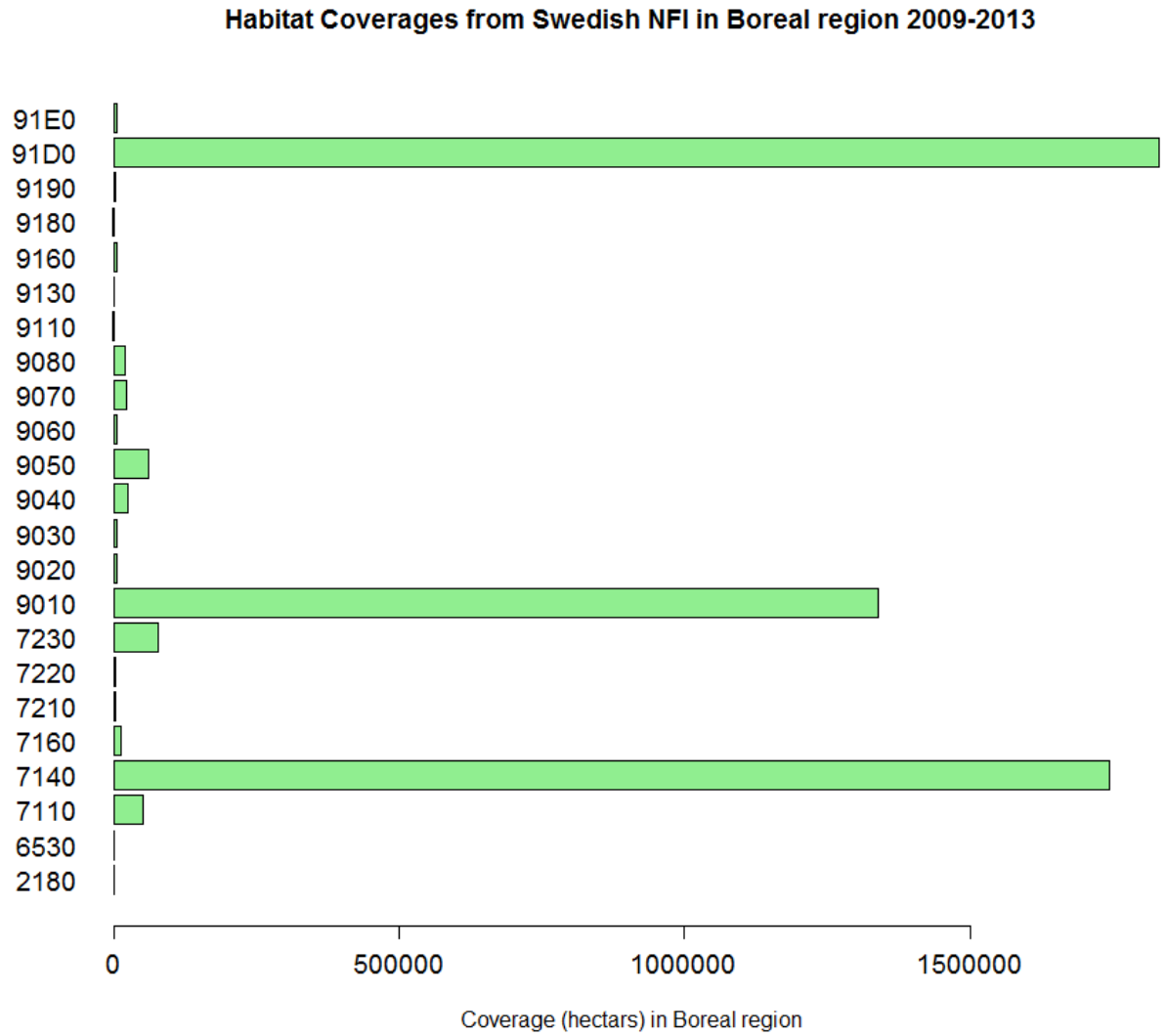
Using data from ongoing programs

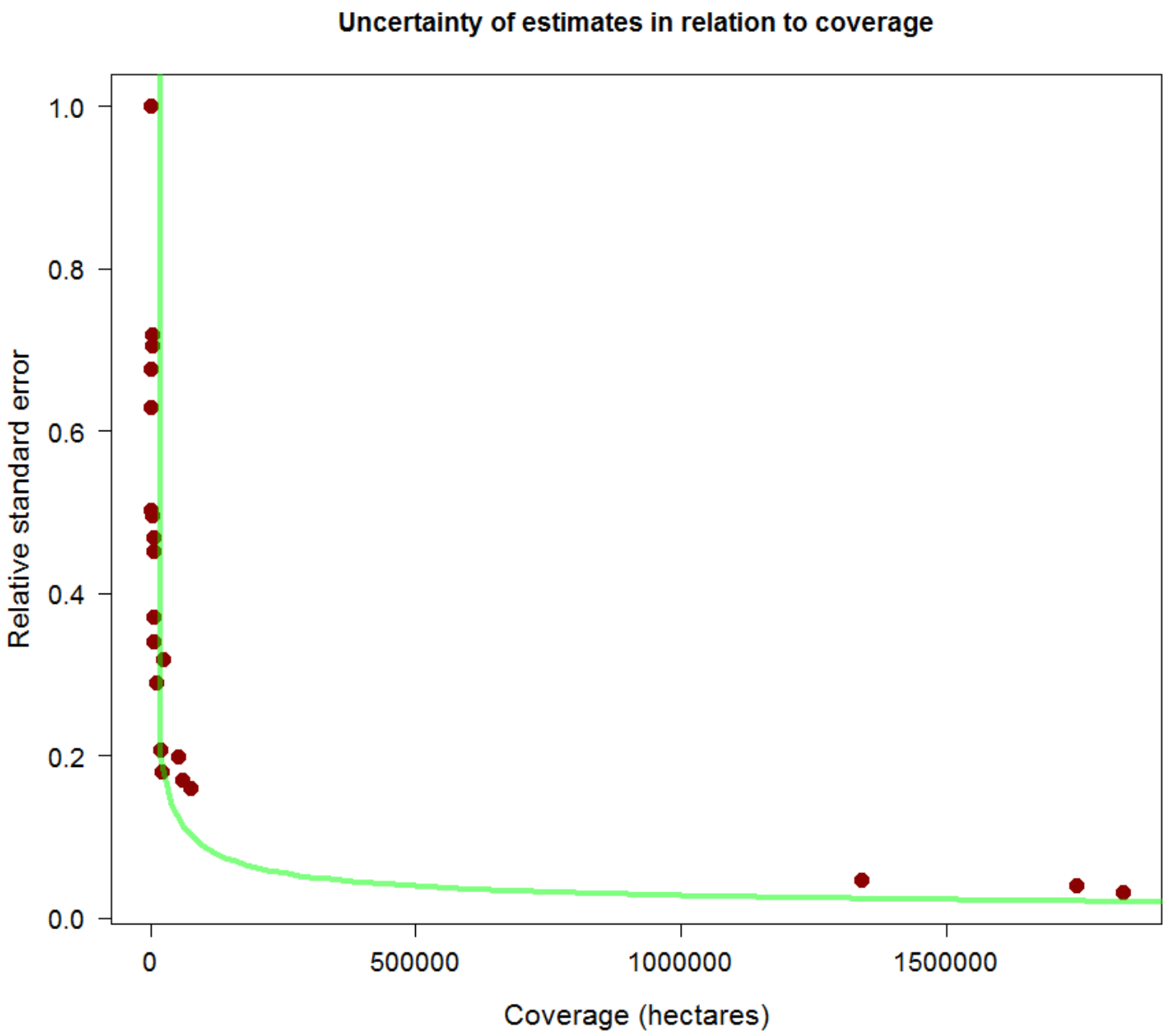
- Swedish NFI, NILS
  - Random plot sampling, covering whole of Sweden

Most habitats are rare (or at least infrequent)







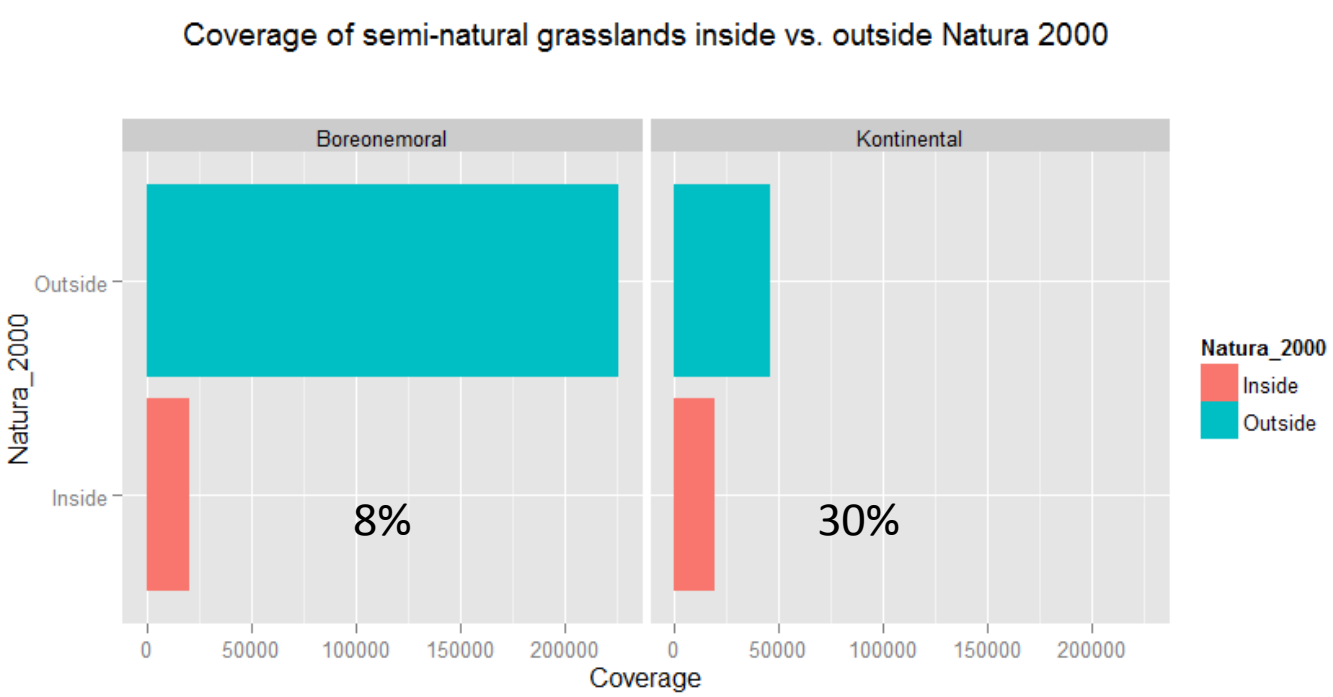

Uncertainty of estimates in relation to coverage
Relative standard error
1.0
0.8
0.6
0.4
0.2
0.0
0
500000
1000000
1500000
Coverage (hectares)

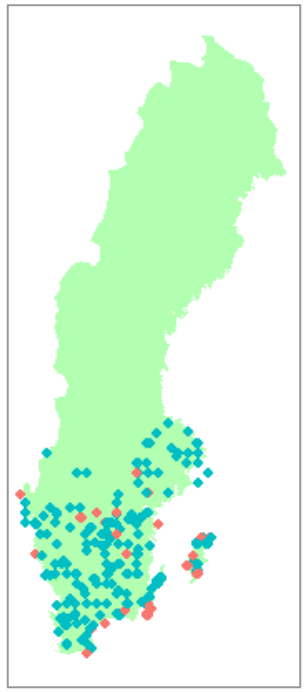
Using data from ongoing programs

- Swedish NFI, NILS
  - Random plot sampling, covering whole of Sweden
  - Many rare and few common habitats
  - Excellent data for common habitats, but insufficient for rare and infrequent
  - Useful for estimating coverage, distribution and quality
- TUVA, Forest key habitats, protected areas
  - Databases of known high value sites of semi-natural grasslands, forests and other habitats
  - No sampling, inclusion probability unknown and it differs between regions and habitats
  - Useful for distribution maps

Spatial scope of the survey?

- Is it possible to base the habitat assessment on data from the Natura 2000 network only?
- Guideline – if 80% is located within …
- How much of our habitats are located inside protected areas?



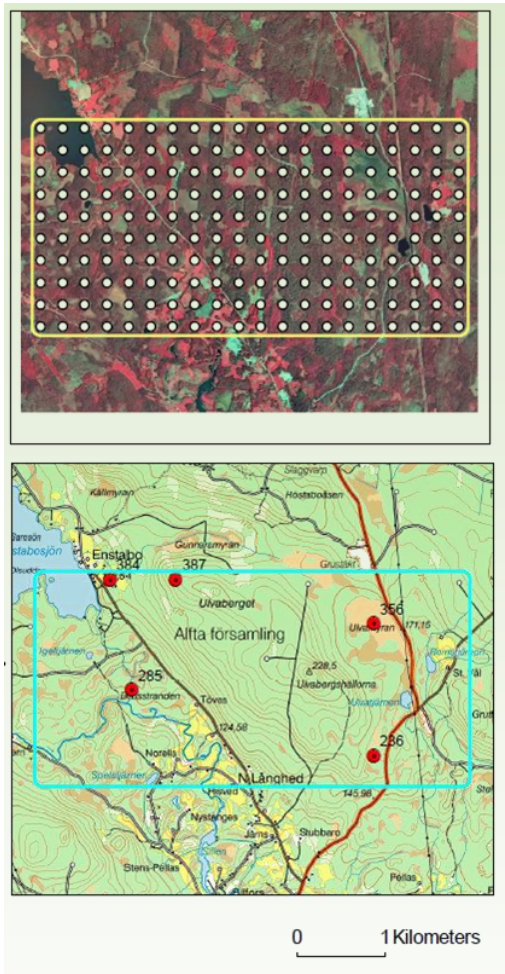


Need for earth observation data

- Experiences from three remote sensing projects
  - Base-line survey of habitats and NILS land cover/land use survey using manual interpretation of airborne NIR images
  - Swedish forest map (kNN) using satellite images combined with Swedish NFI data
- Habitat classification in grasslands and forests depends on anthropogenic land-use and manual techniques with aerial images is better to detect and infer human land-use activities
- Base-line habitat survey ended in 2009 and we could recruit experienced image interpreters to LIFE+ MOTH

Habitat assessment needs field data (also)

- Remote sensing gives information about coverage, and some status variables
- Cover and abundance of vascular plants, lichens and mosses, shrub cover, woody debris (so far) needs data collection in the field
- Combining remote sensing data and field data with two-phase sampling



Demand for usefulness

- Data should be available and useful in other assessments (Swedish EPA)
  - Data collection of variables and species needed in general biodiversity monitoring.
- Methods should be useful in other countries (LIFE–unit)
  - Publication and dissemination

What we will present

- Sven: Description of the design of the point-grid two-phase method – General terrestrial habitat inventory
- Anna: Principles behind the aerial interpretation
- Åsa: The two-phase sea-shore inventory using a line-intercept method
- Sven: Shows how to combine estimates from several different surveys
- Hans: Some results with focus on forest habitats

- Hans & Åsa: After-LIFE – Suggestions of future surveys based on methods from LIFE+ MOTH
- Johan Abenius – Future visions from Swedish EPA

And our invited guest speakers

- Bengt-Gunnar Jonsson – chair of session II
- Rūta Sniedze–Kretalova - Habitat monitoring in Natura 2000 sites in Latvia
- Toon Westra - The monitoring design for Natura 2000 habitats in Flanders
- Wenche Eide - Assessment of alpine habitats in Sweden
- Olli Ojala - Monitoring of Habitat types of Community Interest in Finland
- Clive Hurford - Is *Liparis loeselii* a typical species?
- Håkan Olsson - Use of remote sensing in habitat monitoring