European Topic Centre on Biological Diversity
A Topic Centre of The European Environment Agency

HABITATS DIRECTIVE ARTICLE 17 REPORT (2001 – 2006)

DATA COMPLETENESS, QUALITY AND COHERENCE

This paper is part of the web-based Article 17 Technical Report (2001-2006)
http://biodiversity.eionet.europa.eu/article17
compiled by the European Topic Centre on Biological Diversity for the European Commission (DG Environment)

DISCLAIMER:

The contents of this paper do not necessarily reflect the official opinion of the European Environment Agency, the European Commission or other European Communities institutions.

ETC/BD, Paris, 2008

Data completeness, quality and coherence

The methodology for assessing conservation status used for Article 17 reporting requires a variety of data. Ideally these data would have been collected during the reporting period (2001-2006) using compatible methods in each Member State but this was unrealistic. In reality Member States have mostly used data collected for other purposes (often related to national data requirements including site management) and over varied time periods. In many instances data does not exist, this is particularly the case for trends. The guidance document[1] produced to help the Member States encourages the use of expert opinion where data is not available but in many cases data was not reported and parameters or overall assessments were reported as 'unknown'.

Even when data are available there are often problems arising from differing means of presenting the data or the way in which it has been collected. For instance some countries reported distribution using relatively coarse grids while others reported with fine resolution grids or with large scale mapping of habitats. Some of these problems and their consequences are discussed below.

Further statistics and other information relating to data quality and coherence are given as an appendix.

Assessment as 'unknown'

Overall some 13% of regional habitat assessments and 27% of regional species assessments were reported by Member States as 'unknown'. The number of 'unknown' was especially high in the Mediterranean region, largely due to the Spanish and Portuguese reports and also for the marine regions (see below). Member States varied in the number of 'unknown' and other missing data.

Figure 1 (below) clearly shows that 'unknown' was particularly common for species in countries of southern Europe with Cyprus, Greece, Spain and Portugal all reporting 'unknown' for more than 50% of their species reports. In Spain there were administrative problems leading to assessments not being completed; for a large number of Spanish species, data and an IUCN style assessment is available in a series of national Red data books. Portugal apparently also suffered from administrative problems to finalise assessments for most of its plant species but it is not clear if the large number of 'unknowns' from Cyprus and Greece represents administrative problems or a genuine absence of information.

Missing data and its impact

For regional evaluations of habitats the preferred weighting, thought likely to lead to the least errors, was weighting by reported area (method 2XA[2]). However this was only possible for 60% of the habitat assessments where weighting was required. For species the preferred weighting was by reported population (method 2XP) but this was only possible in some 13% of evaluations where weighting was used. This was partly due to problems of varied and incompatible units used for reporting population size but also of missing data. More than 25% of species reports did not give a value for population for six Member States with 58% of French species reports having no information on the population size. However 10 countries always gave this information.

[1] Assessment, monitoring and reporting under Article 17 of the Habitats Directive: Explanatory Notes & Guidelines October 2006
http://circa.europa.eu/Public/irc/env/monnat/library?l=/habitats_reporting/reporting_2001-2007/guidlines_reporting&vm=detailed&sb=Title

[2] These methods are described in 'Article 17 Reporting – Habitats Directive - Guidelines for assessing conservation status of habitats and species at the biogeographic level'
http://circa.europa.eu/Public/irc/env/monnat/library?l=/habitats_reporting/reporting_2001-2007/biogeographic_assessment&vm=detailed&sb=Title

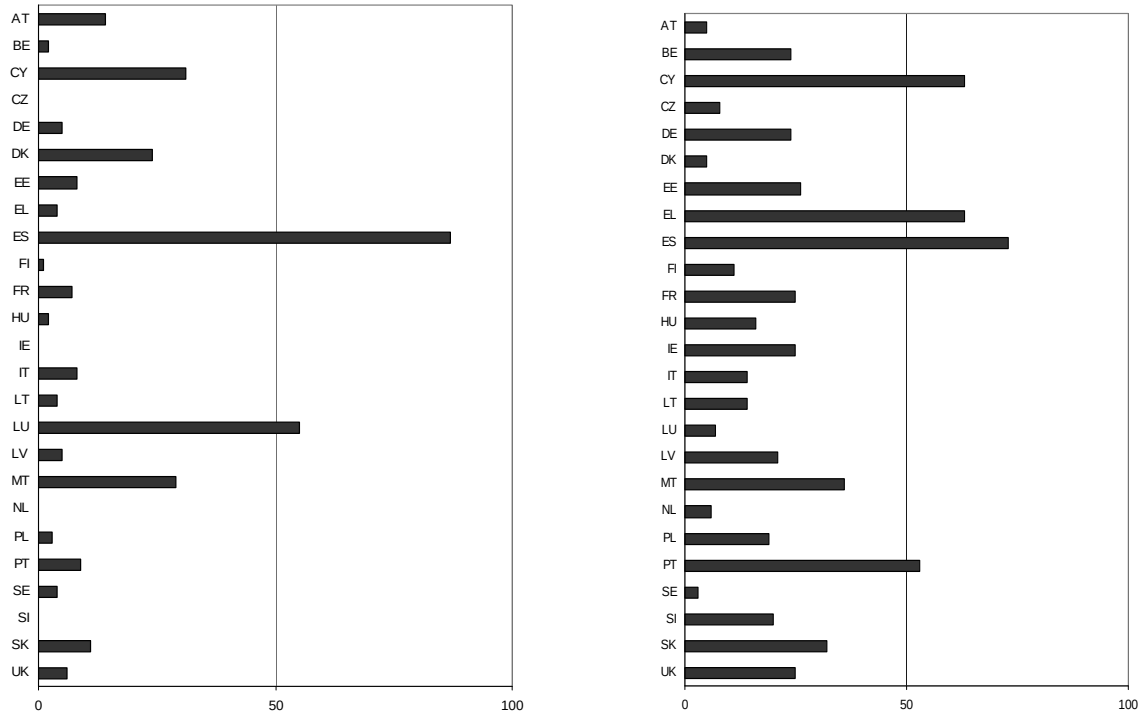


Figure 1 - Percentage of reports assessed as 'unknown' for each Member State for habitats (left) and species (right)

Generally, range was more often reported than area/population, both for species and habitats.

Information on trends was difficult for most Member States with very few that reported trend magnitudes, as shown in the table below:

Parameter	Percentage of reports including information on trend magnitude
Habitat range	1.7%
Habitat area	2.5%
Species range	3.1%
Species population	4.5%

Often trend direction was known even when the area or population was not, for example habitat area was not reported for 11% of Member State reports but the associated trend was only absent from 4% of reports.

Marine habitats and species

Data to allow assessments of marine habitats and species appear to be lacking in many countries which has lead to a higher percentage of 'unknowns' for marine habitats and species than for terrestrial habitats and species as shown by figure 2. Although there are a higher proportion of unknowns for marine habitats and species there is little difference in reported data quality for habitats. For marine species there are many reports with no entry for data quality but a comparison for those species where data quality for population is given show that data quality has been given as 'poor' almost twice as often for marine species (60% for marine species, 35% for terrestrial species).

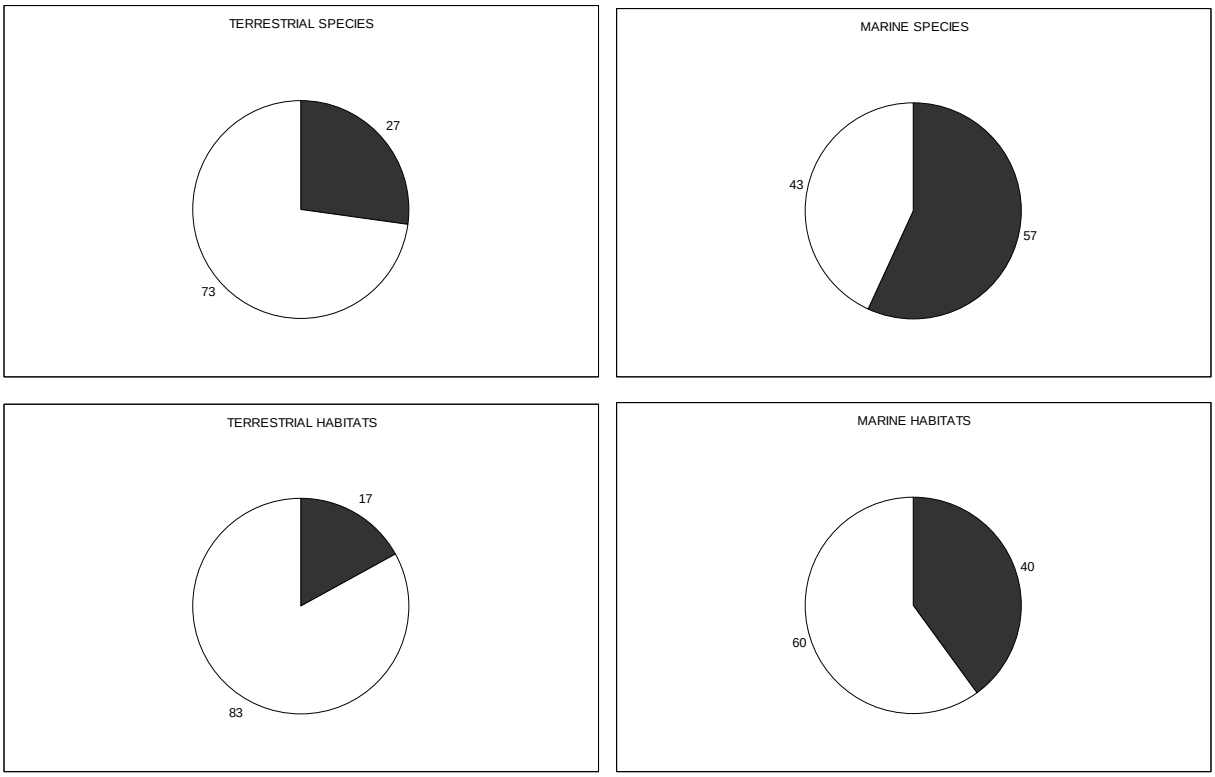


Figure 2 - Percentage of regional assessments as 'unknown' for terrestrial (left) and marine (right) for species (above) and habitats (below). Black indicates the proportion of assessments which are 'unknown' (including 'unknown but not favourable')

Favourable Reference Values

Informal comments from the countries indicated that the use of 'favourable reference values' was found difficult and it is clear that the most widely adopted strategy was to indicate that the value was thought to be equal to, greater than or much greater than the current value. For example, for habitats a comparison was used for 43% of reports and a value given for 35% (22% reported no value) for 'favourable reference area'. Only 60% of species reports included a favourable reference population.

Even when Favourable reference values were reported there appears to be much variation between Member States in how to estimate the values. For example, Italy has reported the favourable reference population of the Annex II and IV priority tree species *Abies nebrodensis* as just 23 - 32 individuals (the current population); this species is endemic to Sicily and considered 'Critically endangered' by IUCN and the reported reference value seems extremely low. There are few tree species listed on the

Annexes but *Zelkova abelicea* which is endemic to Crete has a reported Favourable Reference Population of 'greater than 100 individuals'.

The use of favourable reference values needs further work before the next report.

Typical Species (habitat assessments only)

Member States were asked to take account of typical species of a habitat when assessing its 'structure and function' and to list the species considered. However, it is clear that different approaches have been used, with the number of species listed varying greatly. Denmark did not note any species but indicated they had used the lists of characteristic species noted in the 'Interpretation manual of EU habitats'[3] while the United Kingdom only reported typical species for 21 of its 78 habitats with an average of 9 species per habitat (habitats with typical species only). Other countries such as the Czech Republic reported long lists (average 38 species per habitat for the Czech Republic). Further work is needed to ensure a coherent approach and this has already begun.

Habitat of species (species assessments only)

Many countries found this difficult, especially for wide ranging species which are not associated with a specific habitat. Values for 'Suitable habitat for the species' were rarely reported, with 17 Member States reporting no value for 50% or more of their reports with Italy reporting no values at all. Further work is needed for this parameter and better guidance is required for future reports.

Threats and Pressures

Member States were asked to note threats (foreseeable impacts) and pressures (past and present impacts) threatening the long term viability of habitats and species using a typology originally developed for the Natura 2000 Standard Data Forms[4]. These threats and pressures are listed as nine groups (e.g. agriculture & forestry, mining & extraction of minerals, etc). However, the reported threats and pressures were not ranked and the majority of habitats and species were reported as subject to most groups of threats and pressures. For example all nine groups were noted for 105 habitats (of 216). This limits further analysis and it is not possible to identify the most important threats and pressures for particular habitats or species.

This section of the report needs improving for the next reporting cycle, with Member States being asked to list only the most important threats and pressures and to rank them in importance.

[3] http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/2007_07_im.pdf

[4] See Appendix E to the Explanatory notes for the Natura 2000 Standard Data Form http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/standarddataforms/notes_en.pdf

Spatial data

The Member State reports included maps of both range and distribution. Although guidance was given in the Explanatory Notes & Guidelines[5] it is clear that differing approaches were taken in determining range and that the maps provided were derived from data captured at a variety of resolutions. Some Member States provided maps based on point data, polylines, other as grids of varying sizes or polygons. A variety of projections were used, sometimes more than one in a single country. The European Topic Centre on Biological Diversity (ETC/BD) re-projected maps to a standard projection (ETRS LAEA 5210) and harmonised the data to give range and distribution on a 10 km x 10 km or equivalent grid as shown in Figure 3.

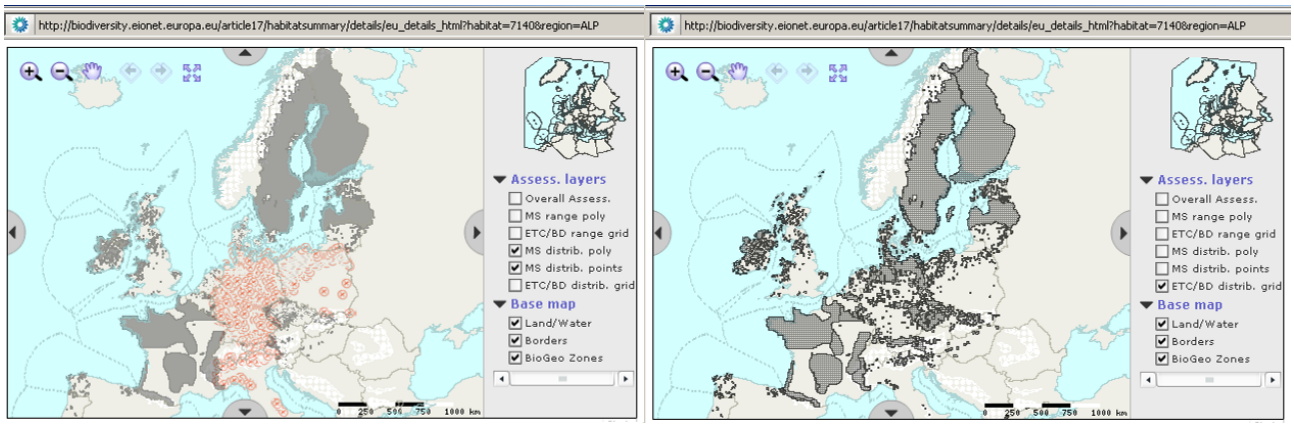


Figure 3 - Distribution of habitat type 7140 as reported by the Member States (left) and after harmonisation by the ETC/BD (right). The red circles represent points.

When required, habitat area and area of species distribution for weighting Member State assessments to produce regional assessments were derived from the harmonised maps. It is clear that the variations in the resolution of the distribution maps can lead to under and overestimates of area. Figure 4 shows the distribution of a grassland habitat which typically occurs as small scattered stands. France has reported a generalised map of its distribution while the Czech Republic map is derived from detailed field mapping with some polygons as small as a few hectares. Deriving areas from these maps overestimates the area in France relative to the Czech Republic but there is no way of correcting for this – although where evident we have noted its occurrence on the species and habitat 'data sheets'. As noted above, most habitat assessments used reported area for weighting so the majority of assessments are not subject to this possible problem.

[5] Assessment, monitoring and reporting under Article 17 of the Habitats Directive: Explanatory Notes & Guidelines October 2006
http://circa.europa.eu/Public/irc/env/monnat/library?l=/habitats_reporting/reporting_2001-2007/guidlines_reporting&vm=detailed&sb=Title

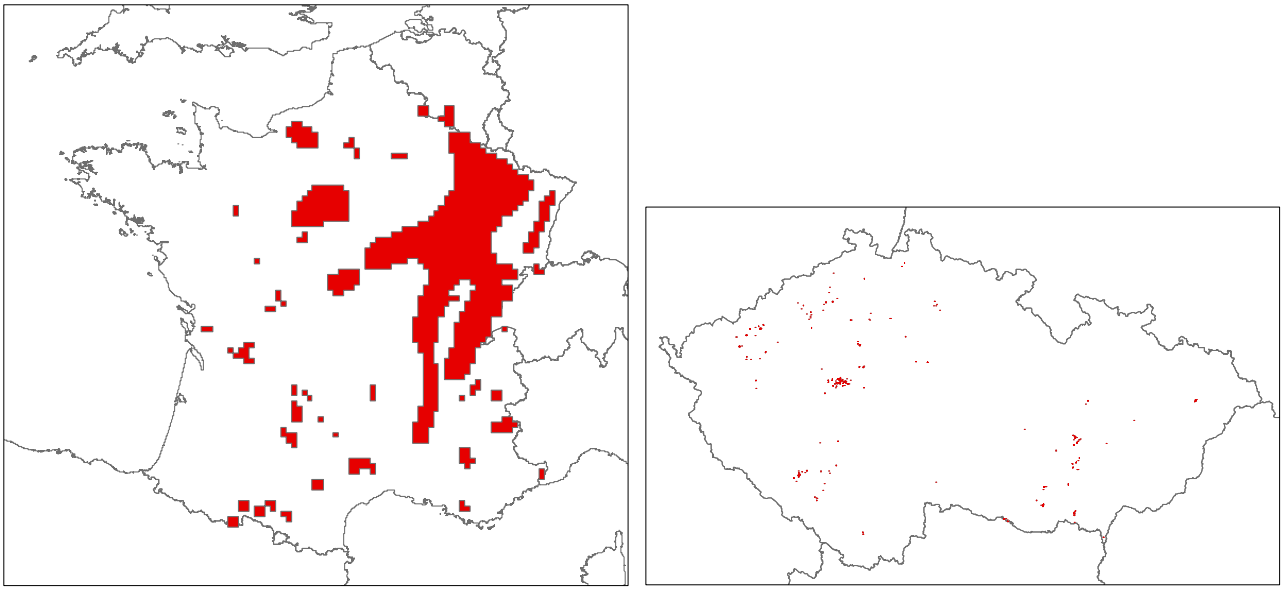


Figure 4 - Distribution of habitat type 6110 *Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi* in France (left) and the Czech Republic (right)

However weighting based on a gridded distribution map (method 2GD) was the most often used method for weighting when producing the species assessments for biogeographical regions and was used for 77% of species assessments where weighting was required. The extensive use of gridded data was due to the lack of coherence in the use of population units. Although weighting by population was the preferred option it was only possible for 13% of the species biogeographical assessments.

Figure 5 illustrates differing approaches to estimating range from distribution data. Clearly the guidance given in the explanatory notes was not sufficient and there is a clear need for harmonisation in future reports.

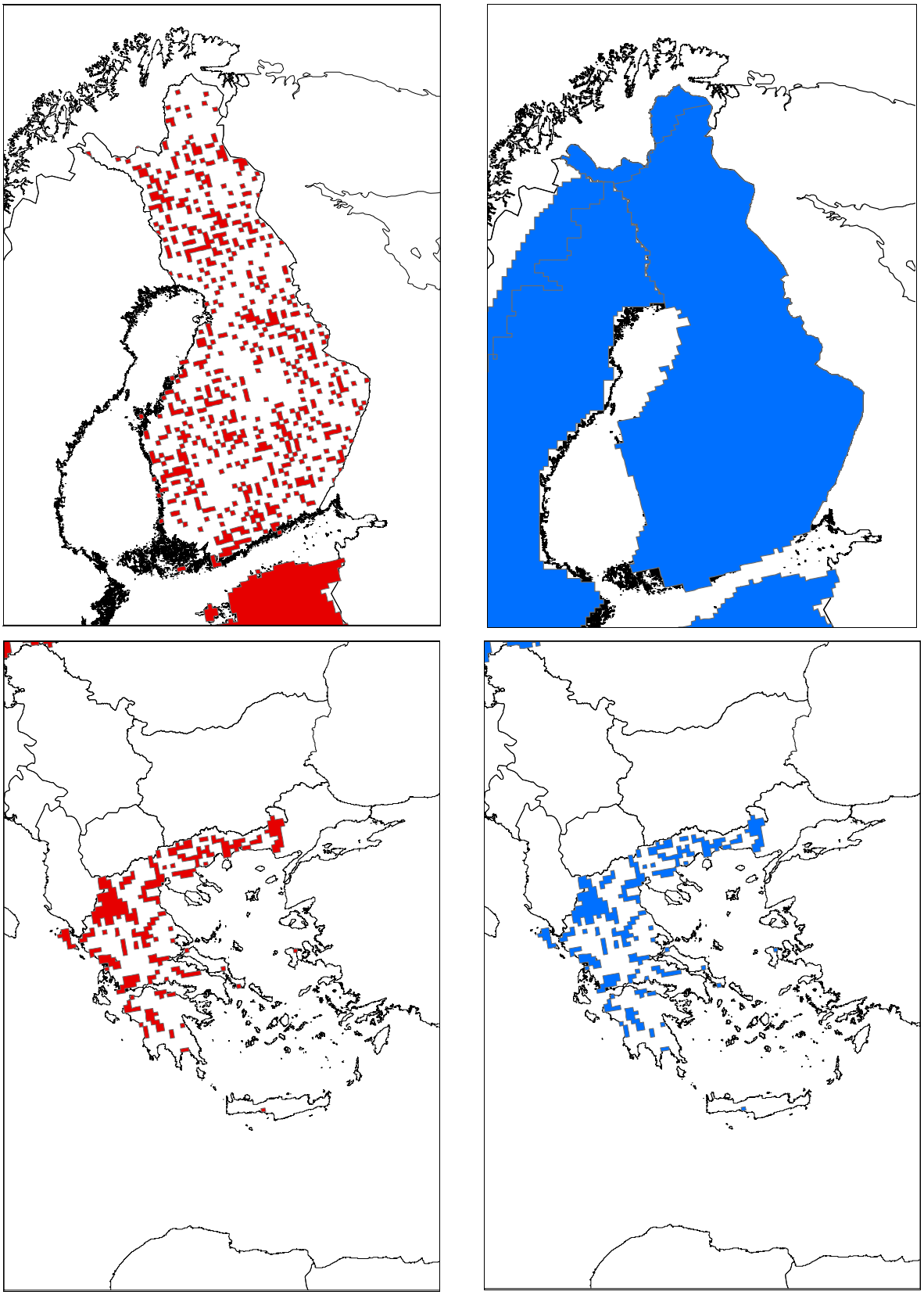


Figure 5 - Different approaches to deriving range (right) from distribution (left) for the otter (*Lutra lutra*) in Finland (above) and Greece (below) (Note – Sweden only reported range for this species).

Coherence in reporting between countries

In some cases there are differences in the conservation status of a habitat or species between adjacent countries that appear more likely to be due to different applications of the methodology than to any real ecological difference. For example, Figure 6 shows the Member State assessments for habitat type 4010 and clearly this habitat is unfavourable throughout its range. Given that one of the major threats and pressures is atmospheric pollution it is not clear why the habitat has been assessed as 'unfavourable-inadequate' by the Netherlands but 'unfavourable-bad' by all its neighbouring countries in the Atlantic region when atmospheric pollution is known to be similar in all these countries.

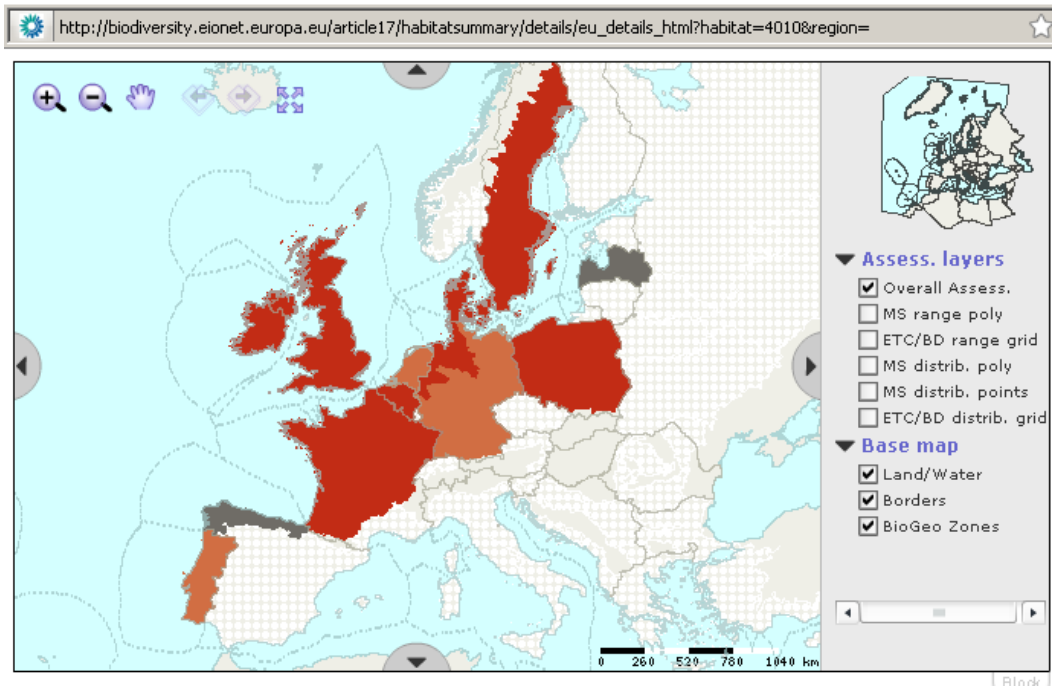


Figure 6 - Conservation status in each Member State of habitat type 4010 Northern Atlantic wet heaths with *Erica tetralix.*

Figure 7 shows Member State assessments for habitat type 6510 - Lowland hay meadows - where the Italian assessment of 'structure and function' as 'unknown' in the Mediterranean region leads to an overall assessment as 'favourable'. Without further information it is difficult to comment on this assessment but it is difficult to understand why no assessment is possible and it one of many, particularly for southern Europe where one parameter reported as 'unknown' leads to an overall assessment as favourable for habitats and species widely regarded as threatened (Estonia and Slovakia reported all parameters as 'favourable').

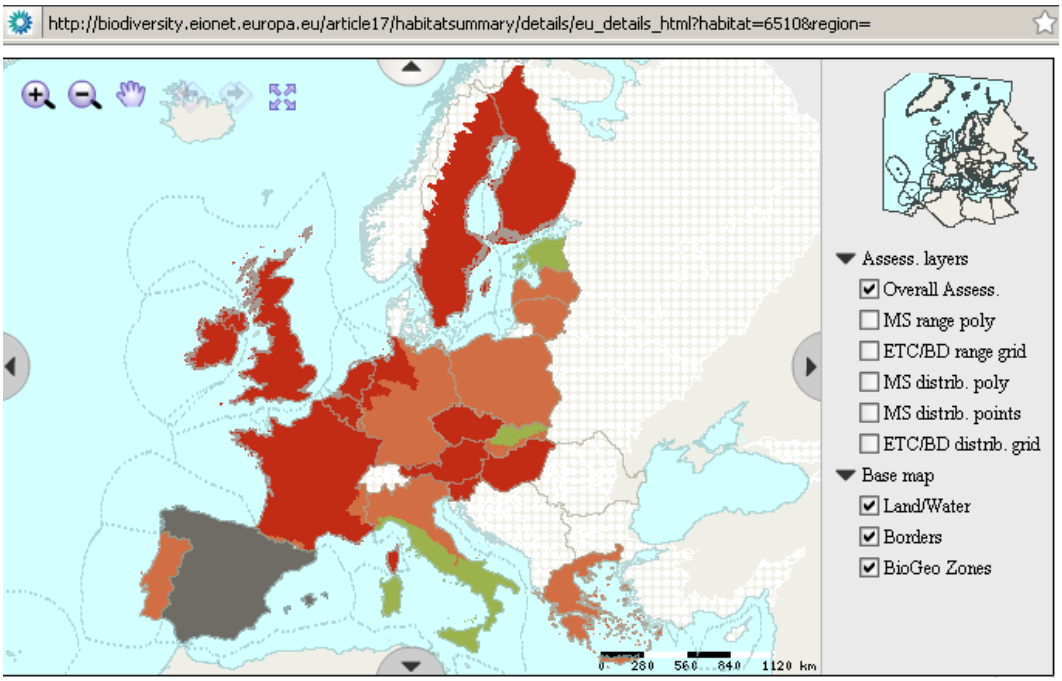


Figure 7 - Conservation status of in each Member State of habitat type 6510 - Lowland hay meadows

Italy and Greece have a large number of habitats and species assessed as 'favourable' but where one parameter (usually 'structure and function' or 'future prospects') was reported as 'unknown', often leading to favourable assessments when its neighbours reported unfavourable. For example, for habitats in the Mediterranean biogeographical region Italy has reported 37 habitats (38%) as 'favourable' but with one unknown from a total of 98 assessments while for Greece some 30% of habitat assessments are 'favourable but with one unknown' (always 'future prospects'). Neighbouring France only had 3% of such habitats for the same biogeographical region.

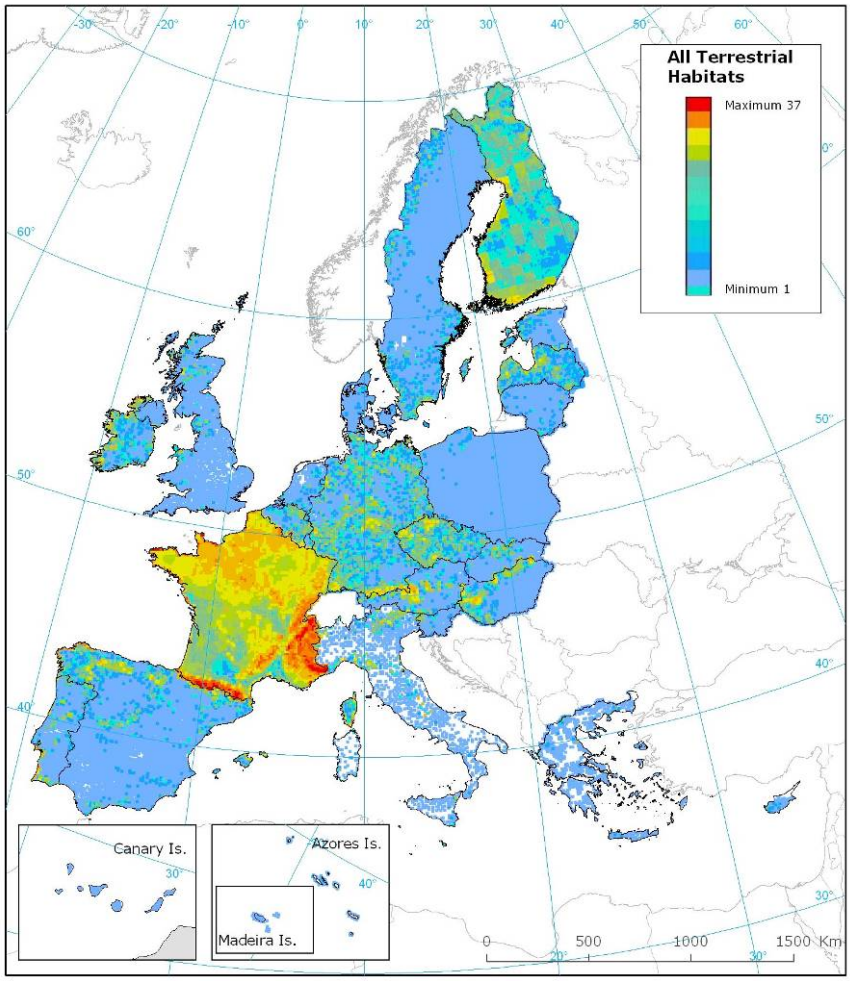


Figure 8 - Habitat diversity across the European Union – see text for details

Habitat diversity was calculated based on the number of Annex I habitats present in each cell of a 10 x 10 km grid based on the ETC/BD grid maps of habitat distribution and the results are shown on Figure 8 where blue indicates low and red high diversity. France appears to be the most diverse country in the EU25 but this is an artefact due to France reporting at a very coarse resolution compared to the neighbouring countries. Resolution also partly explains why Finland appears more diverse than Sweden and Latvia more diverse than Estonia and Lithuania. Again this map highlights the need for better harmonisation in reporting.

These differences may limit the use of the dataset for further research and any further analysis must take these factors into account.

Appendix
Details on data quality, completeness and Coherence

The European Topic Centre on Biological Diversity (ETC/BD) ran a series of checks on the data completeness and coherence. These are described in the document 'Quality Evaluation of Member States reporting for Article 17 of Habitats Directive' (http://circa.europa.eu/Public/irc/env/monnat/library?l=/habitats_reporting/reporting_2001-2007/background/quality_analysis&vm=detailed&sb=Title).

This appendix provides additional details on the quality, completeness and coherence of data.

Data gaps / Data completeness

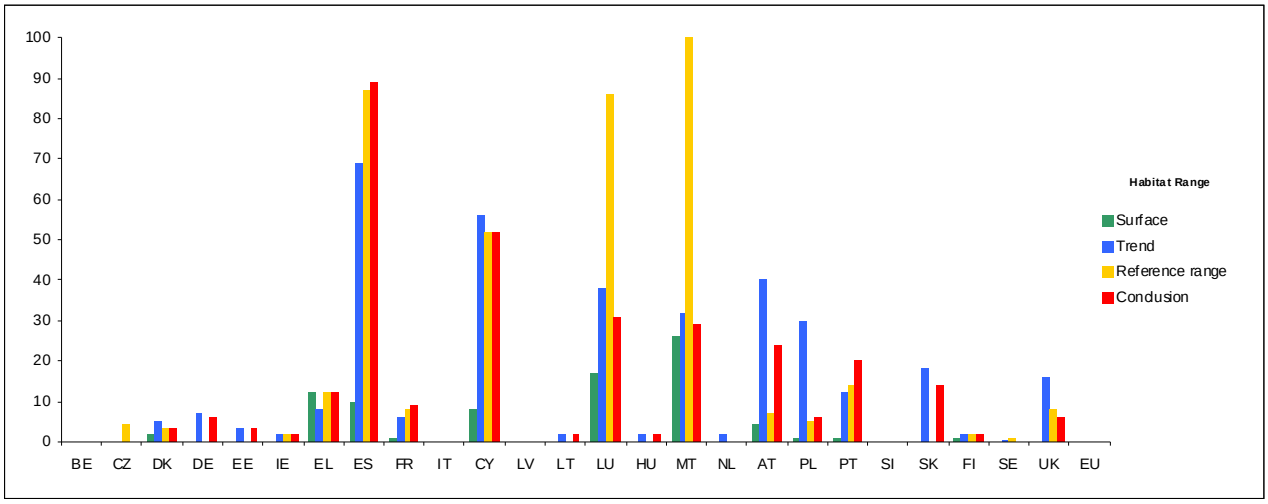
Habitats – Percentage of fields with mandatory information missing or reported as unknown

MS	Habitat Range				Habitat area				Structure & Functions		Future prospects	Overall assessment	Maps
	Surf.	Trend	Ref. range	Concl.	Area	Trend	Ref. area	Concl.	Typical species	Concl.	Concl.		
BE									8	7	3	2	
CZ			4		3		31	6		2			
DK	2	5	3	3	2	57	30	37	100 *	23	54	24	15
DE		7		6	1	10	1	5	2	38	12	5	
EE		3		3		3		13		15	10	8	
IE		2	2	2	10	5	14	10		5			
EL	12	8	12	12	12	8	12	12	1	1	34	4	1
ES	10	69	87	89	32	67	88	87	9	87	88	87	51
FR	1	6	8	9	0	9	3	10	1	23	10	7	
IT									1	56	23	8	
CY	8	56	52	52	8	81	56	69	6	27	31	31	4
LV						16		4	5	18	19	5	
LT		2		2		13		11	2	13	4	4	
LU	17	38	86	31	45	66	69	59		48	59	55	26
HU		2		2	2	4	2	4	4	7	2	2	
MT	26	32	100	29	13	32	100	29	13	32	23	29	
NL		2				2							
AT	4	40	7	24	11	34	19	30	4	66	13	14	2
PL	1	30	5	6	12	26	13	11		6	10	3	
PT	1	12	14	20	72	1	13	4	60	20	37	9	
SI					5	3	5	6	10	1	5		
SK		18		14		17		23		12	19	11	
FI	1	2	2	2	7	3	8	4	3	1	1	1	1
SE		0.5	1			7	1		4	6	5	4	
UK		16	8	6	18	25	26	17	98	5	8	6	7

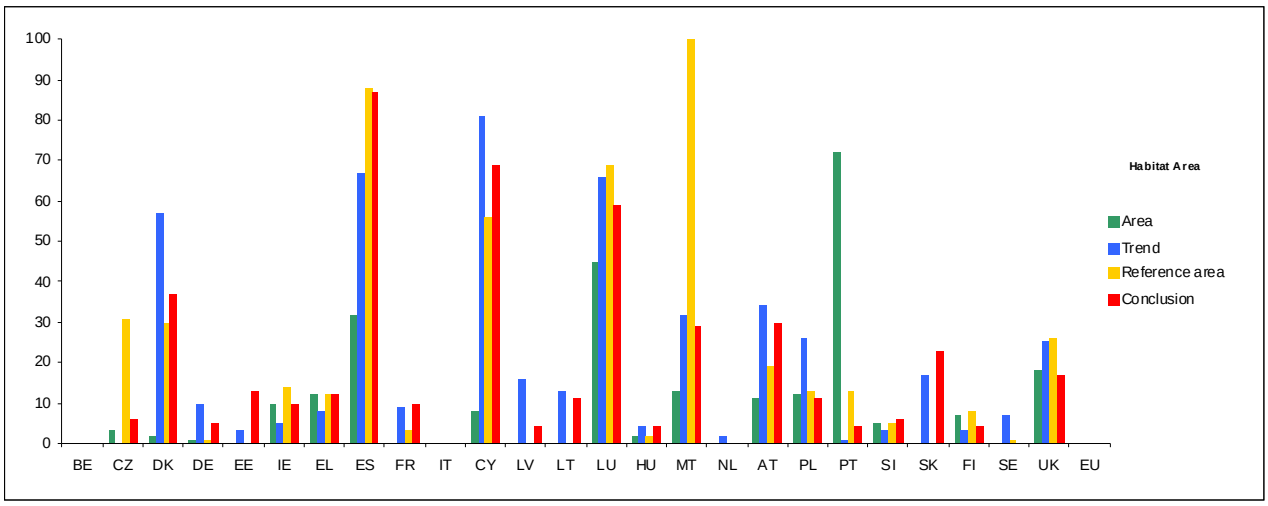
* Denmark did not list any typical species but indicated elsewhere that it had used the species noted as characteristic in the 'Interpretation manual of EU habitats'.

Cells where the percentage is equal to or greater than 50% are highlighted in bold and yellow.

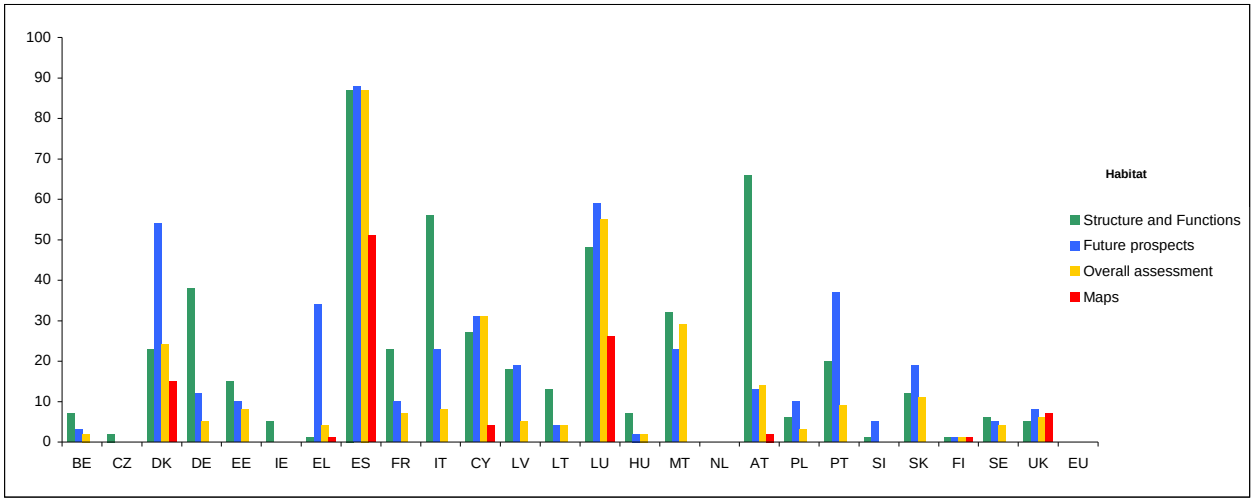
Habitat range: percentage of missing data



Habitat area: percentage of missing data



Habitats: percentage of missing data

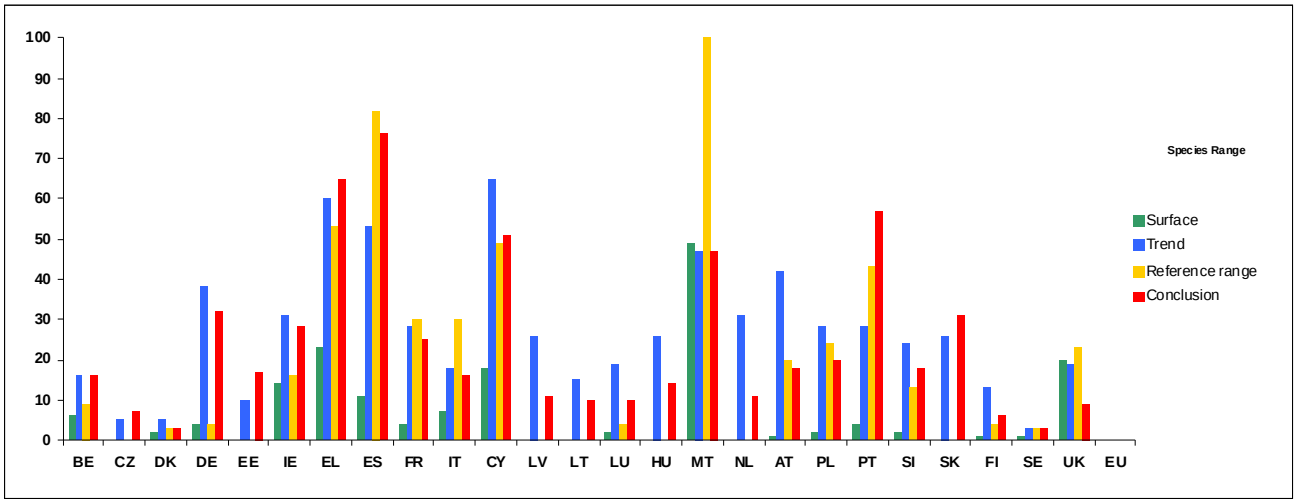


Species – Percentage of fields with mandatory information missing or reported as unknown

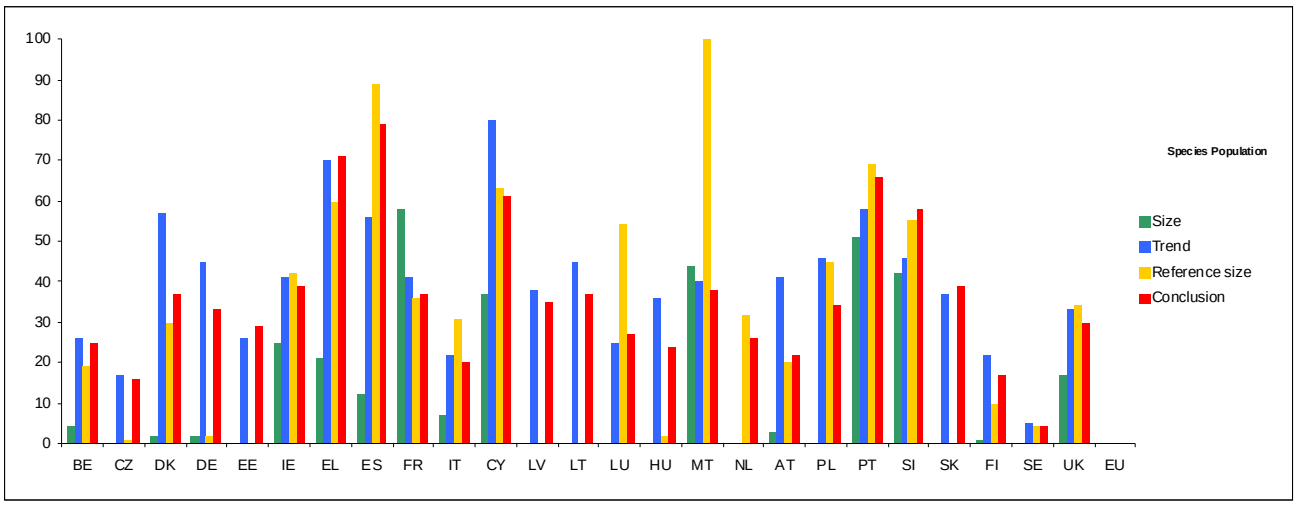
MS	Species Range				Species Population				Habitat of species				Future prospects		Overall assess-ment	Maps
	Surf.	Trend	Ref. range	Concl.	Size	Trend	Ref. size	Concl.	Area	Trend	Suit. Hab.	Concl.	Future	Concl.		
BE	6	16	9	16	4	26	19	25	85	69	90	71	29	26	24	
CZ		5		7		17	1	16	1	14	2	11	8	8	8	0.3
DK	2	5	3	3	2	57	30	37	100	23	54	24	15	2	5	3
DE	4	38	4	32	2	45	2	33	2	31	2	25	32	32	24	19
EE		10		17		26		29		27		32	30	29	26	
IE	14	31	16	28	25	41	42	39	17	33	23	30	27	25	25	14
EL	23	60	53	65	21	70	60	71	80	79	93	83	52	52	63	1
ES	11	53	82	76	12	56	89	79	75	78	85	79	64	74	73	65
FR	4	28	30	25	58	41	36	37	95	38	99	38	27	30	25	0.3
IT	7	18	30	16	7	22	31	20	99	54	100	50	18	17	14	6
CY	18	65	49	51	37	80	63	61	63	86	69	73	65	63	63	16
LV		26		11		38		35	5	16	2	17		27	21	
LT		15		10		45		37		19		12	30	30	14	
LU	2	19	4	10		25	54	27	18	18	77	17	4	7	7	1
HU		26		14		36	2	24	6	37	30	29	22	21	16	1
MT	49	47	100	47	44	40	100	38	67	33	82	35	35	35	36	2
NL		31		11			32	26		30	99	5	11	7	6	
AT	1	42	20	18	3	41	20	22	7	26	68	11	5	5	5	1
PL	2	28	24	20		46	45	34	44	39	52	25	10	19	19	1
PT	4	28	43	57	51	58	69	66	57	41	83	59	15	50	53	4
SI	2	24	13	18	42	46	55	58	64	23	81	23	23	23	20	3
SK		26		31		37		39	16	43	36	36	46	46	32	
FI	1	13	4	6	1	22	10	17	5	13	73	10	13	13	11	
SE	1	3	3	3		5	4	4	2	2	99	0.4	3	5	3	9
UK	20	19	23	9	17	33	34	30	87	51	96	43	23	23	25	9

Cells where the percentage is equal to or greater than 50% are highlighted in bold and yellow.

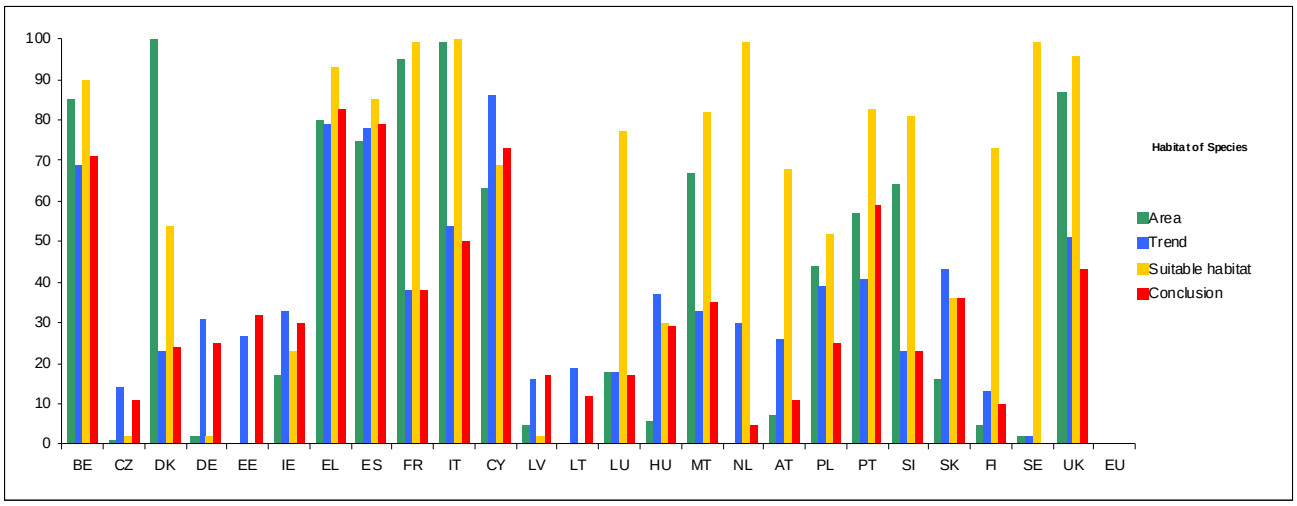
Species range: percentage of missing data



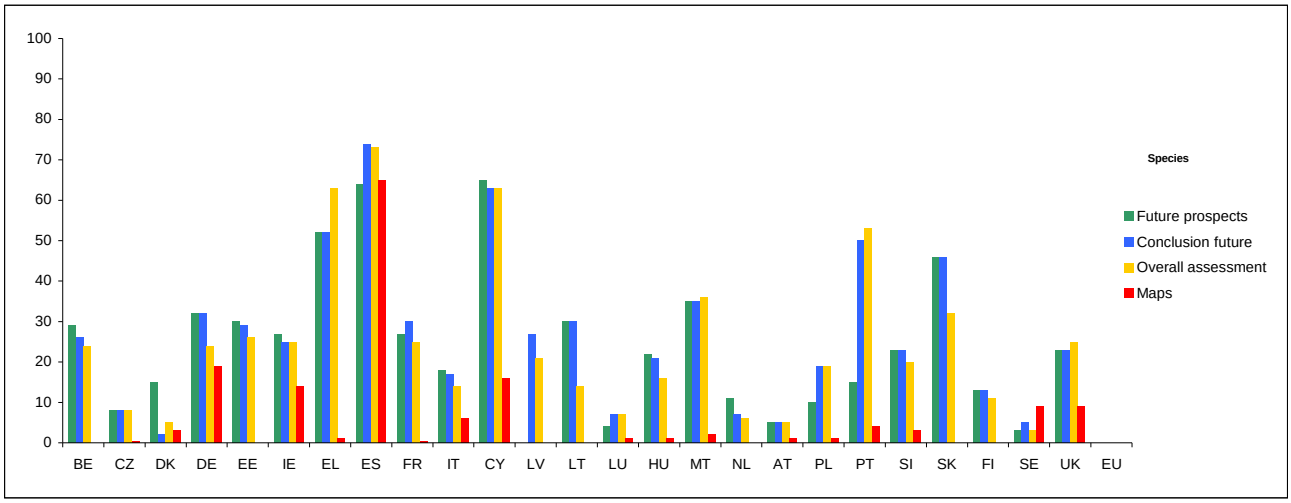
Species population: percentage of missing data



Habitat of species: percentage of missing data

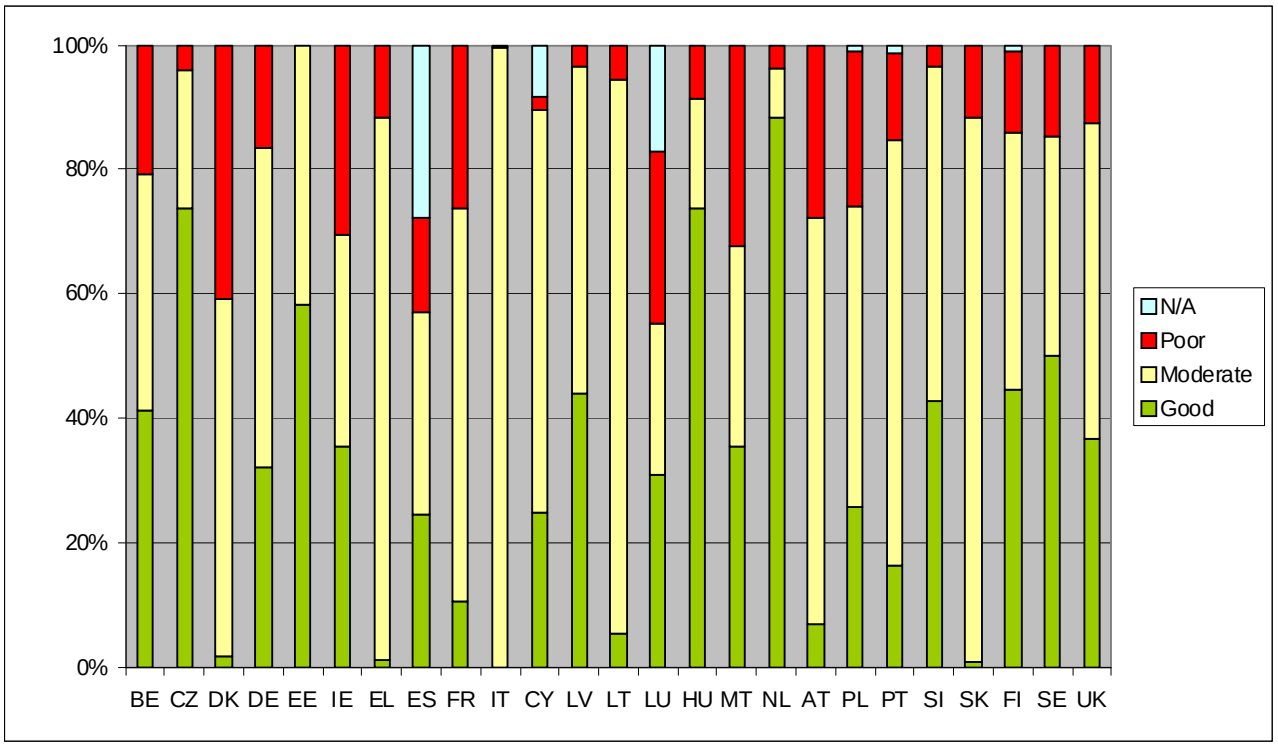


Species: percentage of missing data

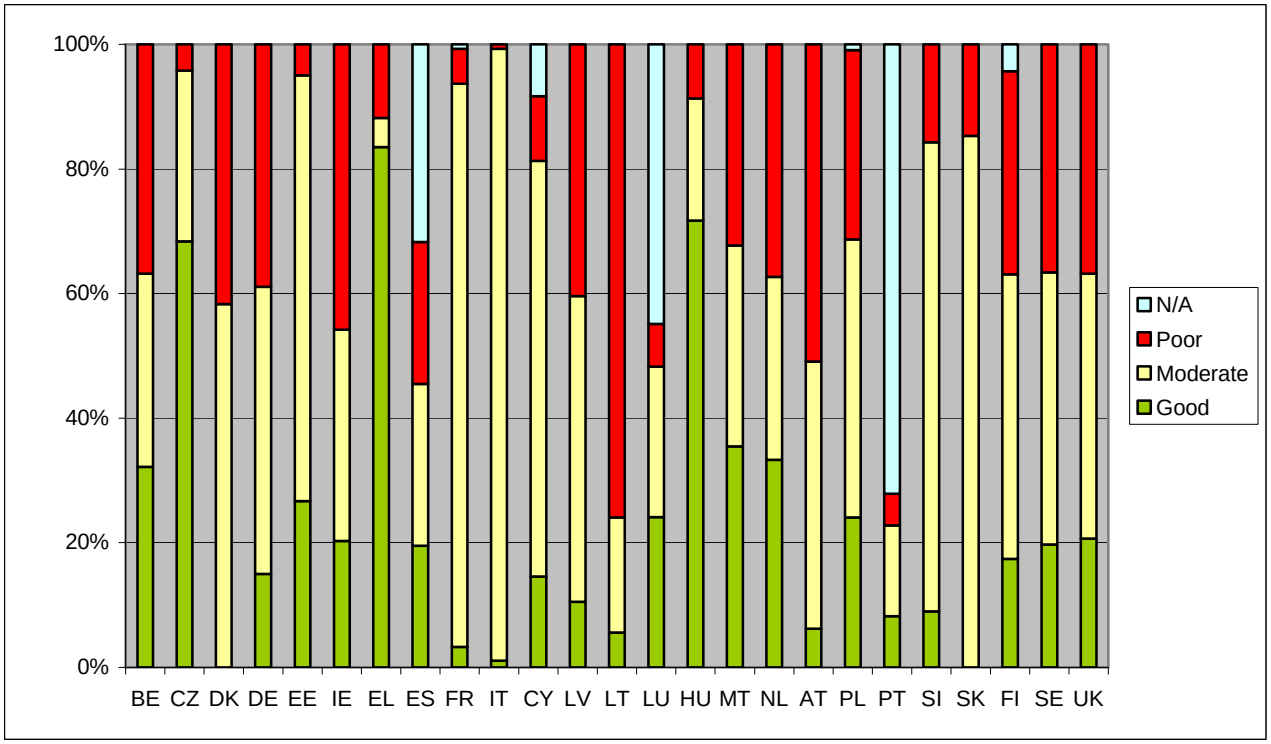


Ranking of data quality as reported by Member States

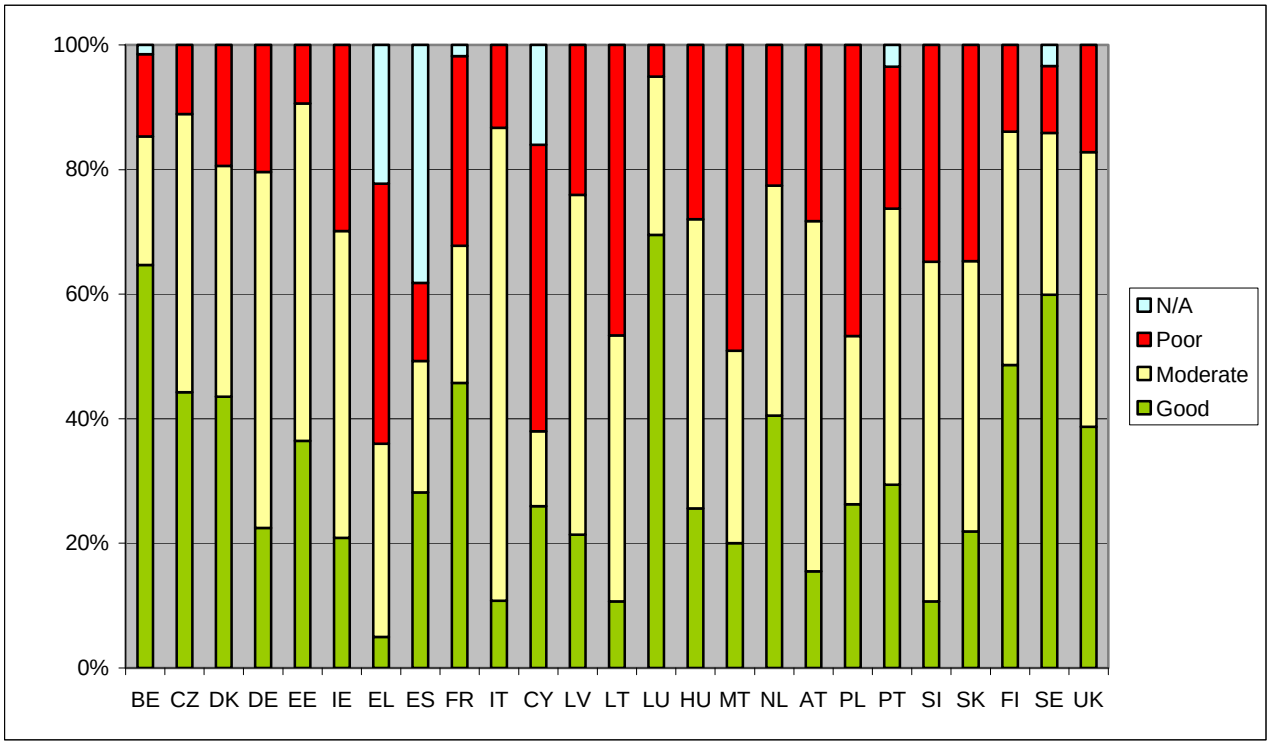
Data quality of 'Habitat range'



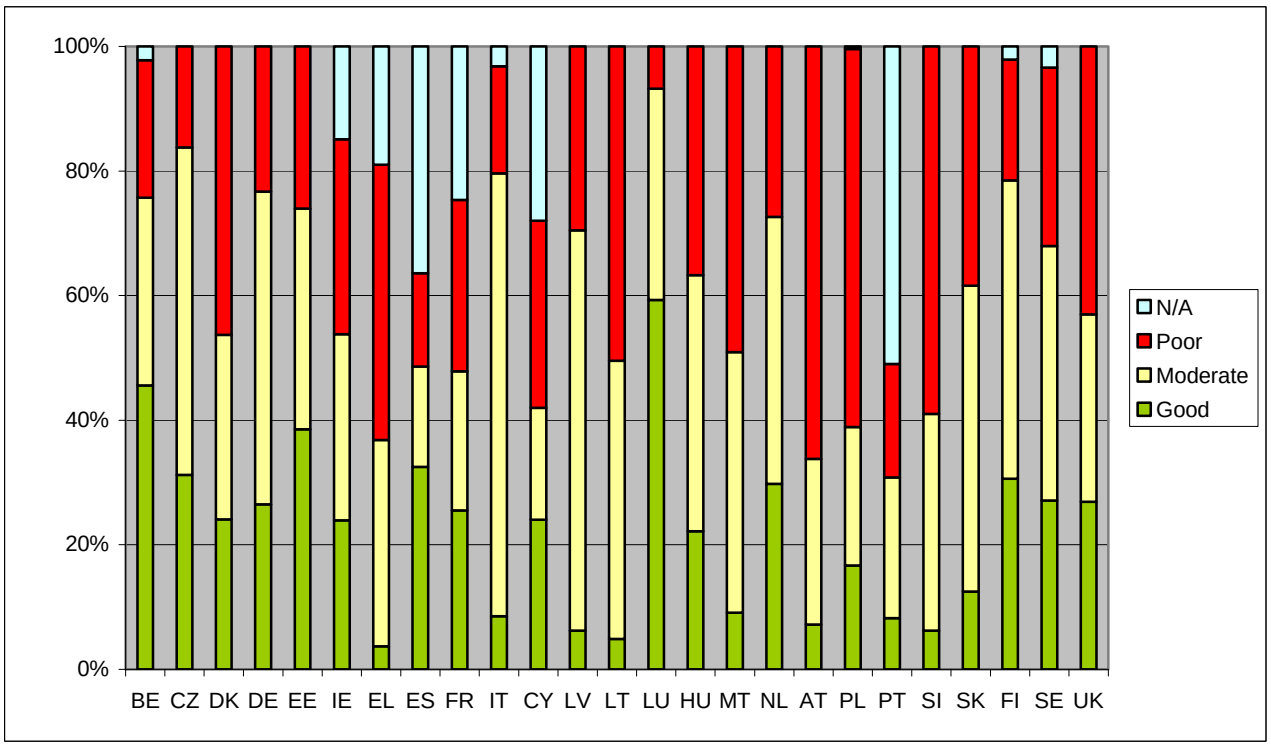
Data quality of ''Habitat area'



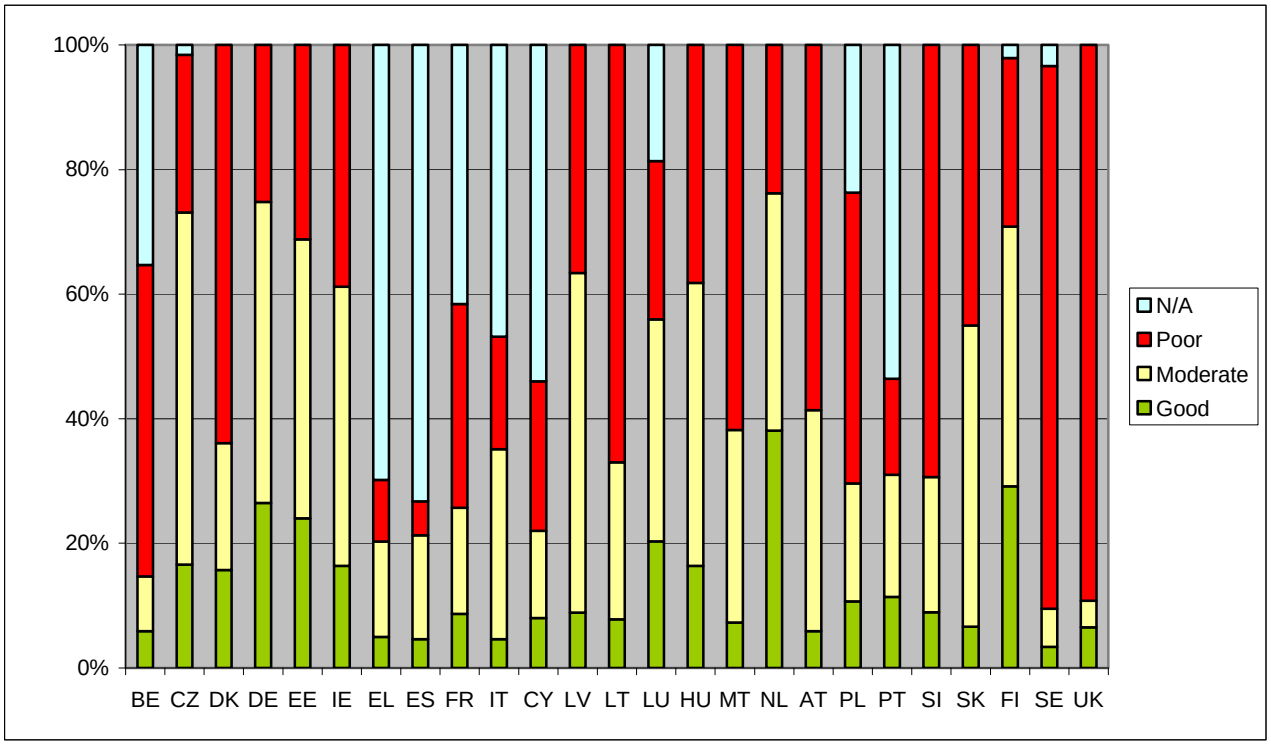
Data quality of 'Species range'



Data quality of 'Species population'

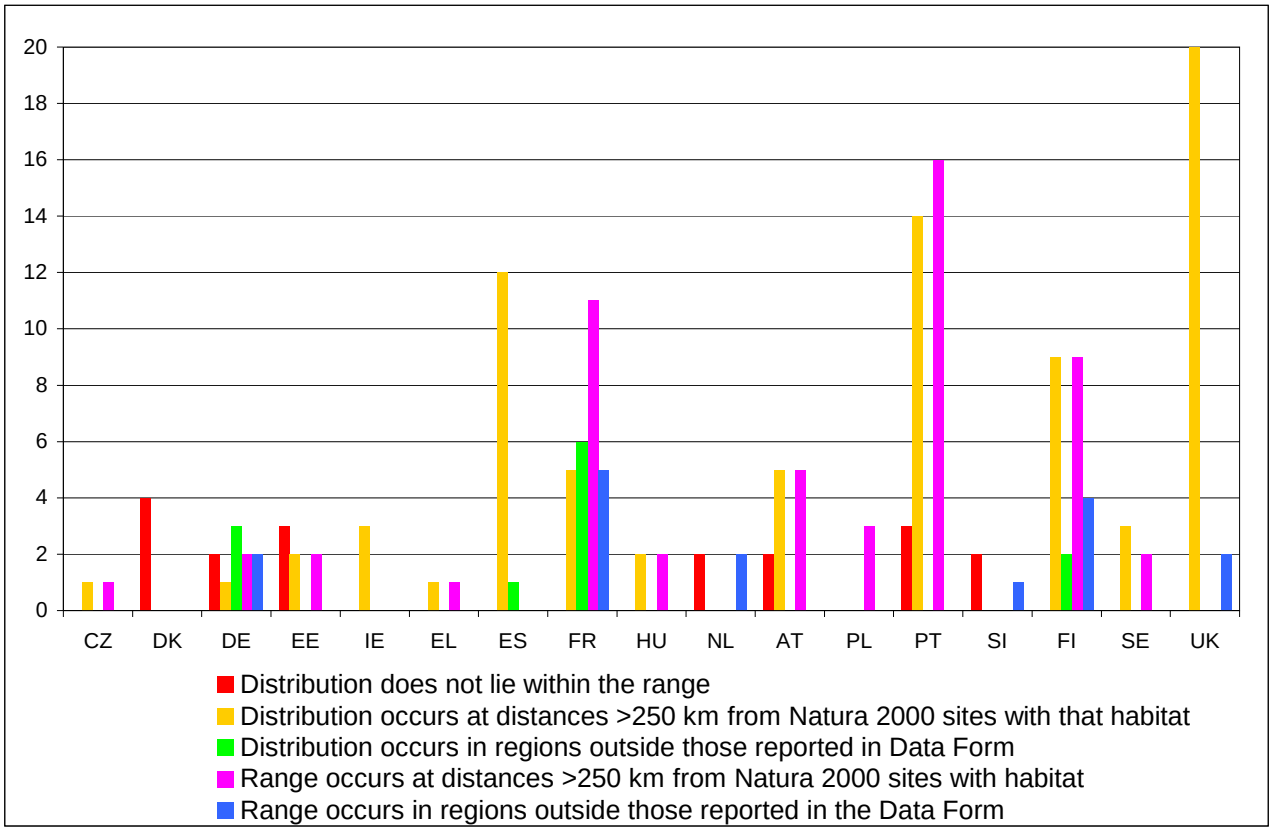


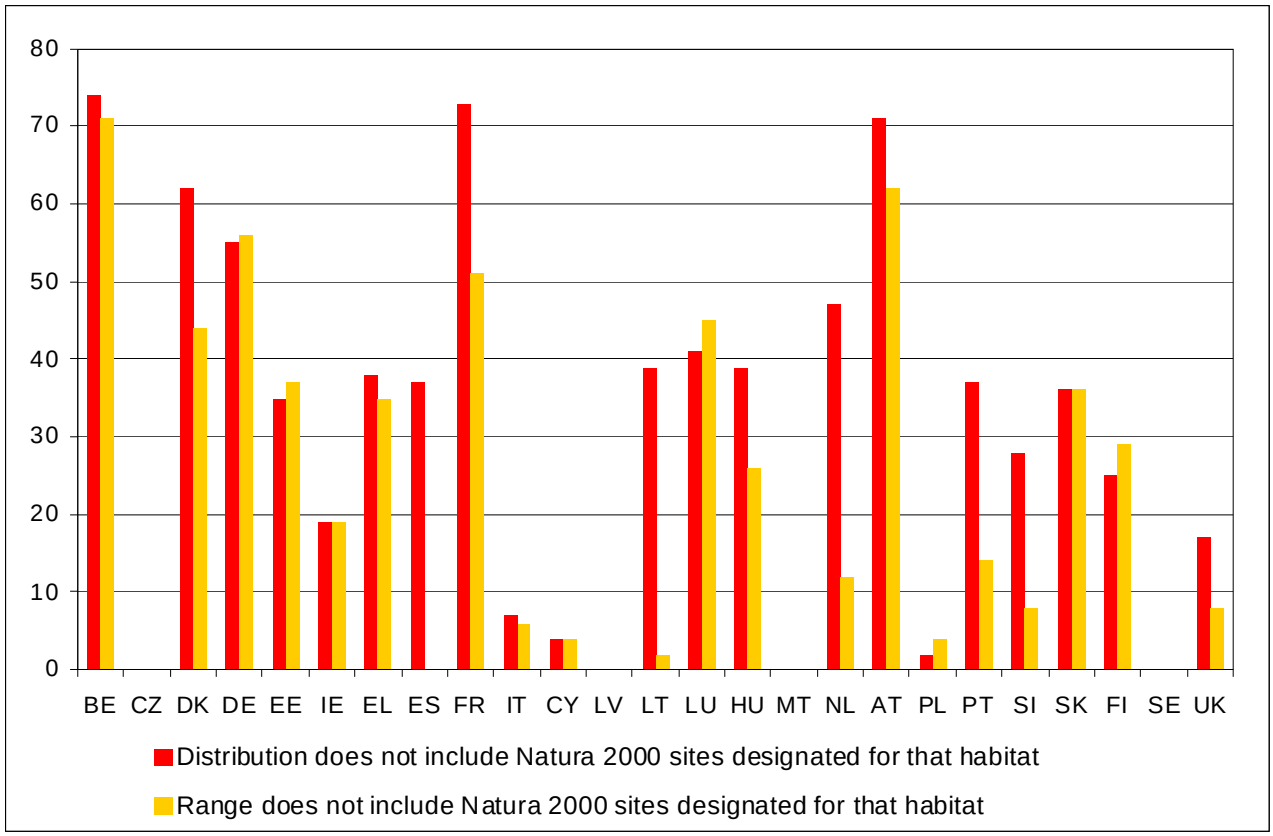
Data quality for 'Habitat of species'



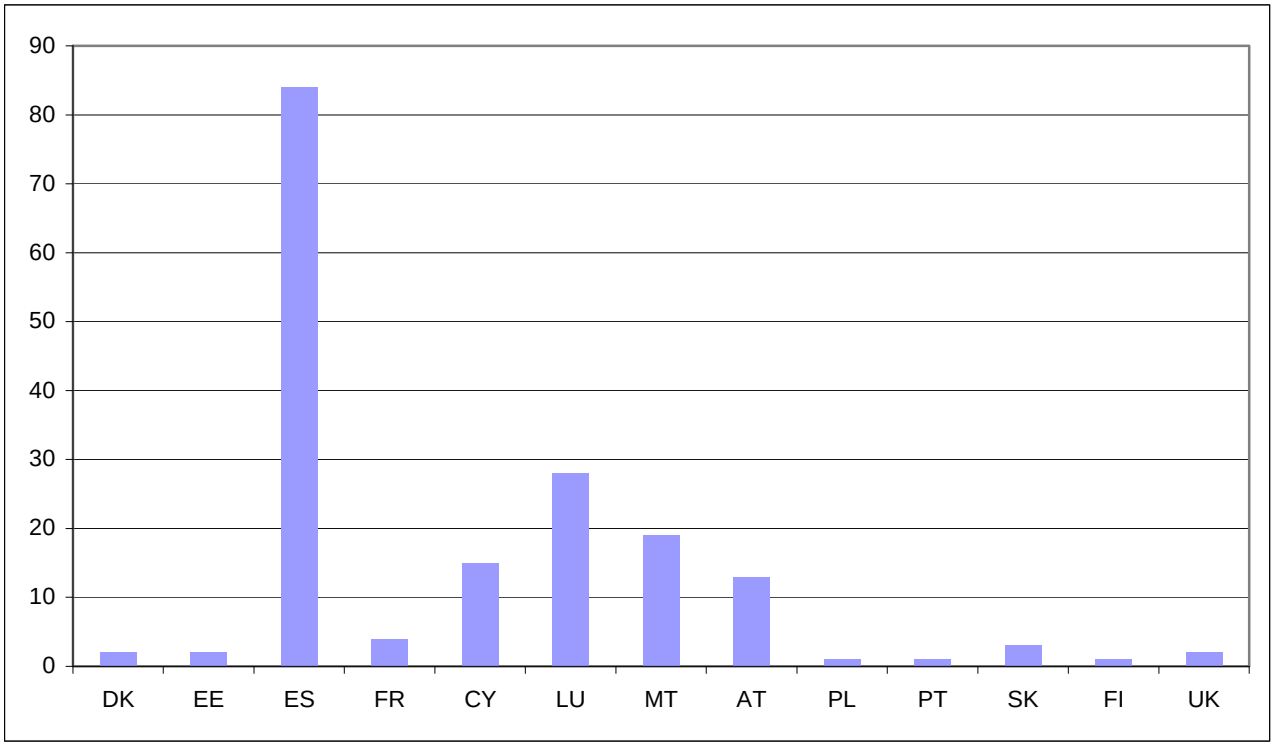
Data quality according to the quality assurance / quality control reports

Percentage of habitat maps, out of total number of habitats per MS, having QA/QC issues

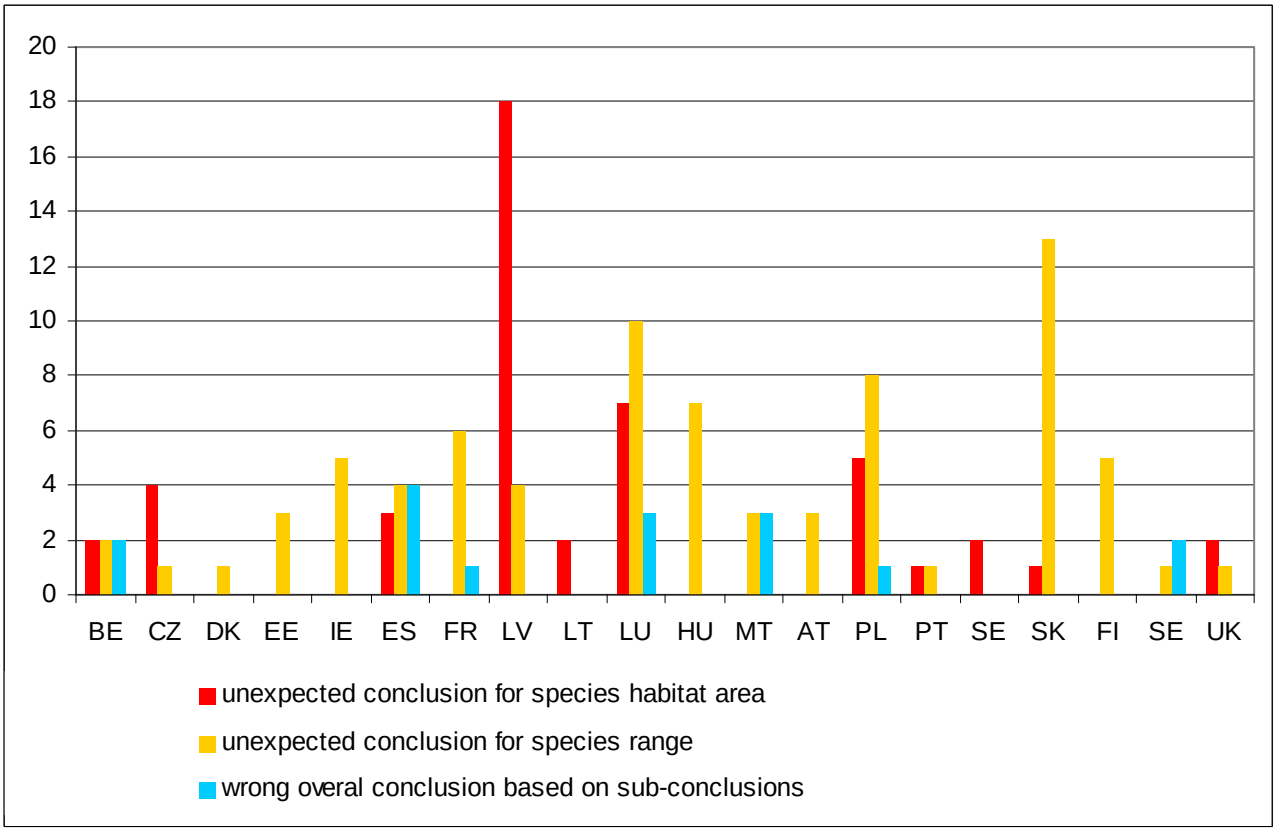




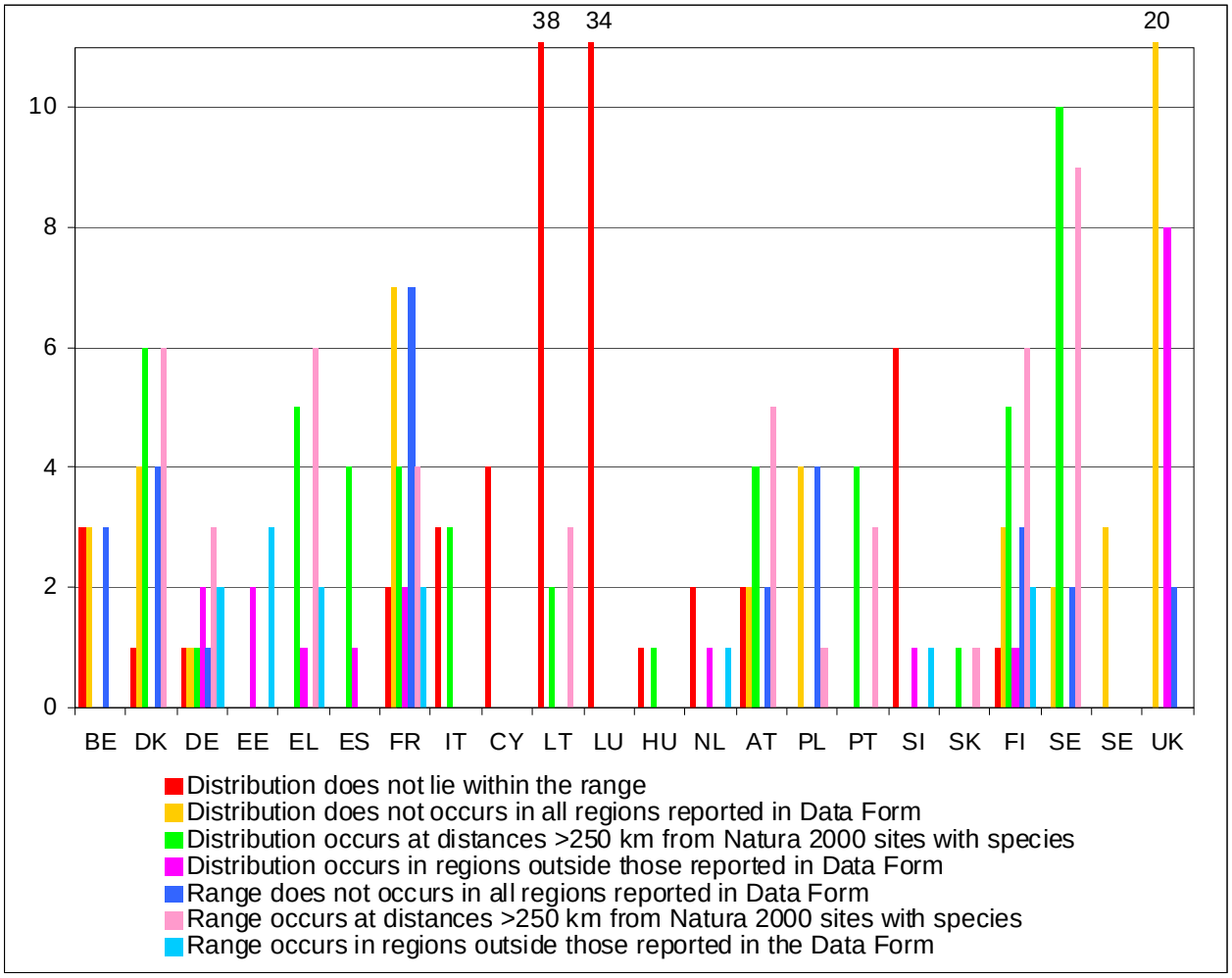
Percentage of habitats, out of total number of habitats per MS, where all sub-conclusions and the overall conclusion were assessed as unknown or not assessed at all

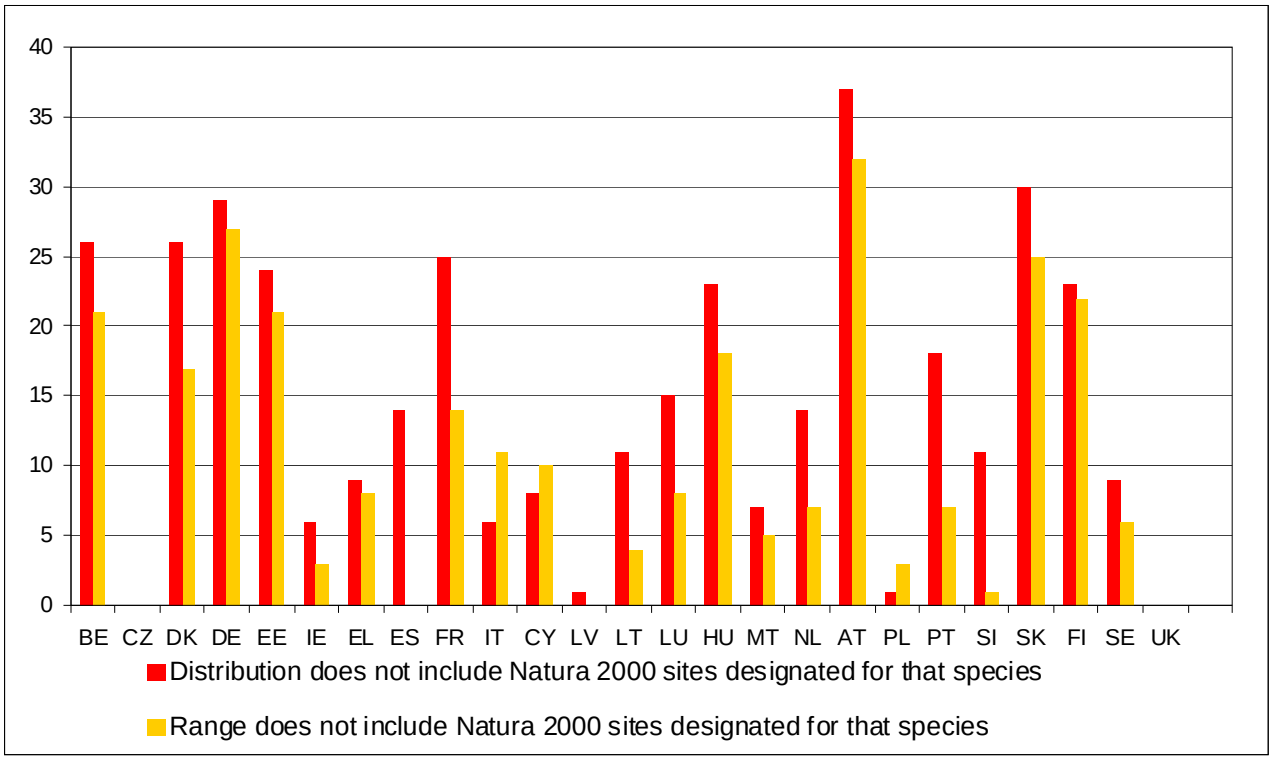


Percentage of habitats, out of total number of habitats per MS, where sub-conclusions or overall conclusion were incorrectly assessed (or the background data seems incorrect)

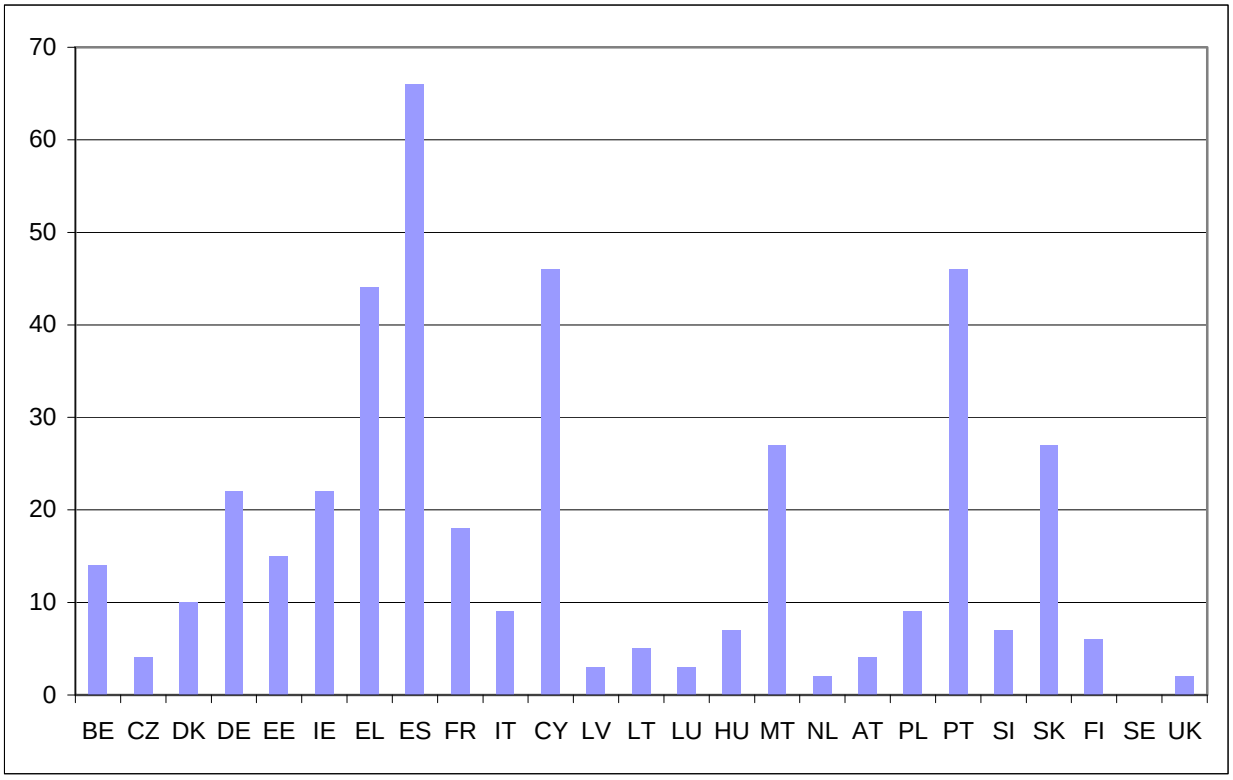


Percentage of species maps, out of total number of species per MS, having QA/QC issues





Percentage of species, out of total number of species per MS, where all sub-conclusions and the overall conclusion were assessed as unknown or not assessed at all



Percentage of species, out of total number of reported species per MS, where sub-conclusions or overall conclusion were incorrectly assessed (or the base data is incorrect)