

Way in which we can combine/merge/integrate/link
CLC and EUNIS

Problem setting: **Grasslands**
 Forests
 Wetlands

LINKS CLC – EUNIS (Moss, Davies 2002)

CLC Type level 3	EUNIS level 2		EUNIS level 3
231 Pastures	6	B1 Coastal dune and sand habitats; E2 Mesic grasslands ; E7 Sparsely wooded grasslands ; FA Hedgerows; X09 Pasture woods; X10 Mixed landscapes with a woodland element	9
321 Natural grassland	7	D6 Inland saline and brackish marshes and reedbeds; E1 Dry grasslands ; E2 Mesic grasslands ; E3 Seasonally wet and wet grasslands ; E4 Alpine and subalpine grasslands ; E5 Woodland fringes and clearings and tall forb habitats; E6 Inland saline grass and herb-dominated habitats	29
311 Broad-leaved forest	4	B1 Coastal dune and sand habitats; B3 Rock cliffs, ledges and shores, including the supralittoral; G1 Broadleaved deciduous woodland ; G2 Broadleaved evergreen woodland ; G5 Lines of trees, small anthropogenic woodlands ...	25
312 Coniferous forest	3	B1 Coastal dune and sand habitats; G3 Coniferous woodland ; G5 Lines of trees, small anthropogenic woodlands ...	18
313 Mixed forest	2	G4 Mixed deciduous and coniferous woodland ; G5 Lines of trees, small anthropogenic woodlands ...	16
411 Inland marshes	7	A2 Littoral sediments; C2 Surface running waters; C3 Littoral zone of inland surface waterbodies ; D2 Valley mires, poor fens and transition mires ; D4 Base-rich fens ; D5 Sedge and reedbeds, normally without free-standing water ; D6 Inland saline and brackish marshes and reedbeds	20
412 Peatbogs	5	C2 Surface standing waters; D1 Raised and blanket bogs ; D3 Aapa, palsa and polygon mires ; X04 Raised bog complexes; X28 Blanket bog complexes	8
421 Salt marshes	1	A2 Littoral sediments	2

231 Pastures

Dense grass cover, of floral composition, dominated by graminacea, not under a rotation system. Mainly for grazing, but the fodder may be harvested mechanically. Includes areas with hedges (bocage).

Extension:

Grazing used by cattle.

Pastures can be described as extensively used grasslands with presence of farm structure such as: fences, shelters, enclosures, watering places, drinking trough or regular agricultural works: mowing, drainage, hay making, agricultural practices, manuring.

321 Natural grassland

Low productivity grassland. Often situated in areas of rough, uneven ground. Frequently includes rocky areas, briars and heathland.

Extension:

Natural grasslands are areas with herbaceous vegetation (maximum height is 150 cm and gramineous species are prevailing) which cover at least 75 % of the surface covered by vegetation which developed **under a minimum human interference (not mowed, fertilized or stimulated by chemicals which might influence production of biomass)**; here belong for instance grass formations of protected areas, karstic areas, military training fields, etc. (even though the human interference cannot be altogether discarded in quoted areas, it does not suppress the natural development or species composition of the meadows), areas of shrub formations of scattered trees.

Grasslands

Mapping European grasslands at a coarse level, which types should be considered?

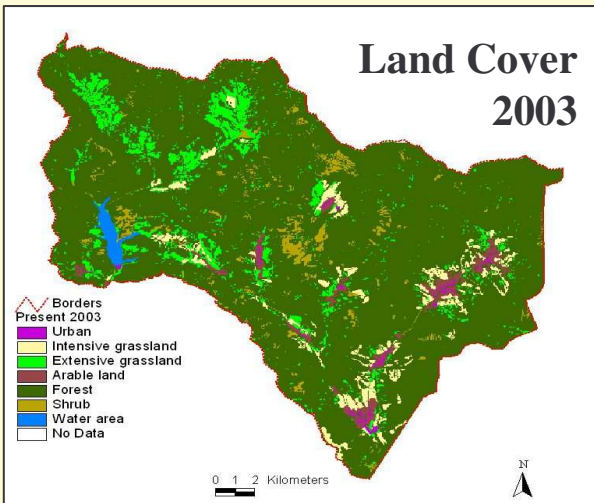
D. Richard, D. Moss (GRASSLAND Expert meeting, Copenhagen May 2002)

- Dry grasslands
- Mesic grasslands
- Seasonally wet and wet grasslands
- Alpine and subalpine grasslands
- Sparsely wooded grasslands
- Inland saline grass- and herb-dominated habitats

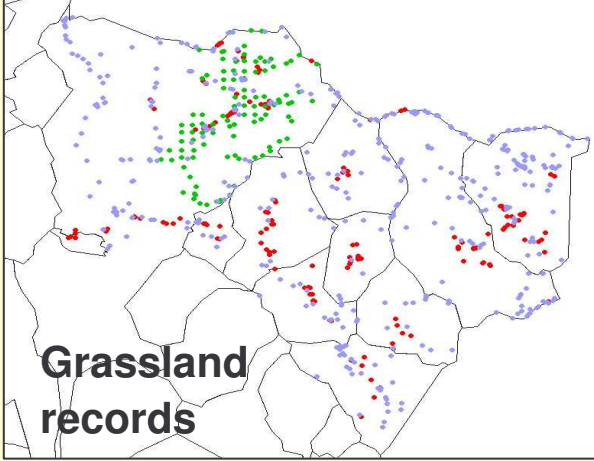
Arable and improved grasslands

Abandoned grasslands

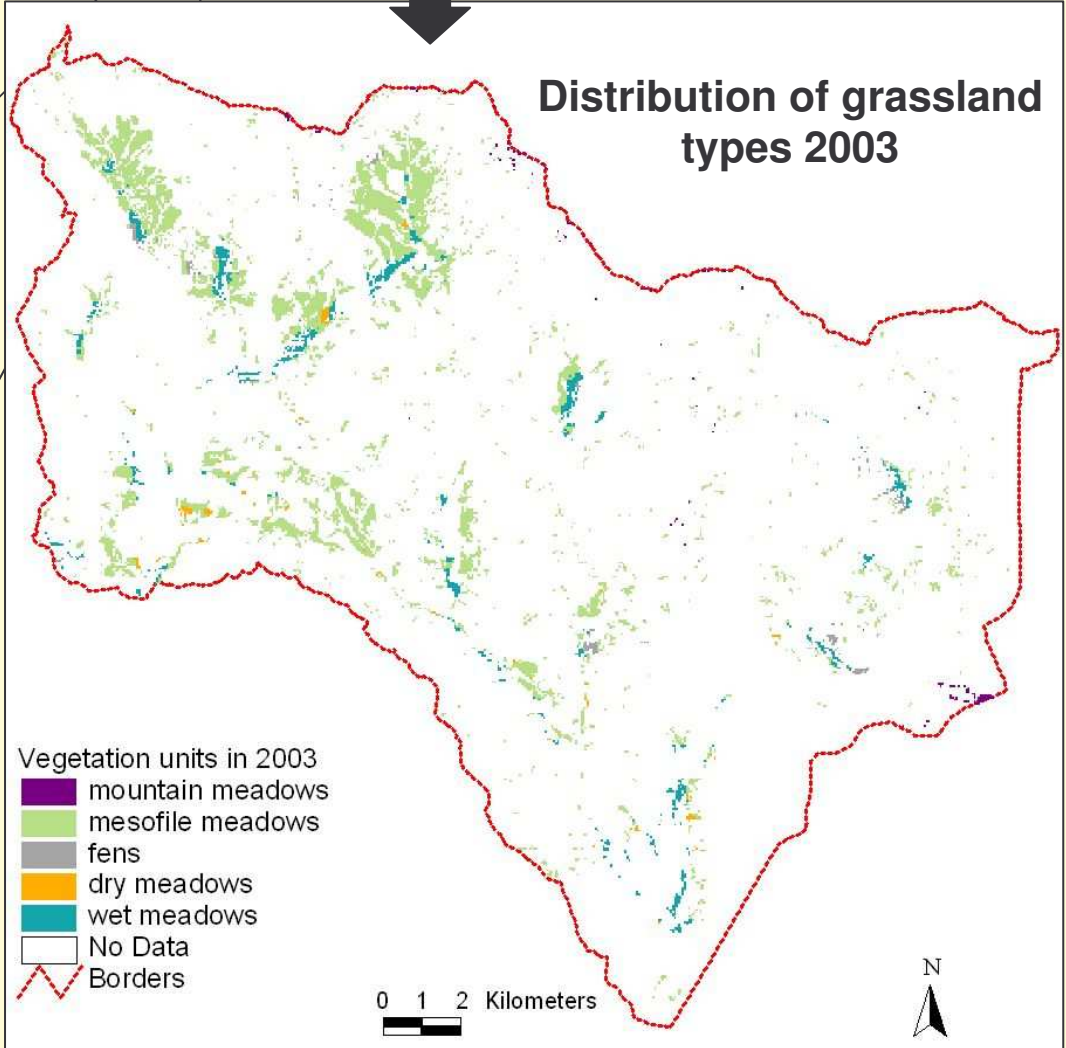
Explore **how these units can be distinguished**, using remote sensing techniques combined with other data such as soil maps, elevation models.



- ### Environmental factors
- Altitude
 - Topographic wetness index
 - Distance to stream
 - Distance to watershed boundary
 - Slope
 - Potential direct solar irradiation



Modelling
CART, ENFA



Forests

- ± O.K., shift to next hierarchical level (EUNIS habitats 3) means that dominant tree species should be distinguished (too many units in level 3)
- possibilities to distinguish plantations, monocultures, not native woodlands (structural features in combination with map of potential natural vegetation: coniferous forests in areas where broadleaved forests are native)
- structural features to distinguish old/older forests, tree species-rich forests (but this is not always linked with ecological quality of woodlands – e.g. native beech or spruce forests)
- usually good knowledge, good data sources – possibility to use ancillary data for more detailed classification and accounting
- **CLC 4 level has limited contribution** (poplar plantations and continuous/discontinuous canopy)

CLC level 3

Shrubs

3.2.2. Moors and heathland

Wetlands

4.1. Inland wetlands

4.1.1. Inland marshes

4.1.2. Peat bogs

4.2. Maritime wetlands

4.2.1. Salt marshes

4.2.2. Salines

4.2.3. Intertidal flats

5. Water bodies

5.1. Inland waters

5.1.1. Water courses

5.1.2. Water bodies

5.2. Marine waters

5.2.1. Coastal lagoons

5.2.2. Estuaries

5.2.3. Sea and ocean

Wetlands

- ± O.K., relatively detailed and suitable division
- question of spatial resolution – size of smallest mapping unit
- CLC level 4 is useful
e.g. fresh water/saline inland marshes, natural water bodies/reservoirs, rivers/channels
- some other units can be added
e.g. sedge and reedbeds, littoral zones of water bodies

To explore potential of new sensors to distinguish habitat types in more detailed level

First step: To define units that can be useful both for habitat mapping and for ecosystem accounting

To identify ancillary data and methods that can refine results from remote sensing