Overview of current EU level JRC/EEA HNV farmland methodology

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Expert workshop to review potential improvements of the JRC/EEA HNV farmland methodology

Vienna, 12th June 2017

European Commission

JRC Scientific and Technical Reports

High Nature Value Farmland in Europe

An estimate of the distribution patterns on the basis of land cover and biodiversity data

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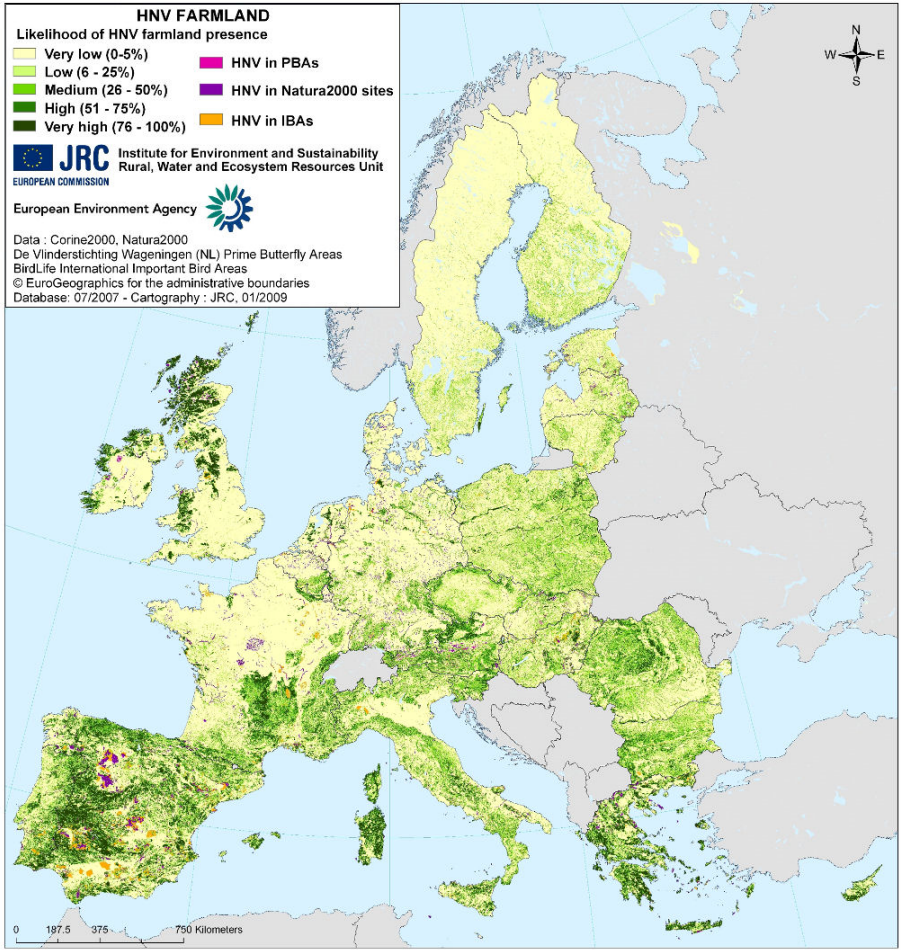
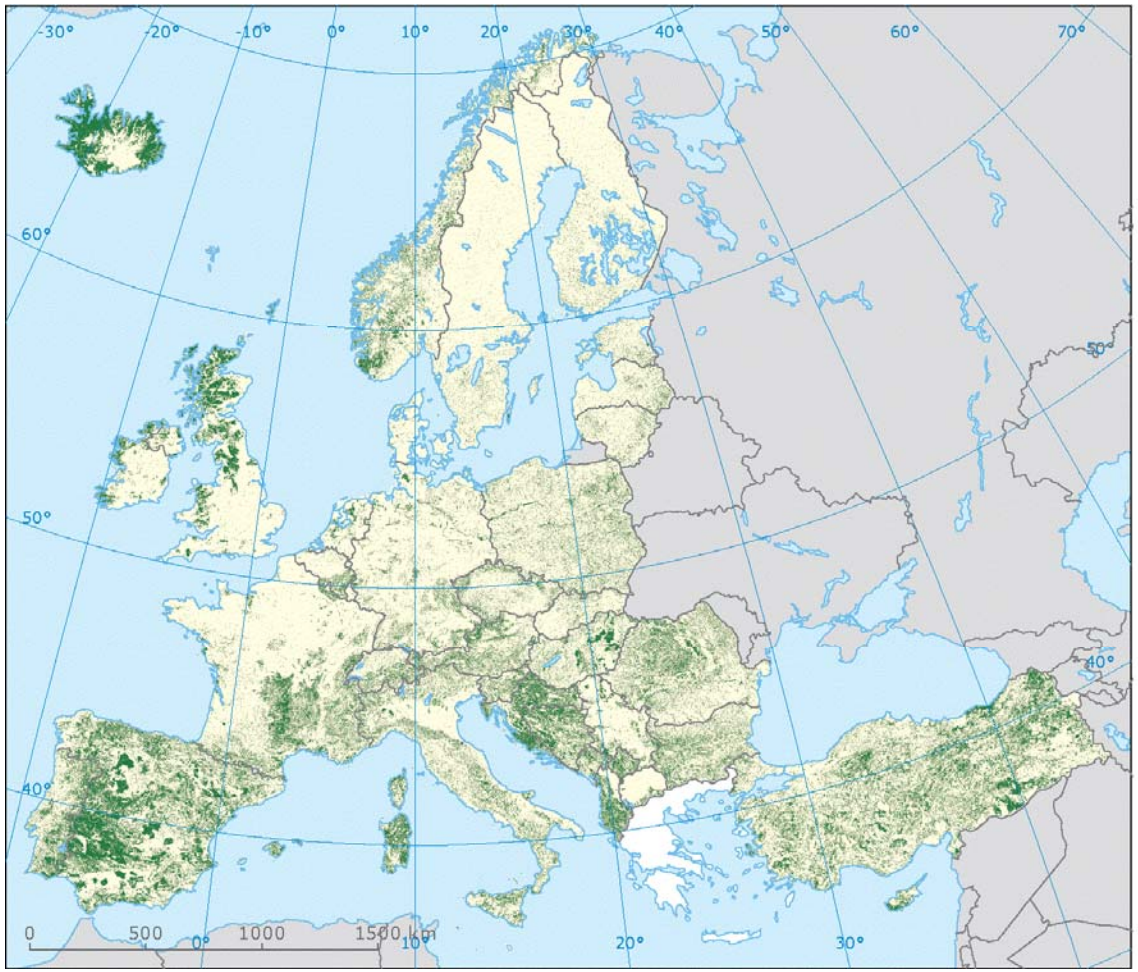
JRC EUROPEAN COMMISSION

European Environment Agency

In 2008 the JRC and the EEA, in collaboration with BirdLife International and the Dutch Butterfly Conservation (De Vlinderstichting), have released the first HNV map for the EU. The map is based on CLC2000



The methodology was adapted by ETC-SIA in the 2012 update of the map, based on CLC 2006. Iceland, Norway, Balkans and Turkey have been included



Estimated High Nature Value (HNV) farmland presence in Europe, 2012 update

HNV farmland

No data

Outside coverage

Data sources:
Corine 2006, Natura 2000
IBAs: BirdLife International
PBAs: De Vlinderstichting (NL)

National biodiversity data
(UK, CZ, LT, SE, ES)

National HNV contributions
(HR, SR, CH)

Cartography: Umweltbundesamt

Methodology: EEA & JRC 2007
adapted by: ETC-SIA 2012

© EuroGeographics for administrative boundaries

Some history: milestones of the HNV project

- EEA Report 1/2004 – First map of HNV for EU15
- Start of new map – Spring 2005
- Meeting with EU experts – Dec 2005
- Series of regional workshops – Apr May Jun 2006
- Launch of Country consultation (EEA) – Summer 2006
- Meeting with MS – Nov 2006
- Official revisions by MS – Nov 2006 → Feb 2007
- Final revision of the map Feb → July 2007
- Official presentation of the final map → beginning of 2008

Key definition:

HNV farmland comprises those areas in Europe where agriculture is a major (usually the dominant) land use and where that agriculture supports, or is associated with, either a high species and habitat diversity or the presence of species of European conservation concern, or both' (Andersen et al. 2003)

HNV farmland typology:

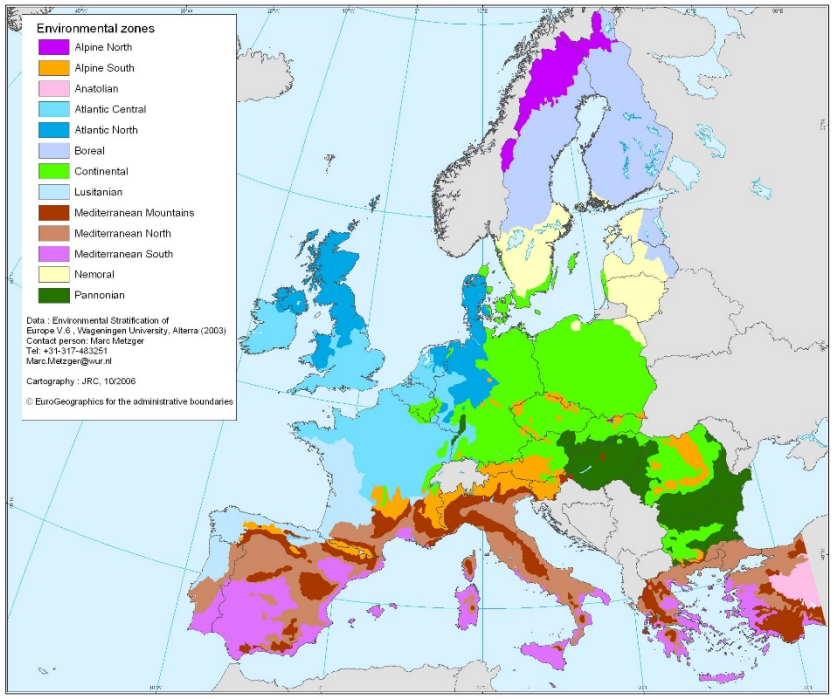
- **Type 1** Farmland with a high proportion of semi-natural vegetation
- **Type 2** Farmland with a mosaic of low intensity agriculture and natural and structural elements, such as field margins, hedgerows, stone walls, patches of woodland or scrub, small rivers etc

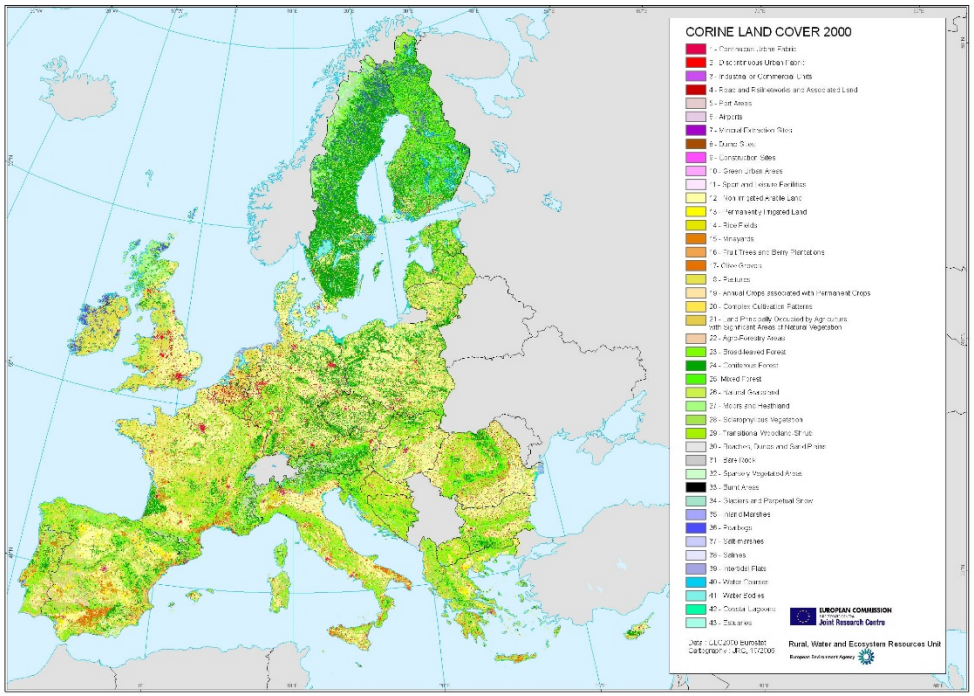
- **Type 3** Farmland supporting rare species or a high proportion of European or World populations

METHODOLOGY 1

The method is based on land cover data, for which a regionally differentiated selection (based on the environmental stratification of Europe) is made of habitats where HNV farmland may be expected.

For each combination of Country and Environmental Zone, experts selected those CLC classes that are likely to contain primarily HNV land





Example of reselection table (Spain)

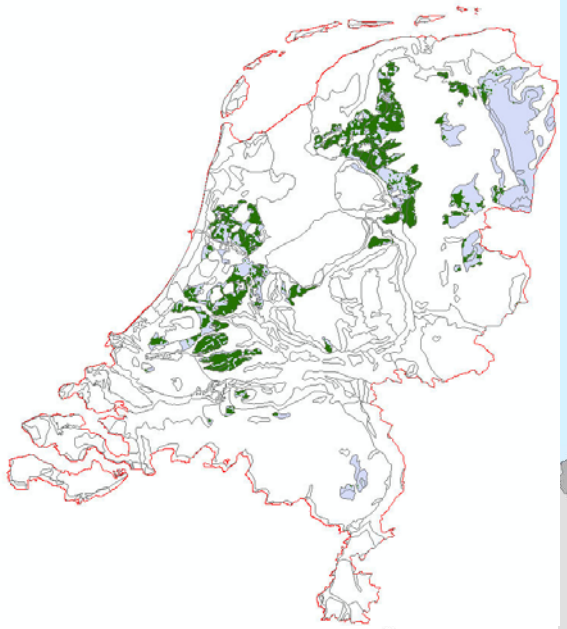
CLC	CLC codes	Alpine South	Atlantic Central	Lusitanian	Mediterranean Mountains	Mediterranean North	Mediterranean South
Non-irrigated arable land	211	0	0	0	0	0	0
Permanently irrigated land	212	0	0	0	0	0	0
Rice fields	213	0	0	0	0	0	0
Vineyards	221	0	0	0	0	0	0
Fruit trees and berry plantations	222	0	0	0	0	0	0
Olive groves	223	0	0	0	0	0	0
Pastures	231	231	231	231	231	231	231
Annual crops associated with permanent crops	241	0	241	0	241	241	241
Complex cultivation patterns	242	0	242	0	242	0	0
Land principally occupied by agriculture	243	243	0	243	243	243	243
Agro-forestry areas	244	244	0	244	244	244	244
Natural grasslands	321	321	321	0	321	321	321
Moors and heathland	322	322	322	322	322	322	322
Sclerophyllous vegetation	323	0	323	323	323	323	323
Transitional woodland/shrub	324	0	0	0	0	0	0
Sparsely vegetated areas	333	0	0	0	0	0	0
Inland marshes	411	411	411	411	411	411	411
Peat bogs	412	0	0	0	0	0	412
Salt marshes	421	0	421	421	421	421	421

The map “Landscape Types of Germany” substituted the environmental zones in the stratification

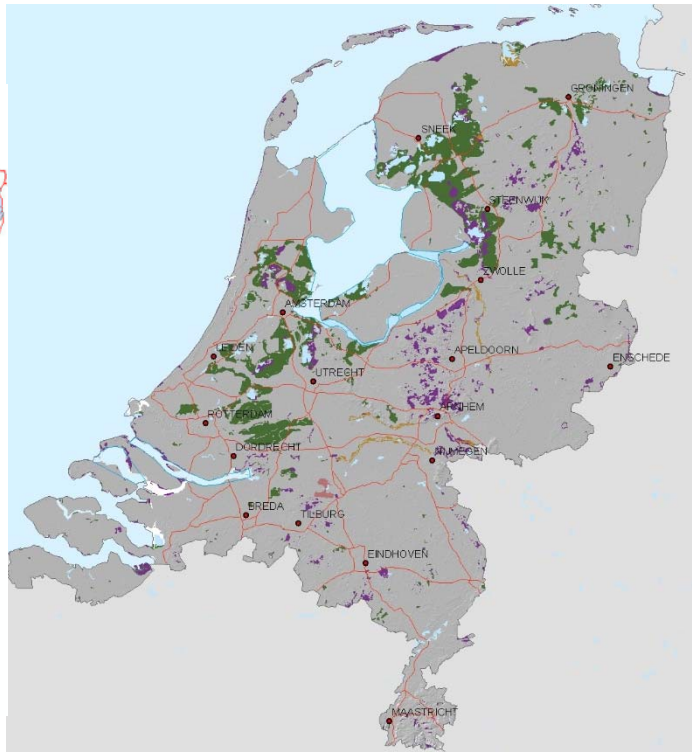
METHODOLOGY 2

Corrections at Country level – The Netherlands (example)

Original selection



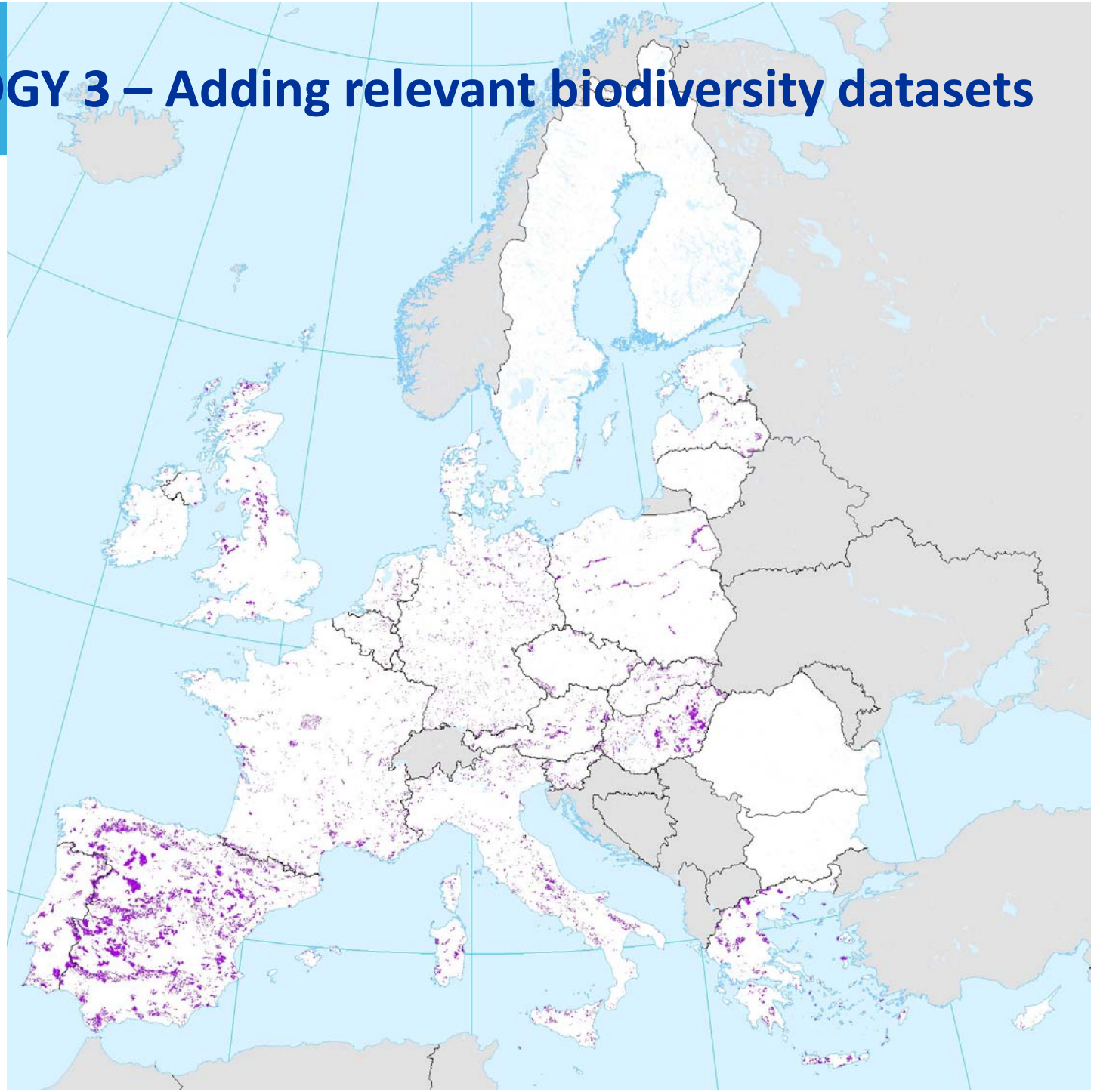
Pastures on peatland



Updated map

METHODOLOGY 3 – Adding relevant biodiversity datasets

NATURA2000 sites hosting habitats threatened by the abandonment of low-intensity agricultural practices



Habitats threatened by the abandonment of agriculture

Code	Habitat name
1330 °	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
1340	Inland salt meadows
1530	Pannonic salt steppes and salt marshes
1630	Boreal Baltic coastal meadows
2130 °	Fixed coastal dunes with herbaceous vegetation (grey dunes)
2140 °	Decalcified fixed dunes with Empetrum nigrum
2150 °	Atlantic decalcified fixed dunes (Calluno-Ulicetea)
2160 °	Dunes with Hippophae rhamnoides
2170 °	Dunes with Salix repens ssp. argentea (Salicion arenariae)
21A0	Machairs (* in Ireland)
2310	Dry sandy heaths with Calluna and Genista
2320	Dry sandy heaths with Calluna and Empetrum nigrum
2330	Inland dunes with open Corynephorus and Agrostis grasslands
2340	Pannonic inland dunes
4010	Northern Atlantic wet heaths with Erica tetralix
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix
4030	Dry heaths (all subtypes)
4040	Dry Atlantic coastal heaths with Erica vagans
4090	Endemic oro-Mediterranean heaths with gorse
5130	Juniperus communis formations on heaths or calcareous grasslands
5420	Sarcopoterium spinosum phryganas
5430	Endemic phryganas of the Euphorbio-Verbascion
6110	Rupicolous calcareous or basophilic grasslands of the Alysso-Sedion albi
6120	Xeric sand calcareous grasslands
6140	Siliceous Pyrenean Festuca eskia grasslands
6150	Siliceous alpine and boreal grasslands
6160	Oro-Iberian Festuca indigesta grasslands
6170	Alpine and subalpine calcareous grasslands
6180	Macaronesian mesophile grasslands
6190	Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco Brometalia)(*important orchid sites)
6220	Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea
6230	Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)
6240	Sub-pannonic steppic grassland
6250	Pannonic loess steppic grasslands
6260	Pannonic sand steppes
6270	Fennoscandian lowland species-rich dry to mesic grasslands
6280	Nordic alvar and precambrian calcareous flatrocks
62A0	Eastern sub-mediteranean dry grasslands (Scorzoneratalia villosae)
6310	Sclerophyllous grazed forests (dehesas) with Quercus suber and/or Quercus ilex
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
6420	Mediterranean tall humid herb grasslands of the Molinio-Holoschoenion
6430 °	Eutrophic tall herbs
6440	Alluvial meadows of river valleys of the Cnidion dubii
6450	Northern boreal alluvial meadows
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)
6520	Mountain hay meadows
6530	Fennoscandian wooded meadows
7140 °	Transition mires and quaking bogs
7230	Calcareous (and alkaline) fens
8230 °	Siliceous rocky slopes with pioneer vegetation
8240	Limestone pavements
9070	Fennoscandian wooded pastures

IMPORTANT BIRD AREAS

Selection of sites hosting indicator species

IBA data are provided by BirdLife Europe (Wageningen – NL)

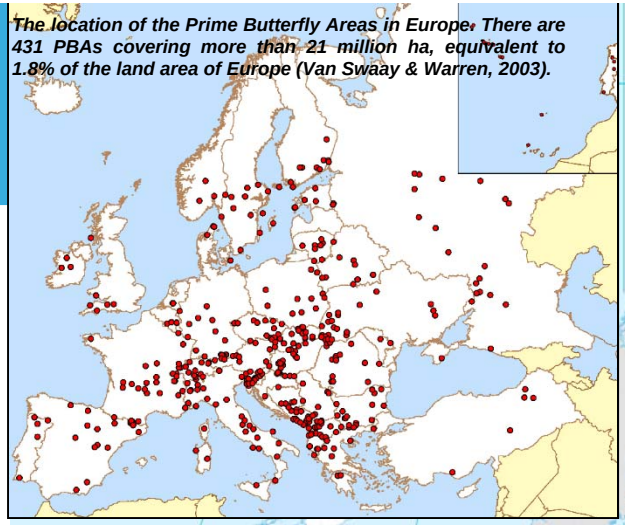
Bird indicator species

Common name	Scientific name
Black-crowned Night-heron	Nycticorax nycticorax
White Stork	Ciconia ciconia
Mute Swan	Cygnus olor
Tundra Swan	Cygnus columbianus
Whooper Swan	Cygnus cygnus
Bean Goose	Anser fabalis
Pink-footed Goose	Anser brachyrhynchus
Greater White-fronted Goose	Anser albifrons
Lesser White-fronted Goose	Anser erythropus
Greylag Goose	Anser anser
Barnacle Goose	Branta leucopsis
Brent Goose	Branta bernicla
Red-breasted Goose	Branta ruficollis
Garganey	Anas querquedula
Black-winged Kite	Elanus caeruleus
Black Kite	Milvus migrans
Red Kite	Milvus milvus
Egyptian Vulture	Neophron percnopterus
Griffon Vulture	Gyps fulvus
Cinereous Vulture	Aegypius monachus
Short-toed Snake-eagle	Circaetus gallicus
Northern Harrier	Circus cyaneus
Montagu's Harrier	Circus pygargus
Levant Sparrowhawk	Accipiter brevipes
Long-legged Buzzard	Buteo rufinus
Lesser Spotted Eagle	Aquila pomarina
Greater Spotted Eagle	Aquila clanga
Eastern Imperial Eagle	Aquila heliaca
Spanish Imperial Eagle	Aquila adalberti
Booted Eagle	Hieraaetus pennatus
Bonelli's Eagle	Hieraaetus fasciatus
Lesser Kestrel	Falco naumanni
Common Kestrel	Falco tinnunculus
Red-footed Falcon	Falco vespertinus
Lanner Falcon	Falco biarmicus
Saker Falcon	Falco cherrug
Black Grouse	Tetrao tetrix
Chukar	Alectoris chukar
Red-legged Partridge	Alectoris rufa
Black Francolin	Francolinus francolinus
Grey Partridge	Perdix perdix
Common Quail	Coturnix coturnix
Spotted Crake	Porzana porzana
Corncrake	Crex crex
Common Crane	Grus grus
Little Bustard	Tetrax tetrax
Houbara Bustard	Chlamydotis undulata
Great Bustard	Otis tarda
Eurasian Oystercatcher	Haematopus ostralegus
Eurasian Thick-knee	Burhinus oedicnemus
Cream-coloured Courser	Cursorius cursor
Collared Pratincole	Glareola pratincola
Eurasian Golden Plover	Pluvialis apricaria
Northern Lapwing	Vanellus vanellus
Ruff	Philomachus pugnax
Common Snipe	Gallinago gallinago
Great Snipe	Gallinago media
Black-tailed Godwit	Limosa limosa
Eurasian Curlew	Numenius arquata
Common Redshank	Tringa totanus
Black-bellied Sandgrouse	Pterocles orientalis

Common name	Scientific name
Pin-tailed Sandgrouse	Pterocles alchata
Stock Dove	Columba oenas
European Turtle-dove	Streptopelia turtur
Barn Owl	Tyto alba
Common Scops-owl	Otus scops
Little Owl	Athene noctua
Short-eared Owl	Asio flammeus
European Bee-eater	Merops apiaster
European Roller	Coracias garrulus
Eurasian Hoopoe	Upupa epops
Eurasian Wryneck	Jynx torquilla
Eurasian Green Woodpecker	Picus viridis
Syrian Woodpecker	Dendrocopos syriacus
Dupont's Lark	Chersophilus duponti
Calandra Lark	Melanocorypha calandra
Greater Short-toed Lark	Calandrella brachydactyla
Lesser Short-toed Lark	Calandrella rufescens
Crested Lark	Galerida cristata
Thekla Lark	Galerida theklae
Wood Lark	Lullula arborea
Eurasian Skylark	Alauda arvensis
Barn Swallow	Hirundo rustica
Tawny Pipit	Anthus campestris
Yellow Wagtail	Motacilla flava
Rufous-tailed Scrub-robin	Erythropygia galactotes
Whinchat	Saxicola rubetra
Common Stonechat	Saxicola torquatus
Northern Wheatear	Oenanthe oenanthe
Black-eared Wheatear	Oenanthe hispanica
Fieldfare	Turdus pilaris
Redwing	Turdus iliacus
Common Grasshopper-warbler	Locustella naevia
Eurasian River Warbler	Locustella fluviatilis
Aquatic Warbler	Acrocephalus paludicola
Olivaceous Warbler	Hippolais pallida
Olive-tree Warbler	Hippolais olivetorum
Orphean Warbler	Sylvia hortensis
Barred Warbler	Sylvia nisoria
Common Whitethroat	Sylvia communis
Red-backed Shrike	Lanius collurio
Lesser Grey Shrike	Lanius minor
Great Grey Shrike	Lanius excubitor
Woodchat Shrike	Lanius senator
Masked Shrike	Lanius nubicus
Red-billed Chough	Pyrrhocorax pyrrhocorax
Eurasian Jackdaw	Corvus monedula
Rook	Corvus frugilegus
Eurasian Tree Sparrow	Passer montanus
Island Canary	Serinus canaria
Eurasian Linnet	Carduelis cannabina
Twite	Carduelis flavirostris
Trumpeter Finch	Bucanetes githagineus
Yellowhammer	Emberiza citrinella
Cirl Bunting	Emberiza cirlus
Ortolan Bunting	Emberiza hortulana
Reed Bunting	Emberiza schoeniclus
Black-headed Bunting	Emberiza melanocephala
Corn Bunting	Miliaria calandra

PRIME BUTTERFLY AREAS

Selection of sites hosting indicator species



The location of the Prime Butterfly Areas in Europe. There are 431 PBAs covering more than 21 million ha, equivalent to 1.8% of the land area of Europe (Van Swaay & Warren, 2003).

PBA data are provided by De Vlinderstichting (Wageningen – NL)

European Commission

Selection criteria for land cover classes in EU wide biodiversity datasets

1	1.1.1 Continuous urban fabric
2	1.1.2 Discontinuous urban fabric
3	1.2.1 Industrial or commercial units
4	1.2.2 Road and rail networks and associated land
5	1.2.3 Port Areas
6	1.2.4 Airports
7	1.3.1 Mineral extraction sites
8	1.3.2 Dump sites
9	1.3.3 Construction sites
10	1.4.1 Green urban areas
11	1.4.2 Sport and leisure facilities
12	2.1.1 Non-irrigated arable land (ES - P only)
13	2.1.2 Permanently irrigated land
14	2.1.3 Rice fields (ES - P - I - HU)
15	2.2.1 Vineyards
16	2.2.2 Fruit trees and berry plantations
17	2.2.3 Olive groves
18	2.3.1 Pastures
19	2.4.1 Annual crops associated with permanent crops
20	2.4.2 Complex cultivation patterns
21	2.4.3 Land principally occupied by agriculture, with significant areas of natural vegetation
22	2.4.4 Agro-forestry areas
23	3.1.1 Broad-leaved forest
24	3.1.2 Coniferous forest
25	3.1.3 Mixed forest
26	3.2.1 Natural grassland
27	3.2.2 Moors and heathland
28	3.2.3 Sclerophyllous vegetation
29	3.2.4 Transitional woodland-scrub
30	3.3.1 Beaches, dunes, sands
31	3.3.2 Bare rocks
32	3.3.3 Sparsely vegetated areas
33	3.3.4 Burnt areas
34	3.3.5 Glaciers and perpetual snow
35	4.1.1 Inland marshes
36	4.1.2 Peat bogs
37	4.2.1 Salt marshes
38	4.2.2 Salines
39	4.2.3 Intertidal flats
40	5.1.1 Water courses
41	5.1.2 Water bodies
42	5.2.1 Coastal lagoons
43	5.2.2 Estuaries
44	5.2.3 Sea and ocean

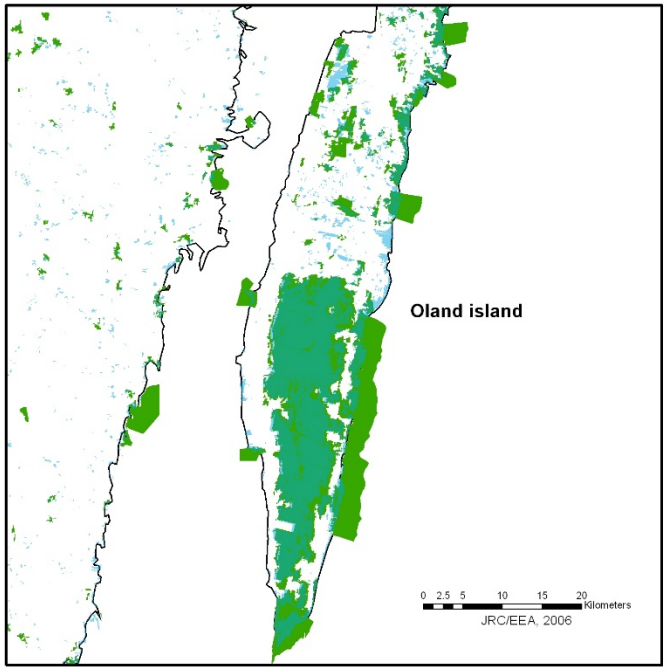
Accepted
Rejected
General rules (Env.zone + Country)
Only in selected Countries

Joint Research Centre

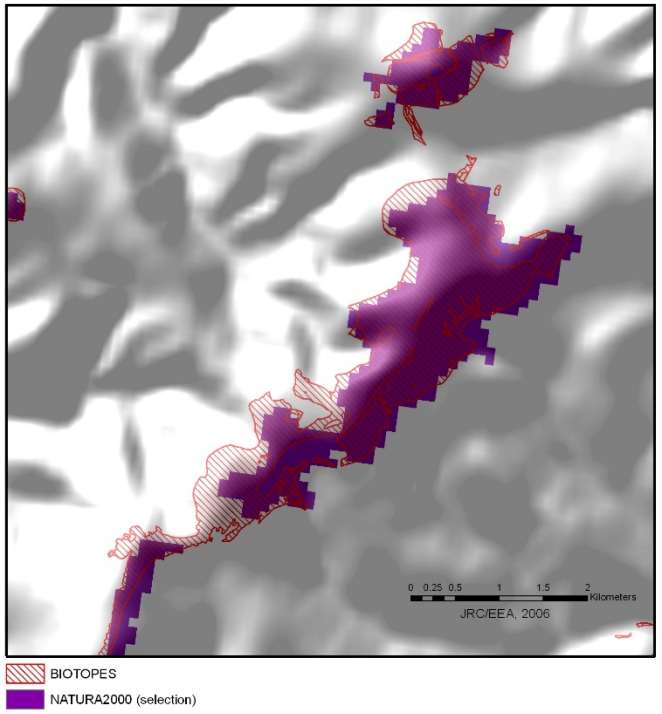
METHODOLOGY 4

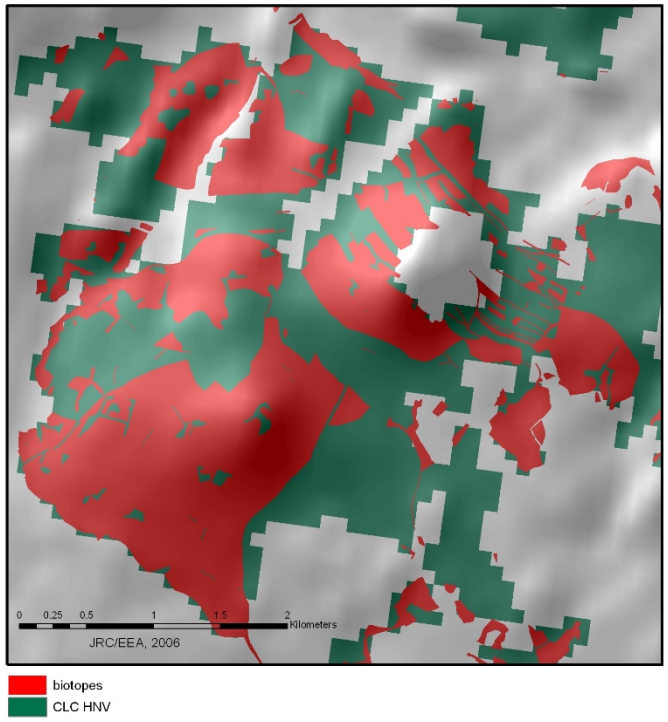
National biodiversity datasets

- Estonian Semi-natural Community Conservation Association (ESCCA) database of Estonian semi-natural communities
- Lithuania - National Grasslands Inventory
- Czech Republic - biotopes map
- England - aggregated data of habitat inventories for grasslands, moors and heathlands, inland marshes and salt marshes, for 23 terrestrial UKBAP priority habitats
- Swedish survey of semi-natural meadows and pastures



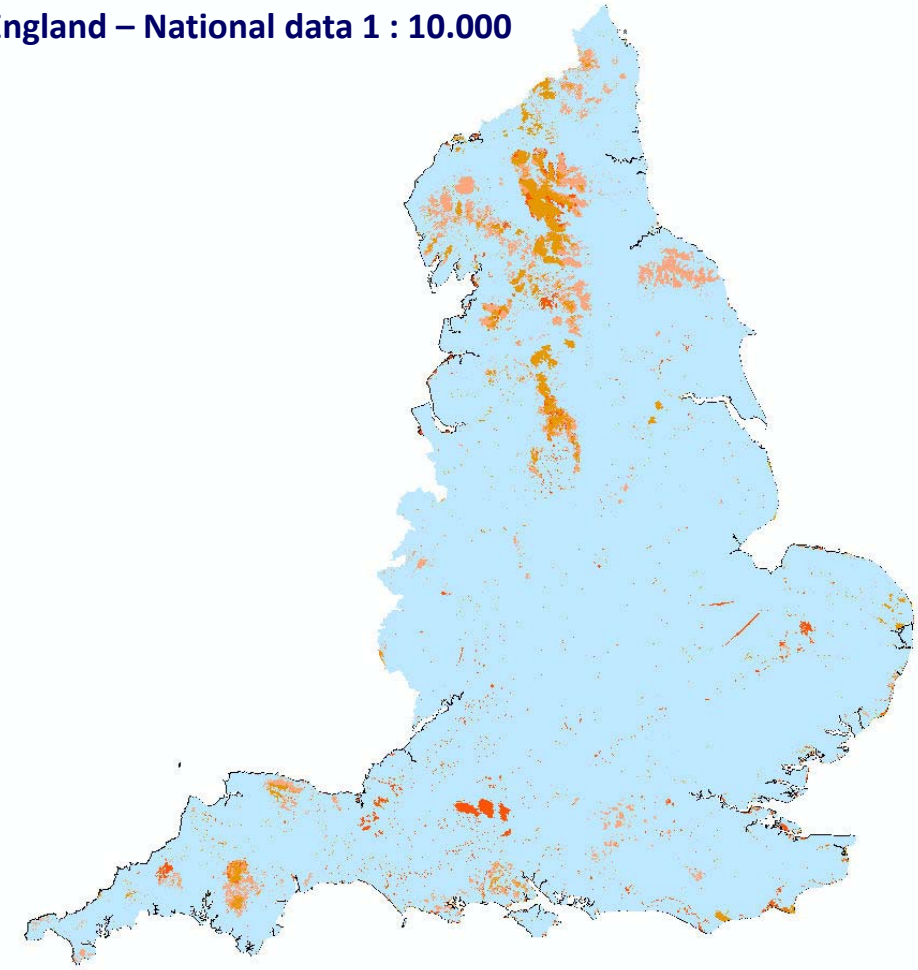
Swedish inventory of valuable meadows and pastures



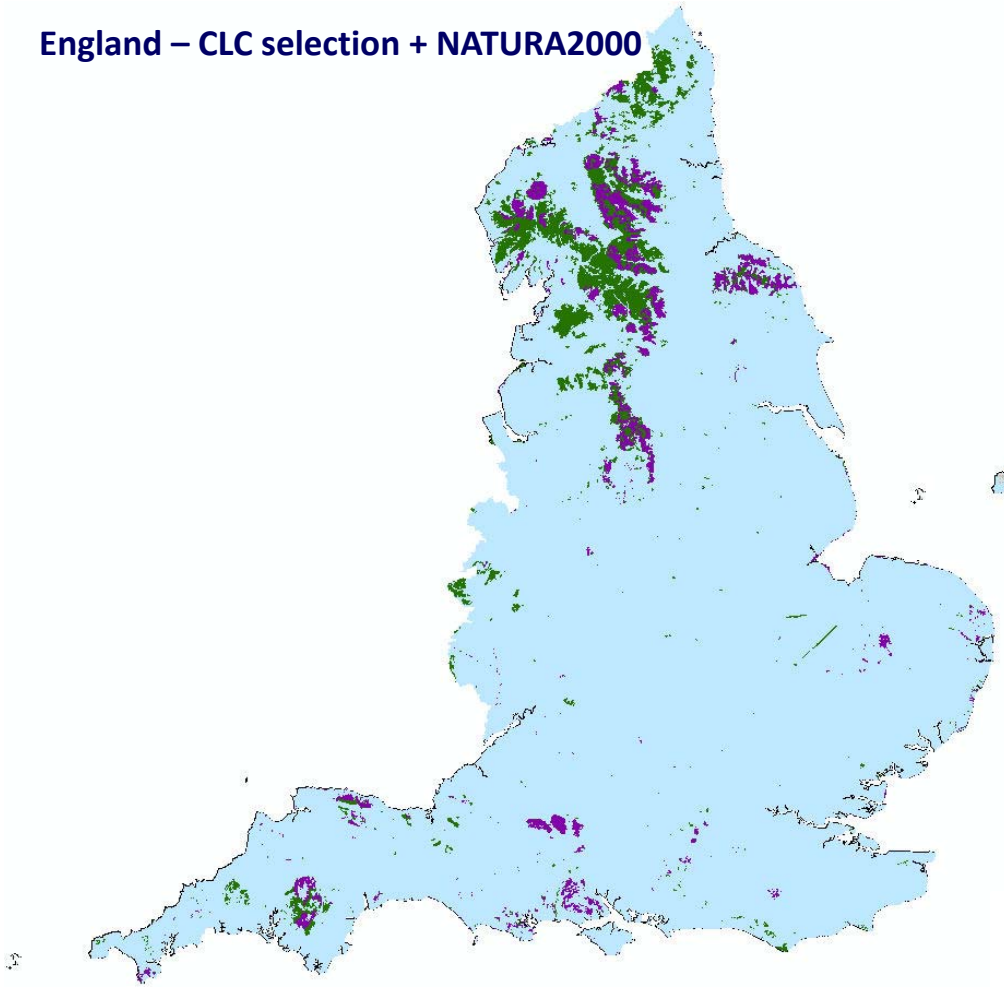


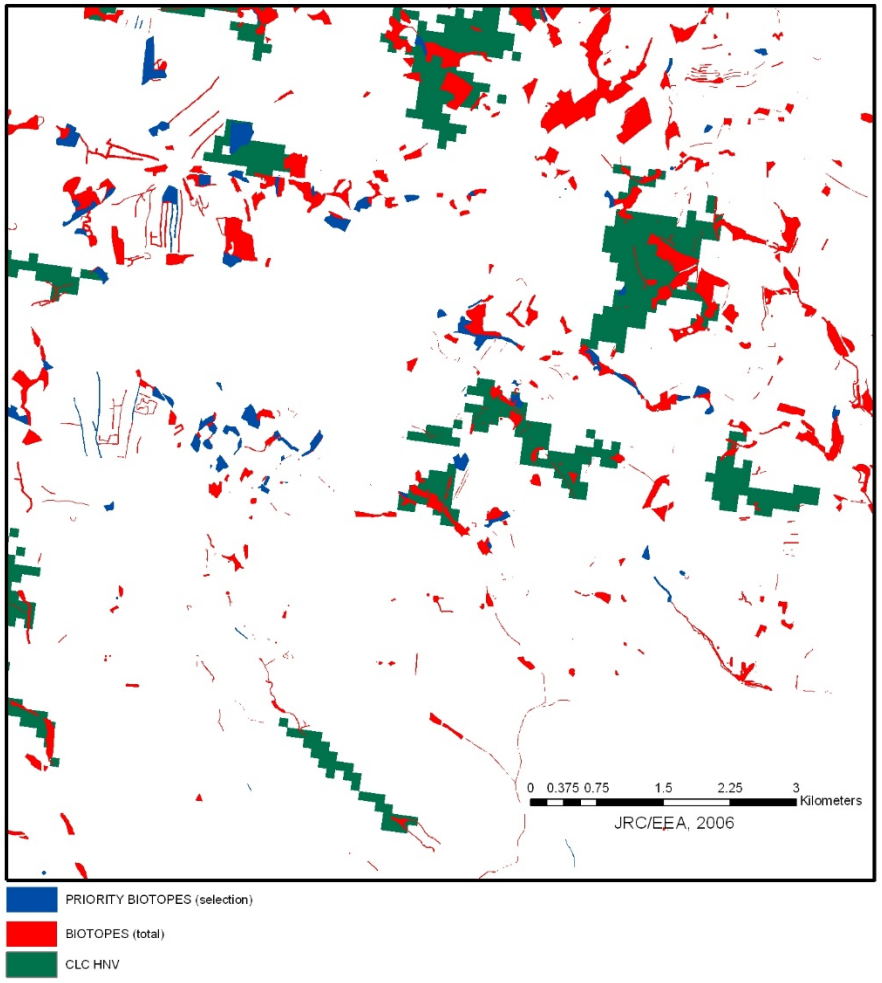
Czech Republic Biotopes map

England – National data 1 : 10.000

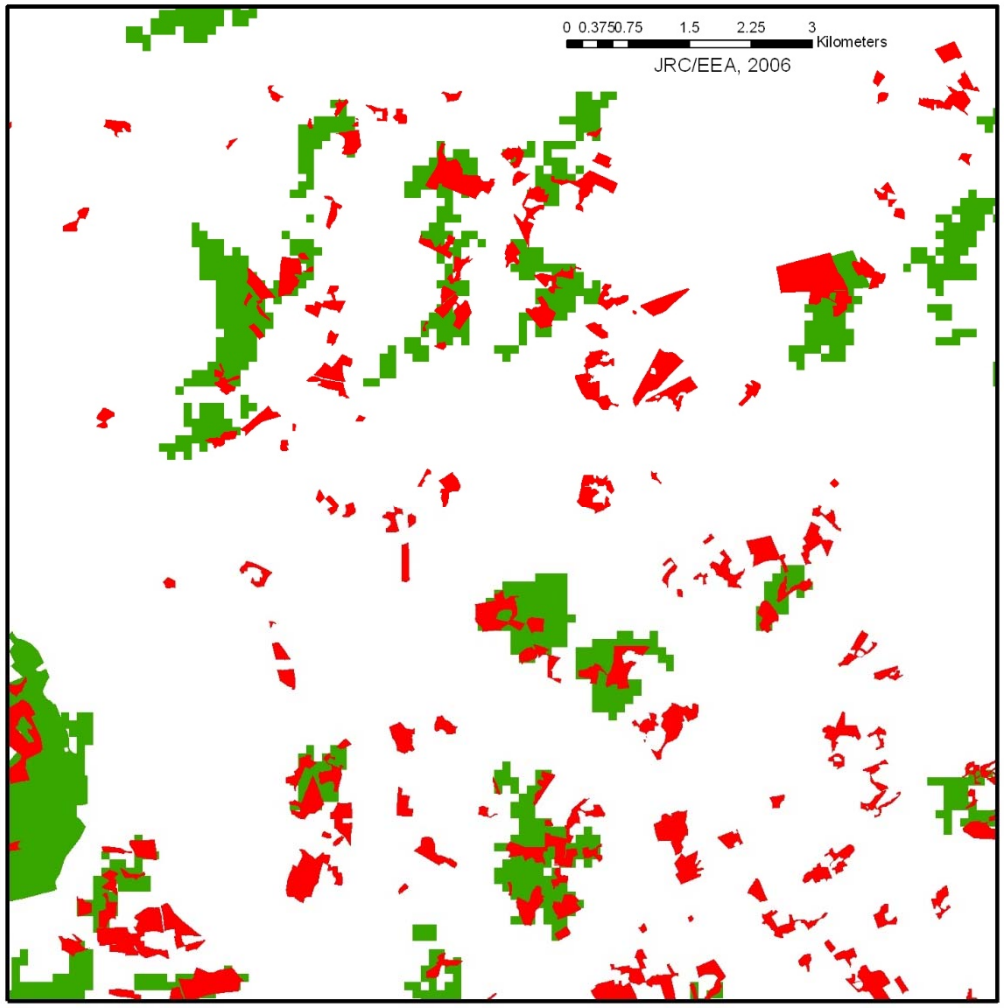


England – CLC selection + NATURA2000





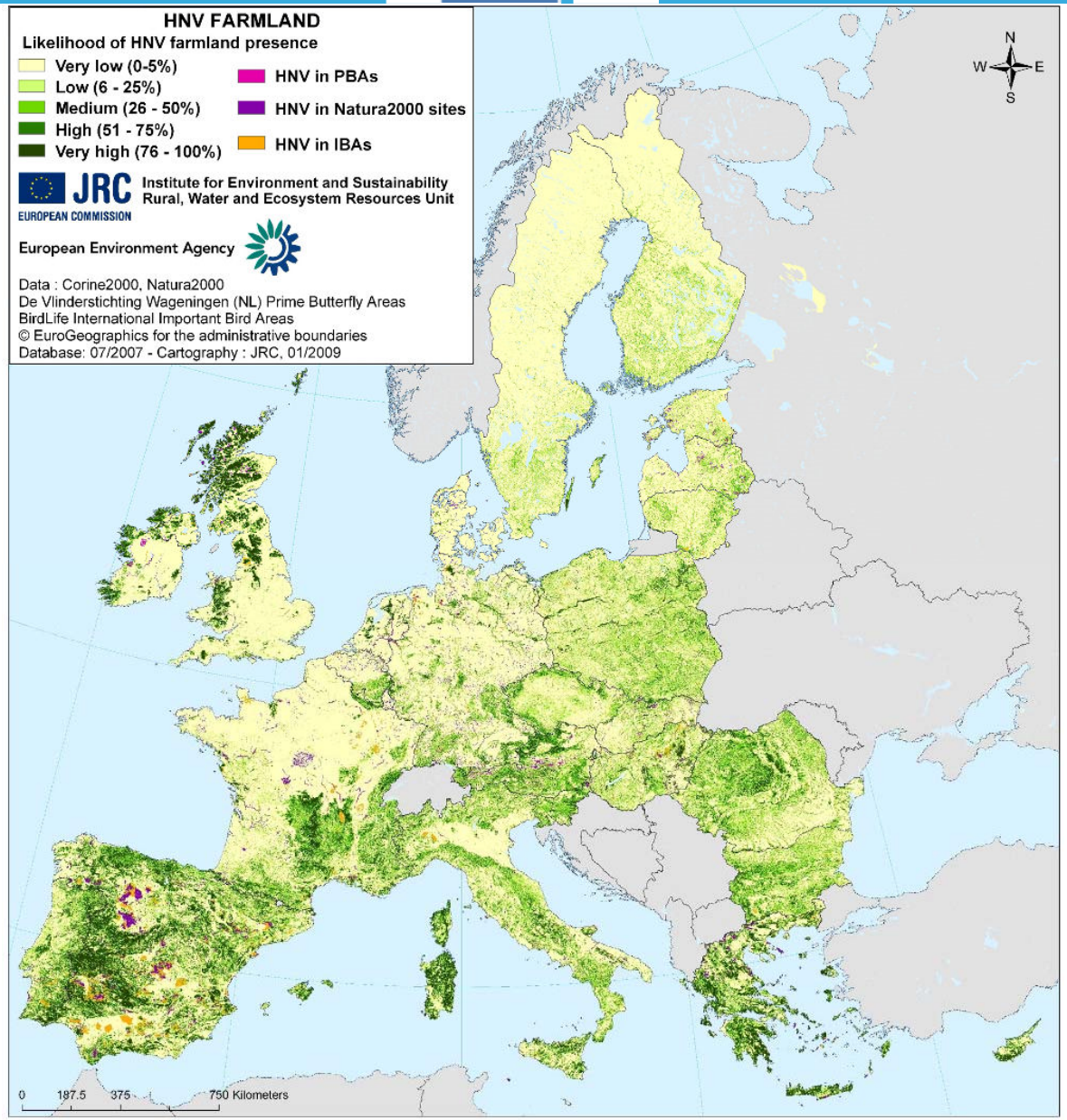
Czech Republic - Biotopes map



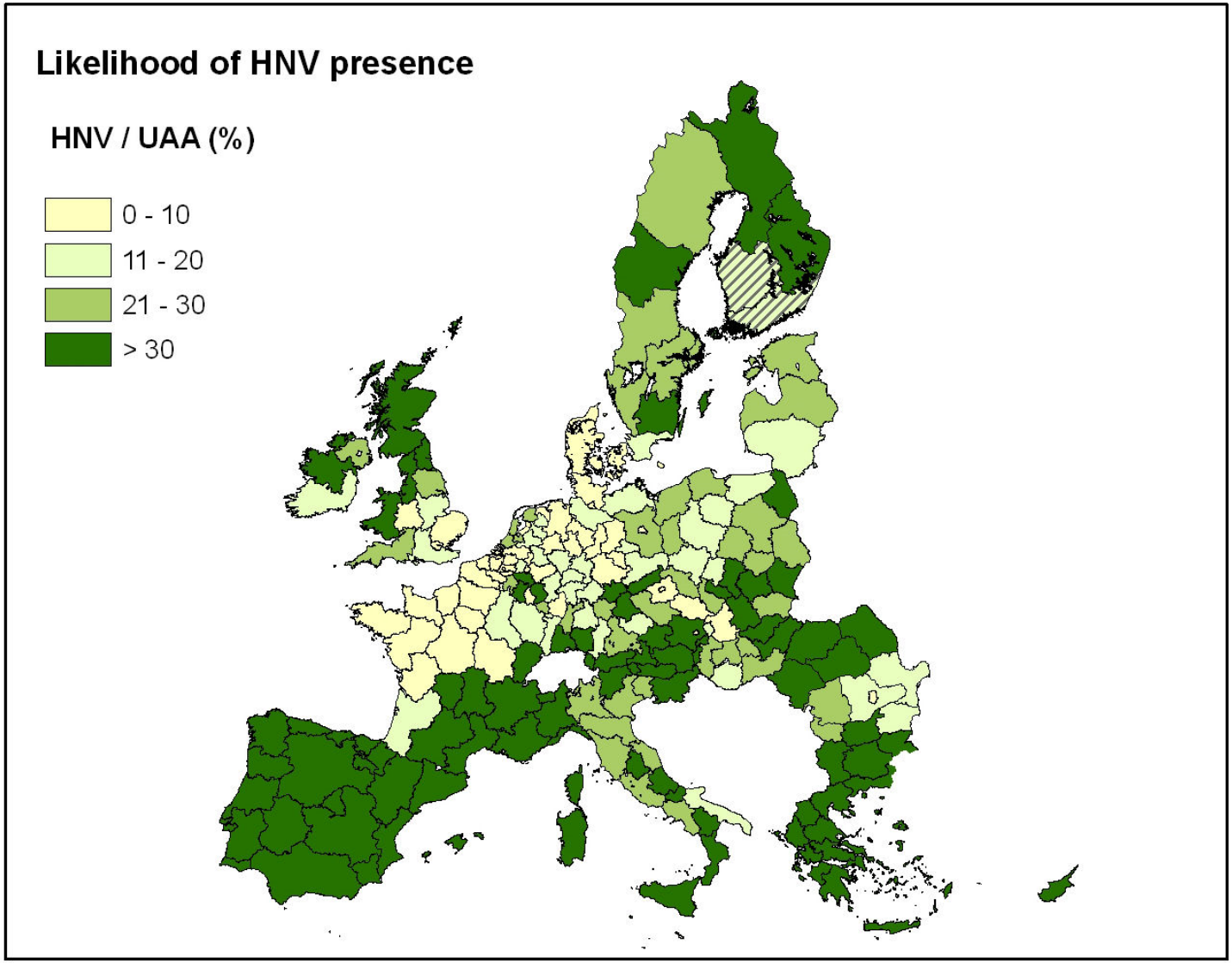
Swedish inventory of valuable meadows and pastures

FINAL RESULT

The map was published at 1 sqkm resolution, and indicates the likelihood of HNV presence



It was possible to calculate in broad classes the % of HNV farmland in the UAA per NUTS2 region



THE WAY FORWARD

- The HNV methodology dates back to 2007, it is time for an update!
- In some cases CLC rules should be revised (i.e. Germany)
- The main requirement for updates is that they guarantee the consistency of results across Europe
- How to guarantee consistency of approach in the time series remains to be decided

THANK YOU