

Sveriges lantbruksuniversitet Swedish University of Agricultural Sciences

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Monitoring of Terrestrial Habitats

Inventory by Aerial Interpretation in MOTH



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Aerial photo interpretation to pinpoint Annex 1 Habitats

- Land cover: A method that can cover large areas and identify a *wide* range of land-cover and vegetation types, (forest, grasslands, mires, seashores and substrate habitats).
- Land use: Also a method that can identify the *degree of anthropogenic impact* on the habitat, (some are including e.g. pastures, others excluding e.g. forests).
- Manual interpretation of colour infrared aerial photographs in stereo was the most viable remote sensing option in capturing all these aspects!

Digital photogrammetric workstation





Finding the Habitats

<u>Phase I</u>

- All points are classified in Non habitats and possible habitats.
- This data goes on to: planning of field inventory and later estimations.
- The point in the grid defines which point in the landscape will be classified
- Sampling unit: **12,5 km²** with 200 points ca 1,5 days to complete
- Compared to wall-to-wall delineation of 1 km² and assignation of 87 variables (NILS inventory), ca 3 days to complete







Characteristics to look for

- One reads the whole vegetation community, the biotope instead of single species – excellent overview.
- o Life forms
- Flows and Patterns in the landscape
- Colours, heights, denseness, structure and texture of objects, surfaces, sizes and shapes
- Moisture, geography, topography, soil, rocks, cultural effects recent and historical and phenology.

"A vegetation detective"



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Colour infrared (CIR) aerial photographs



- Developed by the military forces, to find camouflaged weapons in greenery
- Red colour means content of chlorophyll, based on such things as water content, thickness of leaf cuticula, and degree of bare ground, rocks or boulders with or without lichens (and camouflage...)
- This altogether makes CIR-aerial photographs superior for vegetation classification
- A long tradition in this country, and there are University educations in the craft



Photo: Clas Hättestrand, Stockholm University



Point classification - identification of area to be classified

Al-

class





9070 Wooded pasture

Instructions are to give the benefit of the doubt



Point classification – Minimum mapping unit







Point classification – Criteria of naturalness









Types of Codes used in keys

Class type	Description of class type	Example AI class type (included habitats)
α	Single Annex 1 habitat	9040 Nordic subalpine birch forest
β	Collective code for Annex 1 habitats from similar habitat groups	6815 Collective code for alpine grasslands (calcarerous 6170 and siliceous 6150)
Y	Collective code for Annex 1 habitats from different habitat groups	4850 Collective code for sub-alpine salix scrub, tall herb community, wet grassland, heath and mire (4060/6815/7000/4080/6430/)
δ	Collective code including both Annex 1 habitats and Non Annex 1 habitats	6845 Collective code for natural, semi-natural grasslands and cultivated grassland (4030/5130/6120/6230/6270/6210 /6510/6520/4010/6430/6450/6915/2320/2330/6510/ 6520 /6910)
3	Single Non Annex 1 habitat	6913 Wooded cultivated pastures
ζ	Group of Non Annex 1 habitats	9900 Non Annex 1 forest
η	Basecode in series	1000 Marine waters

Room for improvement....



Example Characteristics in Interpretation





Example Characteristics in Interpretation





Quality control - Calibration

Pre-season training sessions!

 Field data, including field photos are matched with the point in the aerial photograph and analysed/discussed among interpreters.

Calibration meetings during season!

 These meetings are important to the overall quality of the data in encouraging a common view on the sometimes unclear interpretation of habitat definitions.





