

LIFE08 NAT/S/000264

MOTH - Demonstrating an integrated
North-European system for
monitoring terrestrial habitats

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Monitoring Terrestrial Habitats (MOTH)
LIFE08 NAT/S/000264



Background and motivation of LIFE+MOTH

–the life before MOTH...

Article 17 reporting

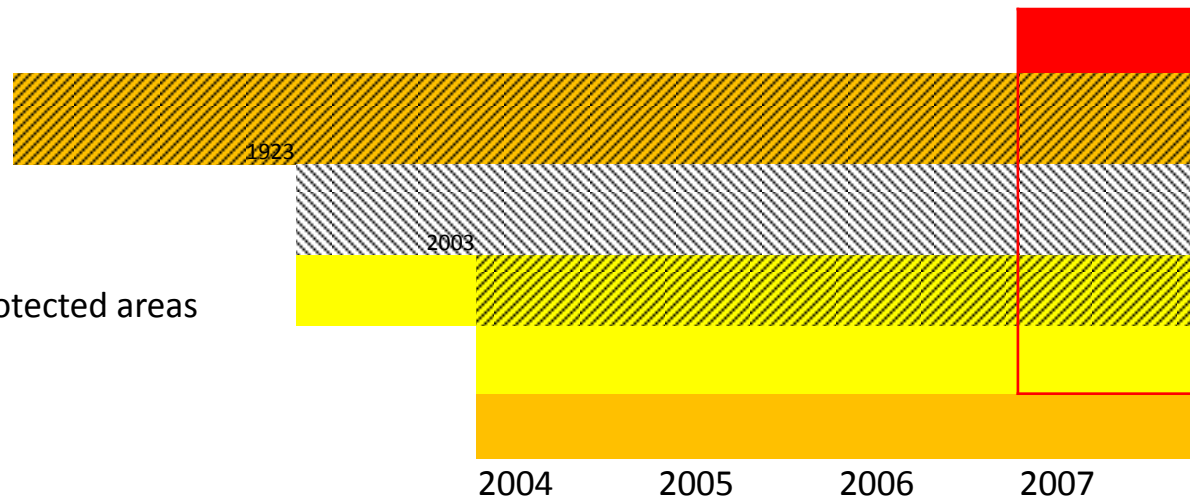
Swedish National Forest
Inventory (NFI)

National Inventory of the
Landscape in Sweden (NILS)

County Adm. boards: Natura 2000 and protected areas

"Base Inventory" Swedish EPA

"Use of NFI and NILS in Article 17" SLU



”Base inventory of Natura 2000 and protected areas” 2004-2008



Frontpage detail from NATURVÅRDSVERKET, 2009. Rapport 5907 • Data från Basinventering av Natura 2000 och skyddade områden

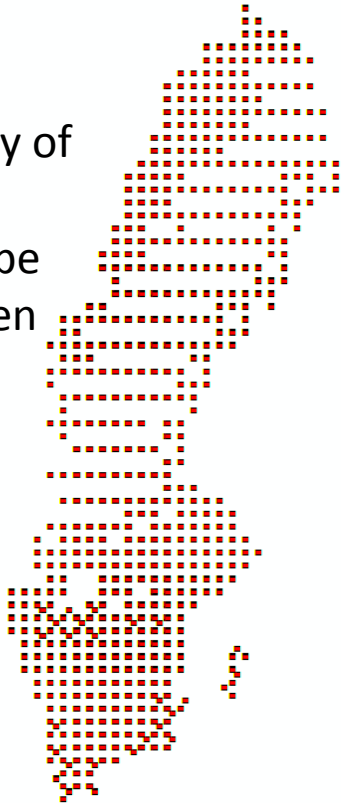
- Aerial photo interpretation
- Delineate polygons of similar properties
- Additional data (historical maps, species lists, habitat classification, stand age, etc)

- Aim: collect data on Annex 1 habitats, structures, function, species in N2k and protected areas, management planning

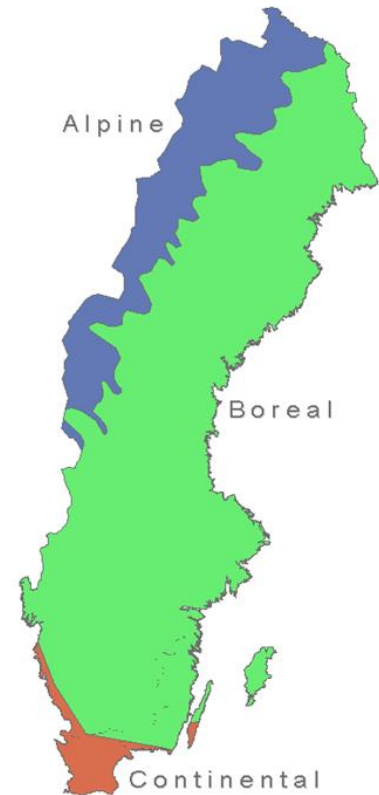
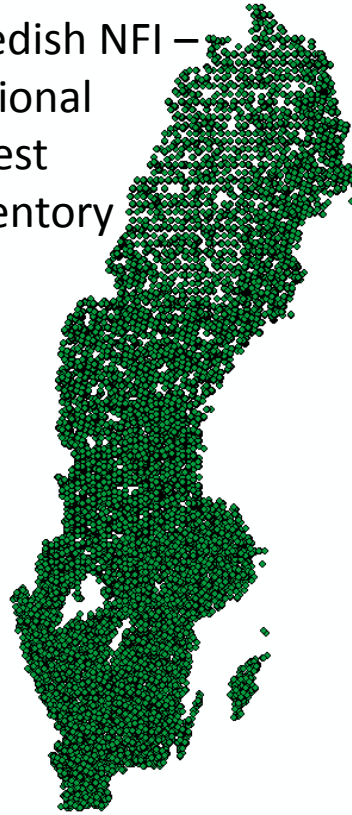
- Field verification and collection of additional field data by County adm. (ongoing)

"Use of NFI and NILS in Article 17" SLU 2004-2007

NILS –
National
inventory of
the
Landscape
in Sweden

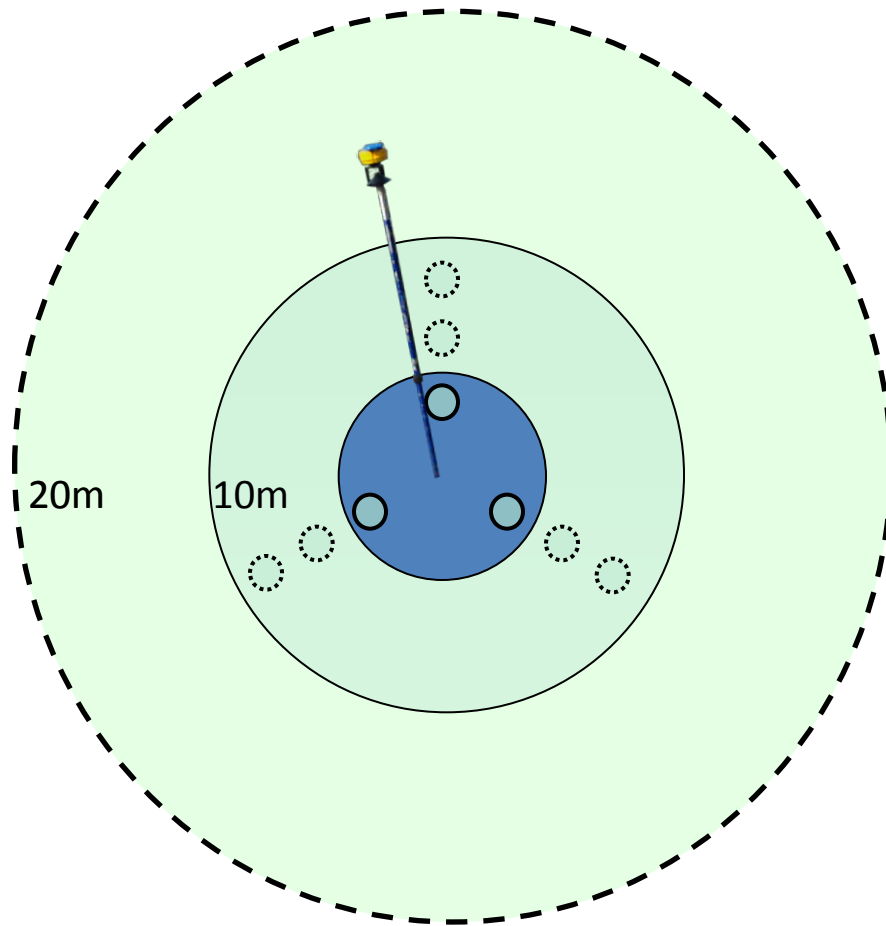


Swedish NFI –
National
Forest
Inventory



Ståhl *et al.*, 2007. Utökad samordning av landskapsövervakning och uppföljning av Natura 2000: slutrapport. Arbetsrapport 196. Umeå, Sveriges lantbruksuniversitet (in Swedish)

Field plots and variables



20m radius:

Land use.

Tree layer: cover, Stand-level: age, height, number of stems and basal stem area (dead/alive)

10m/7m radius:

Ground cover: shrub layer, field layer, bottom layer, cover of listed species

Physical description: humidity, soil types, texture, slope, mire-vegetation types

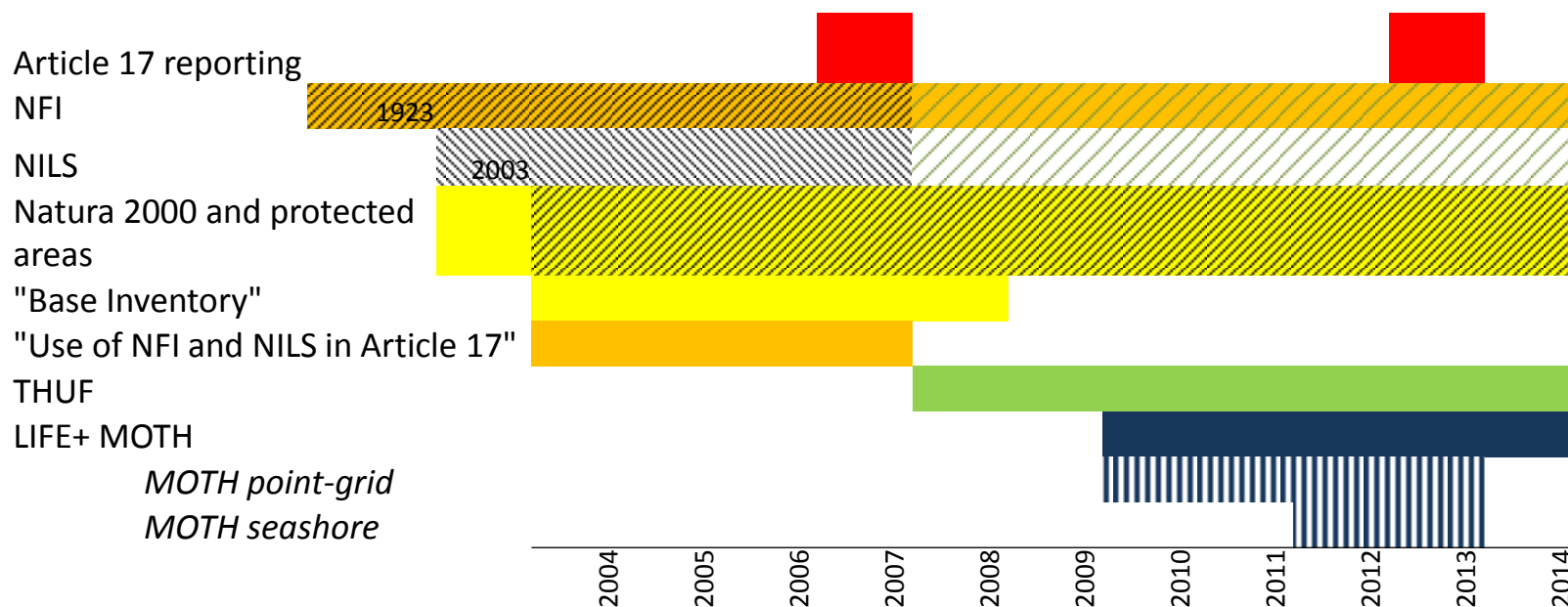
Habitat

0,25m² sample plots (in NILS):

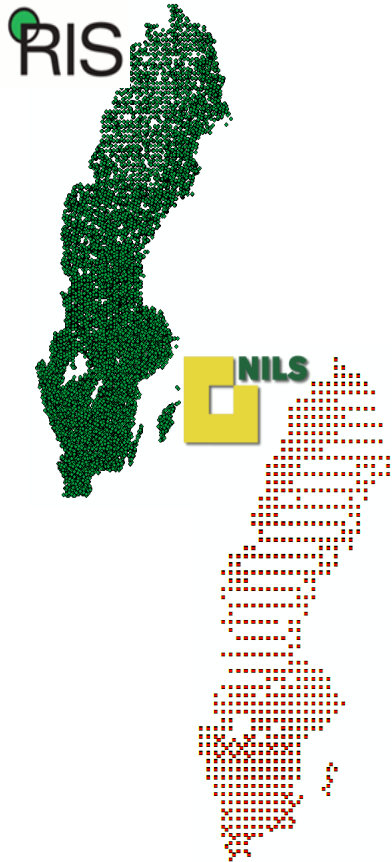
Presence-absence of listed species

Effect of the conclusions and suggestions by Ståhl *et al.*, 2007:

- 2008 NFI and NILS: Extra variables and Habitat classification .
Common Annex 1 habitats
- 2008 THUF, terrestrial habitat monitoring -Development of methods for targeting less frequent Annex 1 habitats:
- 2010 LIFE+ MOTH (point-grid and line-intercept)

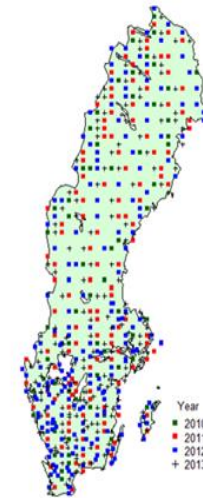


Life+ MOTH (2010-2014)



- Complementary to NFI and NILS. Use of field methodology
- Random sampling
- Two phase-design: interpretation + field visit
- Estimation of areal coverage, distribution and conservation status of terrestrial (less frequent) Annex 1 habitats
- Combining results

Surveyed point-grid clusters



Surveyed sea-shore clusters



Habitat classification



Instruktion för
Habitatinventering
i NILS och MOTH,
2014



Instruktion för
Habitatinventering
i NILS, 2008

Version 2008-06-24

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- **Minimum area for registration** (0,25ha forests, 0,1ha wetlands and grassed areas, points for springs)
- Habitats must **meet general criteria** regarding exploitation, age, amount of dead wood, etc
- Need to use **indicator species** to distinguish among related habitat types. Indicator value may differ in different regions.
- Lists for wetlands, grasslands, and alpine areas where species have different values



Swedish University of
Agricultural Sciences

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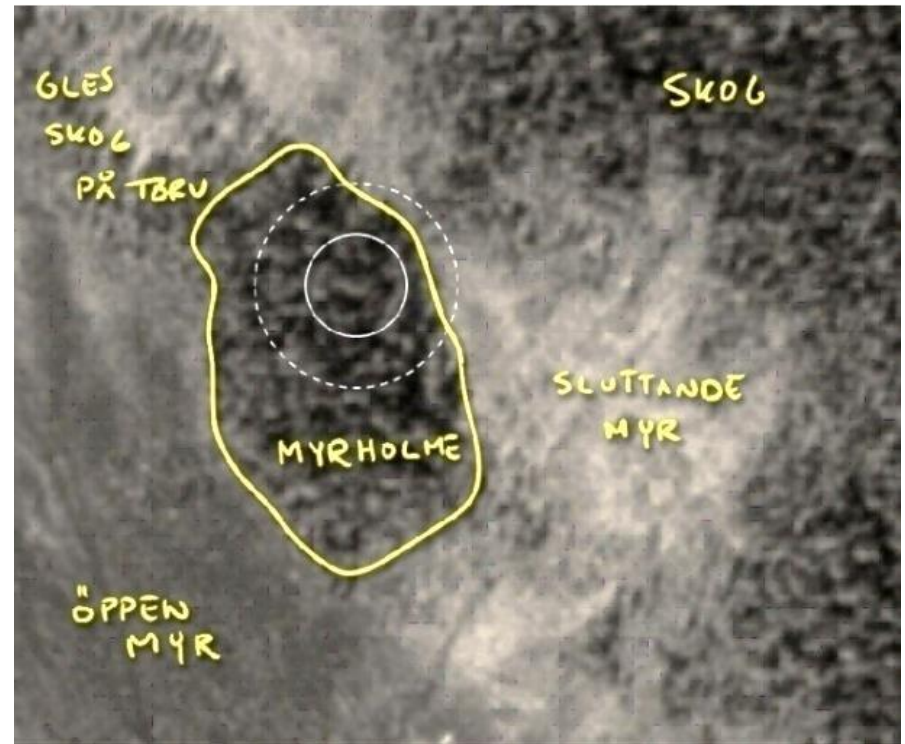
Criteria for naturalness

For *forest habitats*, all of the following criteria have to be fulfilled:

- 1) The stand originates from natural regeneration.
- 2) Large-scale cutting or thinning has not taken place during the last 25 years.
- 3) In moist or wet stands, no ditches, roads etc. within 25 meters from the plot center affect the hydrology in an obvious way.

And, at least one of the following criteria has to be fulfilled:

- 4) Stand age exceeds “lowest recommended final stand age” with at least 40 years.
- 5) Stand exceeds “lowest re-commended final stand age” with at least 20 years: *and* the amount of dead wood exceeds 10 m³/ha, *or*, the stand is multi-layered.
- 6) There are at least eight old standards per hectare of oak, beech, elm, lime or maple
- 7) There are at least 80 standards per hectare of spruce or pine,
- 8) The area is affected by natural disturbances or by management aimed at imitating such disturbances.



Indicator species for wetlands:

Vetenskapligt namn	Svenskt namn	Söder	Norr
<i>Bartsia alpina</i>	Svarthö	1	1
<i>Carex appropinquata</i>	Tagelstarr	1	1
<i>Carex capillaris</i>	Hårstarr	1	1
<i>Carex capitata</i>	Huvudstarr		1
Carex flacca	Slankstarr	1	
<i>Carex flava</i> coll.	Knagglestarrgruppen	1	1/3
<i>Cypripedium calceolus</i>	Guckusko	1	1
<i>Dactylorhiza incarnata</i> coll.	Ängsnyckelgruppen	1	1
Eleocharis quinqueflora	Tagelsäv	1	1
Epipactis palustris	Kärrknipprot	1	
<i>Equisetum scirpoides+variegatum</i>	Tråd-/smalfräken	1	1
Eriophorum latifolium	Gräsull	1	1
<i>Gymnadenia conopsea</i>	Brudsporre	1	1
<i>Listera ovata</i>	Tvåblad	1	1
<i>Ophrys insectifera</i>	Flugblomster	1	1
<i>Parnassia palustris</i>	Slätterblomma	1	
Primula farinosa	Majviva	1	1
Schoenus ferrugineus	Axag	1	1
<i>Selaginella selaginoides</i>	Dvärglummer	1	1/3
<i>Tofieldia pusilla</i>	Björnbrodd		1/3
<i>Calliergon giganteum</i>	Stor skedmossa	1	1
Campylium stellatum	Guldspärrmossa	1	1/3
<i>Catoscopium nigrum</i>	Svartknoppsmossa	1	1
<i>Cinclidium stygium</i>	Myruddmossa	1	1/3
<i>Cratoneuron filicinum</i>	Källtuffmossa	1	1
<i>Leiocolea rutheana</i>	Praktflikmossa	1	1
<i>Meesia triquetra</i>	Trekantig svanmossa		1
<i>Meesia uliginosa</i>	Svanmossa		1
<i>Moerckia hibernica</i>	Kärrmörkia	1	1
Paludella squarrosa	Piprensarmossa	1	1/3
Palustriella commutata+decipiens+falcata	Tuffmossor	1	1
<i>Preissia quadrata</i>	Kalklungmossa	1	1
Scorpidium cossonii	Späd skorpionmossa	1	1
<i>Scorpidium scorpioides</i>	Korvskorpionmossa	1	1/3
<i>Tayloria lingulata</i>	Kärrtrumpetmossa		1
Tomentypnum nitens	Gyllenmossa	1	1/3

Sum:
>3 points =
"rich" habitats

<3 points =
poor habitats





Fieldwork (in NILS/MOTH):

- Two persons in each field team
- One car/team during field season (5 months)
- 16 days/4weeks-period, not more than 6 days in row.
- 10 hours a day
- Travelling time is working hours!
- Costs: 12 000 Skr/field day (incl training, equipment, salary, expences)