Annex B
(informative)
Use cases

This annex describes the use cases that were used as a basis for the development of this data specification.

B.1 Habitat directive (Reporting on Article 17 of Habitats Directive)

The Habitat Directive (92/43/EEC) requires Member States to report on the implementation of the directive in the form of country reports submitted every six years.

The national reports consist of the general part (Annex A) and the specific part (Annex B and D), which includes information about the conservation status and main threats for all of the habitats and species listed in the Annexes of the Directive. The assessment of the conservation status of the habitats and species is the reported using descriptive data (e.g. status and trends) as well as maps of the range and distribution. The information that forms these reports should be based upon monitoring (as stated in Article 11), however most of the Member States do not have sufficiently developed biodiversity monitoring networks therefore the data is often collected from various sources.

The European Topic Centre on Biological Diversity in close cooperation with the Scientific Working Group (group of experts from the Member States) has developed a guidance document specifying the information that should be submitted within the Article 17 reporting. The guidance document specifies that; the spatial datasets provided by Member States should conform to the European 10kmx10km grid (ETRS 89 LAEA 5210) to achieve necessary data harmonization on the EU level.

The Article 17 report containing spatial datasets and descriptive information is uploaded by the Member States to the Reportnet's Central Data Repository and quality checked by the ETC/BD.

The national spatial data sets are harmonised and subsequently merged to form EU-wide datasets.

Based upon the information provided in the Member State reports the ETC/BD produces National Reports for each Member State and a Technical report summarizing the main results of the assessment of the conservation status at the EU biogeographical level. The resulting reports feed into the Composite report which is in accordance with Article 17 prepared by the Commission.

Use Case Description	
Name	Habitat directive (Reporting on Article 17 of Habitats Directive)
Primary actor	Member states
Goal	Achieve the overview about the progress of the implementation of the Habitats directive.
System under consideration	Reportnet's CDR
Importance	High
Description	Article 17 of the Habitats Directive obliges MSs to report every six years about the progress of the implementation of the directive. It is applicable for habitat types and species listed in the Annexes of the Directive.
Pre-condition	National datasets on habitat type and species distribution. Specifications for the data input.
Post-condition	Published national and EU27 reports
Flow of Events – Basic Path	

Use Case Description	
Step 1	MS produces 2 obligatory spatial datasets (distribution of habitat types and species) and one descriptive (tabular) dataset. MS follow the encodings given in the Article 17 Guidelines. The same habitat types and their codings are also used in the Natura 2000 Standard Data Form. (Remark: All habitat types of the Habitats Directive are cross-referenced to EUNIS habitats classification).
Step 2	MS uploads the datasets as XML and GML into Reportnet's CDR.
Step 3	The ETC/BD downloads the national datasets from the CDR.
Step 4	The ETC/BD performs a series of quality assessment on the data.
Step 5	In case the report or data requires improvement, the ETC/BD notifies MS via Reportnet and provides a report on data suggesting improvements. Steps 2,3,4 are repeated then.
Step 6	The assessments for the conservation status of a habitat type are done at the biogeographical level. Therefore the ETC/BD split the MS data by biogeographical region. This is done in 2 steps, first off the regions a habitat type occurs in are selected from the tabular data (this list simply states that Habitat X occurs in bioregion Y), secondly based on the first step the grid cells of the habitat types that occur in a region are extracted from the MS submission by overlaying the distribution with the biogeographical regions (link: Annex III theme 17) and spatial selecting all those grids that occur within the region (see Figure 15 and Figure 16). All the datasets per region are merged into one dataset upon which the assessments are carried out. The end product will be merged boundaries for 9 biogeographical regions and 5 marine regions. This process does lead to those grid cells along the boundaries of regions which belonging to two regions being 'doubly represented' visually, where necessary one of the double sets will be removed.
Step 7	The assessment of the conservation status of the habitat types are calculated per biogeographical region, ideally, based on attributes from the tabular data. Where the tabular data is poor, or inconsistent or absent the spatial data is used as one of the parameters to calculate the conservation status.
Step 8	The ETC/BD merges the 9 biogeographical regions and 5 marine regions into a European dataset, which is disseminated to the public, used in the Natura 2000 viewer etc.
Step 9	ETC/BD produces National reports and a Technical report for DG ENVIRONMENT.
Step 10	DG ENVIRONMENT produces a Composite Report.
Flow of Events – Alternative Paths	
Step m.	None
Data set: Habitat types distribution	
Description	Distribution of Habitat types listed in Annex I of the Habitats Directive.
Type	input
Data provider	National
Geographic scope	National
Thematic scope	Habitats
Scale, resolution	10kmx10km (ETRS 89 LAEA 5210 'European grid')
Delivery	
Documentation	http://ec.europa.eu/environment/nature/knowledge/rep_habitats/index_en.htm
Data set: Biogeographical regions	
Description	Biogeographical regions according to Habitat Directive.

Use Case Description	
Type	input
Data provider	EEA
Geographic scope	EU27
Thematic scope	Biogeographical regions of Europe
Scale, resolution	1:1.000.000
Delivery	
Documentation	http://dataservice.eea.europa.eu/dataservice/metadetails.asp?id=1054

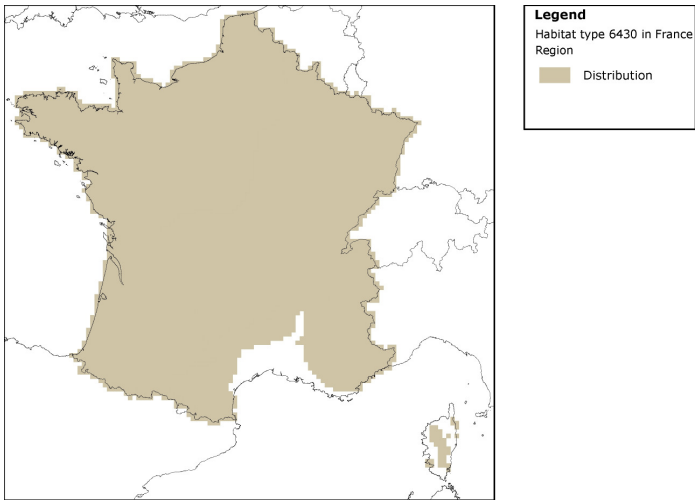

Figure 15 – Distribution of the wide spread habitat type 6430 in France

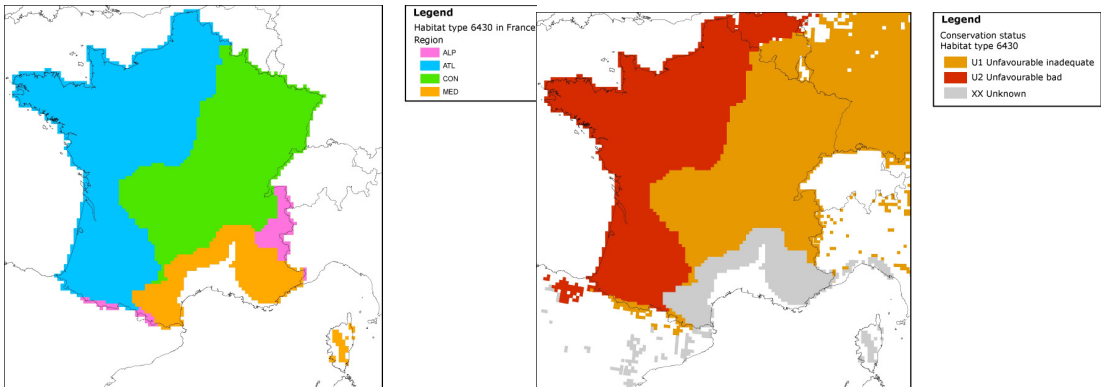

Figure 16 – Distribution of the wide spread habitat type 6430 in France as split by Biogeographical region, now 4 files upon which a Conservation status is calculated. The right figure shows the conservation status as calculated fro the entire region.

Reporting format on the 'main results of the surveillance under Article 11' for Annex I Habitats Types

Field definition	*Brief explanations*
0.1 Member State	The MS for which the reported data apply; use 2 digit code according to list to be found in the reference portal.
0.2 Habitat code	From checklist for reporting under nature directives, e.g. 1110 (do not use subtypes). Should subtypes be used, e.g. for marine habitat types, please ensure that there is also a format filled in for the habitat type as in the directive – Annex I).
1 National level	
1.1. Maps	Distribution and range within the country concerned
1.1.1. Distribution map	Submit a map as a GIS file – together with relevant metadata. Standard for submission is 10x10km ETRS grid cells, projection ETRS LAEA 5210.
1.1.2. Method used - map	3 = Complete survey 2 = Estimate based on partial data with some extrapolation and/or modelling 1 = Estimate based on expert opinion with no or minimal sampling 0 = Absent data
1.1.3. Year or period	Year or period when distribution data was collected.
1.1.4. Additional distribution map Optional	This is for cases if MS wishes to submit an additional map deviating from standard submission map under 1.1.1.
1.1.5. Range map	Submit a map that was used for range evaluation following the same standard as under 1.1.1. or 1.1.4.

2. Biogeographical level Complete for each biogeographical region or marine region concerned	
2.1. Biogeographical region or marine regions	Choose one of the following: Alpine (ALP), Atlantic (ATL), Black Sea (BLS), Boreal (BOR), Continental (CON), Mediterranean (MED), Macaronesian (MAC), Pannonian (PAN), Steppic (STE)), Marine Atlantic (MATL), Marine Mediterranean (MMED), Marine Black Sea (MBLS), Marine Macaronesian (MMAC) and Marine Baltic Sea (MBAL).
2.2. Published sources	If data given below is from published sources give bibliographical references or link to Internet site(s). Give author, year, title of publication, source, volume, number of pages, web address.
2.3. Range	Range within the biogeographical region concerned.
2.3.1. Surface area Range	Total surface area of the range within biogeographical region concerned in km². The method described in the section IV.a.i 'Range' of the guidelines is recommended.
2.3.2 Method used Range	3 = Complete survey 2 = Estimate based on partial data with some extrapolation and/or modelling 1 = Estimate based on expert opinion with no or minimal sampling 0 = Absent data
2.3.3. Short-term trend Period	2001-2012 (rolling 12-year time window) or period as close as possible to it. Indicate the period used here. The short-term trend is to be used for the assessment.
2.3.4. Short-term trend Trend direction	0 = stable + = increase - = decrease x = unknown

2.3.5. Short-term trend Magnitude Optional	**a) Minimum**	Percentage change over the period indicated in the field 2.3.2. - if a precise figure, to give same value under 'minimum' and 'maximum'
	b) Maximum	As for a)
2.3.6. Long-term trend Period Optional	A trend calculated over 24 years. For 2013 reports it is optional (fields 2.3.6 -2.3.8 are optional). Indicate the period used here.	
2.3.7 Long-term trend Trend direction Optional	0 = stable + = increase - = decrease x = unknown	
2.3.8 Long-term trend Magnitude Optional	**a) Minimum**	Percentage change over the period indicated in the field 2.3.6. - if a precise figure, to give same value under 'minimum' and 'maximum'.
	b) Maximum	As for b)
2.3.9 Favourable reference range	a) In km². Submit a map as a GIS file if available.	
	b) Indicate if operators were used (using symbols ≈, >, >>).	
	c) If Favourable Reference Range is unknown, indicate with "x".	
	d) Indicate method used to set reference value (if other than operators) (free text).	
2.3.10 Reason for change Is the difference between the reported value in 2.3.1. and the previous reporting round mainly due to:	a) genuine change? *YES/NO*	
	b) improved knowledge/more accurate data? *YES/NO*	
	c) use of different method (e.g. "Range tool") *YES/NO*	
2.4 Area covered by habitat	Area covered by habitat within the range in the biogeographical region concerned (km^2)	
2.4.1 Surface area	In km²	
2.4.2 Year or period	Year or period when data for area surface was recorded.	
2.4.3 Method used Area covered by habitat	3 = Complete survey or a statistically robust estimate 2 = Estimate based on partial data with some extrapolation and/or modelling 1 = Estimate based on expert opinion with no or minimal sampling 0 = Absent data	
2.4.4 Short-term trend Period	2001-2012 (rolling 12-year time window) or period as close as possible to it. Indicate the period used here. The short-term trend is to be used for the assessment.	
2.4.5 Short-term trend Trend direction	0 = stable + = increase - = decrease x = unknown	

2.4.6 Short-term trend Magnitude Optional	**a) Minimum**	Percentage change over the period indicated in the field 2.4.4 - if a precise figure, to give same value under 'minimum' and 'maximum'.
	b) Maximum	As for a)

	c) Confidence interval	Indicate confidence interval if a statistically reliable method is used.
2.4.7 Short-term trend Method used	3 = Complete survey or a statistically robust estimate 2 = Estimate based on partial data with some extrapolation and/or modelling 1 = Estimate based on expert opinion with no or minimal sampling 0 = Absent data	
2.4.8 Long-term trend Period Optional	A trend calculated over 24 years. For 2013 reports it is optional (fields 2.4.8. – 2.4.10 are optional). Indicate the period used here.	
2.4.9. Long-term trend - Trend direction Optional	0 = stable + = increase - = decrease x = unknown	
2.4.10 Long-term trend Magnitude Optional	**a) Minimum**	Percentage change over the period indicated in the field 2.4.8 - if a precise figure, to give same value under 'minimum' and 'maximum'.
	b) Maximum	As for a)
	c) Confidence interval	Indicate confidence interval if a statistically reliable method is used.
2.4.11 Long-term trend Method used Optional	3 = Complete survey or a statistically robust estimate 2 = Estimate based on partial data with some extrapolation and/or modelling 1 = Estimate based on expert opinion with no or minimal sampling 0 = Absent data	
2.4.12 Favourable reference area	a) In km². Submit a map as a GIS file if available.	
	b) Indicate if operators were used (≈, >, >>[21])	
	c) If Favourable Reference Area is unknown indicate with "x"	
	d) Indicate method used to set reference value (if other than operators) (free text)	
2.4.13 Reason for change Is the difference between the reported value in 2.4.1. and the previous reporting round mainly due to:	a) genuine change? *YES/NO*	
	b) improved knowledge/more accurate data? *YES/NO*	
	c) use of different method (e.g. "Range tool") *YES/NO*	

2.5 Main pressures

a) Pressure	b) Ranking	c) Pollution qualifier
List max 20 pressures. Use codes from the list of threats and pressures to at least the 2nd level[22]	• H = high importance (max 5 entries) • M = medium importance • L = low importance	*optional*
2.5.1 Method used – pressures	3 = based exclusively or to a larger extent on real data from sites/occurrences or other data sources 2 = mainly based on expert judgement and other data 1 = based only on expert judgements	

[21] Special case: symbol "<" can be used only in special cases like for the habitat type Degraded raised bog still capable of natural regeneration (7120)

[22] List of threats and pressures is available on the Art 17 Reference Portal

2.6. Main threats		
a) Threats	**b) Ranking**	**c) Pollution qualifier**
Same explanation as for the pressure	Same explanation as for the pressure	*optional*
2.6.1. Method used –threats	2 = modelling 1 = expert opinion	

2.7 Complementary information	
2.7.1 Typical species	List the typical species used.
2.7.2 Typical species – method used	Describe method(s) used to assess the status of typical species as part of the overall assessment of structure and functions.
2.7.3 Justification of % thresholds for trends	In case a MS is not using the indicative suggested value of 1% per year when assessing trends, this should be duly justified in this free text field.
2.7.4 Structure and functions - Methods used	3 = Complete survey or a statistically robust estimate 2 = Estimate based on partial data with some extrapolation and/or modelling 1 = Estimate based on expert opinion with no or minimal sampling
2.7.5 Other relevant information	Free text

2.8. Conclusions *(assessment of conservation status at end of reporting period)*	
2.8.1. Range	a) Favourable (FV) / Inadequate (U1) / Bad (U2) / Unknown (XX)
	b) If CS is U1 or U2 it is recommended to use qualifiers[23]
2.8.2. Area	a) Favourable (FV) / Inadequate (U1) / Bad (U2) / Unknown (XX)
	b) If CS is U1 or U2 it is recommended to use qualifiers[10]
2.8.3. Specific structures and functions (incl. typical species)	a) Favourable (FV) / Inadequate (U1) / Bad (U2) / Unknown (XX)
	b) If CS is U1 or U2 it is recommended to use qualifiers[10]
2.8.4. Future prospects	a) Favourable (FV) / Inadequate (U1) / Bad (U2) / Unknown (XX)
	b) If CS is U1 or U2 it is recommended to use qualifiers[10]
2.8.5. Overall assessment of Conservation Status	Favourable (FV) / Inadequate (U1) / Bad (U2) / Unknown (XX)
2.8.6 Overall trend in Conservation Status	If CS is inadequate or bad, use of qualifier '+' (improving) or '-' (declining), '=' (stable) or 'x' (unknown) is obligatory.

3. Natura 2000 coverage & conservation measures - Annex I habitat types ***on biogeographical level***

[23] If conservation status is inadequate or bad, it is recommended to indicate use '+' (improving) or '-' (declining), '=' (stable) or 'x' (unknown).

3.1 Area covered by habitat		
3.1.1 Surface area Estimation of habitat type surface area included in the network (of the same biogeographical region).	**a) Minimum**	In km^2
	b) Maximum	Same as above
3.1.2 Method used	3 = Complete survey or a statistically robust estimate 2 = Estimate based on partial data with some extrapolation and/or modelling 1 = Estimate based on expert opinion with no or minimal sampling 0 = Absent data	
3.1.3 Trend of surface area within the network Optional	0 = stable + = increase - = decrease x = unknown	

3.2 Conservation measures

List up to 20 conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.

Fields 3.2.2-3.2.5 to be filled in for each reported measure.

3.2.1 Measure	**3.2.2 Type** Tick the relevant case(s)					**3.2.3 Ranking**	**3.2.4 Location** Tick the relevant case concerning where the measure is PRIMARILY applied			**3.2.5 Broad evaluation of the measure** Tick the relevant case					
	a) Legal/statutory	**b) Administrative**	**c) Contractual**	**d) Recurrent**	**e) One-off**		**a) Inside**	**b) Outside**	**c) Both inside & outside**	**a) Maintain**	**b) Enhance**	**c) Long term**	**d) No effect**	**e) Unknown**	**f) Not evaluated**
Use codes from the checklist on conservation measures						*Highlight – using a capital 'H' – up to 5 of the most important measures*									

Assessing conservation status of a HABITAT type

General evaluation matrix (per biogeographic region within a MS)

Parameter	Conservation Status			
	Favourable ('green')	**Unfavourable – Inadequate ('amber')**	**Unfavourable - Bad ('red')**	***Unknown (insufficient information to make an assessment)***
2.3 Range[24]	Stable (loss and expansion in balance) or increasing AND not smaller than the 'favourable reference range'	Any other combination	Large decrease: Equivalent to a loss of more than 1% per year within period specified by MS OR More than 10% below 'favourable reference range'	*No or insufficient reliable information available*
2.4 Area covered by habitat type within range[25]	Stable (loss and expansion in balance) or increasing AND not smaller than the 'favourable reference area' AND without significant changes in distribution pattern within range (if data available)	Any other combination	Large decrease in surface area: Equivalent to a loss of more than 1% per year (indicative value MS may deviate from if duly justified) within period specified by MS OR With major losses in distribution pattern within range OR More than 10% below 'favourable reference area'	*No or insufficient reliable information available*
Specific structures and functions (including typical species[26]**)**	Structures and functions (including typical species) in good condition and no significant deteriorations / pressures.	Any other combination	More than 25% of the area is unfavourable as regards its specific structures and functions (including typical species)[27]	*No or insufficient reliable information available*
Future prospects (as regards range, area covered and specific structures and functions)	The habitats prospects for its future are excellent / good, no significant impact from threats expected; long-term viability assured.	Any other combination	The habitats prospects are bad, severe impact from threats expected; long-term viability not assured.	*No or insufficient reliable information available*
Overall assessment of CS [28]	All 'green' OR three 'green' and one 'unknown'	One or more 'amber' but no 'red'	One or more 'red'	Two or more 'unknown' combined with green or all "unknown'

[24] Range within the biogeographical region concerned (for definition, see Annex F, further guidance on how to define range (e.g. scale and method) will be given in a foreseen guidance document to be elaborated by ETC-BD.
[25] There may be situations where the habitat area, although above the 'Favourable Reference Area', has decreased as a result of management measures to restore another Annex I habitat or habitat of an Annex II species. The habitat could still be considered to be at 'Favourable Conservation Status' but in such cases please give details in the Complementary Information section ("Other relevant information") of Annex D.
[26] See definition of typical species in the guidance document.
[27] E.g. by discontinuation of former management, or is under pressure from significant adverse influences, e.g. critical loads of pollution exceeded.
28 A specific symbol (+/-/=/?) is recommended to be used in the unfavourable categories to indicate recovering habitats

B.2 Provision of data on habitats (Provide data on habitats and biotopes to meet monitoring and reporting obligations of the Habitats Directive and regional obligations of the Government of NorthRhine-Westphalia, Germany)

The scenario describes how data about the occurrence of habitats will be collected and provided. This process is of crucial relevance for preservation and development of a favourable conservation status of habitats by designating protected sites, for well-directed site management, for land purchase or contractual measures of nature conservation. Monitoring obligations of the Habitats Directive demand an updated report on all sites at least every six years.

This use case describes how data will be collated and evaluated and finally provided.

Use Case Description	
Name	Provision of data on habitats (Provide data on habitats and biotopes to meet monitoring and reporting obligations of the Habitats Directive and regional obligations of the Government of NorthRhine-Westphalia, Germany).
Primary actor	Data provider (MS Germany or the nature conservation administration of the „Bundesländer“).
Goal	To identify the deficits and initiate closer examinations of habitats in the field.
System under consideration	
Importance	High
Description	The user is the MS Germany or the nature conservation administration of the „Bundesländer“, who provide data on habitats to meet reporting and monitoring obligations of the Habitats Directive. Habitat data have to be added to the Standard Data Form for Natura2000 sites and provided in compliance with „Explanatory Notes & Guidelines on Assessment, monitoring and reporting under Article 17 of the Habitats Directive” (1-2006).
Pre-condition	harmonized standards for data collection and processing on all levels and for providing data from regional to federal level.
Post-condition	The inventory results may show up deficits and initiate closer examinations of habitats in the field. Data processing may reveal gaps of the evaluation procedure. Since evaluation processes depend on comparable data, iterative processing may be necessary.
Flow of Events – Basic Path	
Step 1	The regional administrative services responsible for habitat inventory and data provision identify the necessity of data collection from reporting obligations under the Habitats Directive and regional state government requirements.
Step 2	Biotope mapping paying regard to theme-specific, methodological and data-technical specifications of state or federal government. Regular dataset comprises: Geometry, coding of habitat-type in compliance with standardized coding lists (e.g. habitat types of Habitats Directive), vegetation types (using regional coding systems), plant species (typical species), biotope structures, disturbance and conservation status (compl. to Hab.Dir.). Encoding is harmonized on a federal level using a common evaluation schema. Data will be collated by the regional administrative services.
Step 3	Quality assessment of the collated data. (Inventory)Data transfer/transmission to theme-specific information systems.
Step 4	The data necessary for reporting under Art. 17 Hab.Dir. have to be processed by the regional administrative services to meet the obligations of the guidelines. Conclusions will comprise:

Use Case Description	
	• habitat distribution (range, trends, reference distribution) • total area (range, grid map, trend, reference range) • structures and functions (incl. typical species) • future prospects (main pressures) The results (data) will be provided to the federal administration and collated there from all „Bundesländer“. The federal government will finally provide the data to the EU-Commission. The state services in charge with regional duties, on the other hand, will exploit the same data for their own purposes on regional level.
Step 5	These processed reporting data will also be published in specific information systems on the internet by state administrative services.
Flow of Events – Alternative Paths	
Step m.	None
Data set: Member State Data Set	
Description	Geo-data collected complying to (EU)standards or harmonisation agreed upon between the Bundesländer. Geodata administration in GIS. Data publishing in theme-specific information systems on the internet, often IMS or WMS.
Type	output
Data provider	The regional administrative services of the Bundesländer.
Geographic scope	Germany, however, a similar process is obligatory in all EU-MS.
Thematic scope	Habitat types (within and outside of protected sites (incl. Natura2000).
Scale, resolution	The highest resolution that the member state can provide, usually better than 1:25.000, for most parts of DE 1:5.000.
Delivery	These data will be published in specific information systems on the internet by state administrative services including view services. Data will be provided in proprietary format via the federal government towards EU-COM.
Documentation	EU-Guidance document „ Assessment, monitoring and reporting under Article 17 of the Habitats Directive: Explanatory Notes and Guidelines“, Final (SWG 06-02/04).

B.3 EBONE, provide data on European habitat stock and change (GHC habitat surveillance as a European pilot for harmonisation of habitat data (EBONE))

The scenario describes how data on the occurrence of habitats are being collected Europe wide. This process is of crucial relevance for harmonisation of habitat data to measure stock and change.

This use case describes how data are collected and summary statistics are made and provided.

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Use Case Description	
Name	EBONE, provide data on European habitat stock and change (GHC habitat surveillance as a European pilot for harmonisation of habitat data (EBONE)) .
Primary actor	Data collector
Goal	Data collection of the habitats occurrence collected Europe wide.
System under consideration	EBONE
Importance	High
Description	Data collection and integration from different European countries. The methodology is appropriate for coordinating information on habitats and vegetation in order to obtain statistically robust estimates of their extent and associated changes in biodiversity. It combines data from different countries in a common database.
Pre-condition	Harmonized standards for data collection and processing for integrating field data in different countries collected in different schemes.
Post-condition	The report may be used for assessing the usefulness of the method. GIS-analyses and resulting data have to be stored for later use and are available to be shared with EEA. The evaluation processes made possible to compare data.
Flow of Events – User 1	
Step 1	The mapping and comparison of stock and change of habitats in Europe was not possible using EUNIS. The improvement of reporting at the European level required a habitat classification system that is based on strict rules and can be processed statistically. These are the General Habitat Categories (GHC).
Step 2	Habitat mapping has been done in a stratified random way in UK, Sweden, Field data have been collected Regular dataset comprises: Geometry, coding of habitat-type in compliance with standardized coding lists (GHCs), with additional information on dominant species and Annex I types of Habitats Directive/EUNIS, and environmental qualifiers. UK and Swedish data have been recoded to harmonise the dataset.
Step 3	Quality assessment of the collected data. Digitising of the data and transfer to the common database.
Step 4	Data in the database are field data collected in 2009-2010 in Spain, Portugal, Greece, Romania, Austria, Slovak Republic, Estonia, France, Israel, Norway, South Africa, Italy. Data from the Swedish NILS project and the UK Countryside survey and the Austrian SINUS project are being integrated and are being analysed jointly.
Step 5	EBONE provides a European data set on the share and diversity of the general habitat categories using the EBONE web viewer.
Step 6	EBONE produces a report on the status and trends of habitats based on the general habitat categories.
Flow of Events – Alternative Paths	

Use Case Description	
Step m.	None
Data set: Member State Data Set	
Description	EBONE habitat database
Type	output
Data provider	EBONE
Geographic scope	Europe and Mediterranean countries: Israel, South Africa.
Thematic scope	Habitat surveillance
Scale, resolution	1 km^2
Delivery	EBONE 2011
Documentation	Bunce, R.G.H., M.M.B. Bogers, P. Roche, M. Walczak, I.R. Geijzendorffer and R.H.G. Jongman, 2011. Manual for Habitat and Vegetation Surveillance and Monitoring, Temperate, Mediterranean and Desert Biomes Bunce, R.G.H.; Bogers, M.M.B.; Evans, D.; Jongman, R.H.G. (2010). D 4.2: Rule based system for Annex I habitats : Version 3 Document date : 2010-01-24 Bunce, R.G.H., Bogers, M.M.B., Ortega, M., Morton, D., Allard, A., Prinz, M., Peterseil, J. and R. Elena-Rossello. 2010. D4.1: Protocol for converting field habitat data sources into common standards Deliverable report *http://www.ebone.wur.nl/UK/Project+information+and+products/* *http://www.ebone.wur.nl/UK/Publications/*

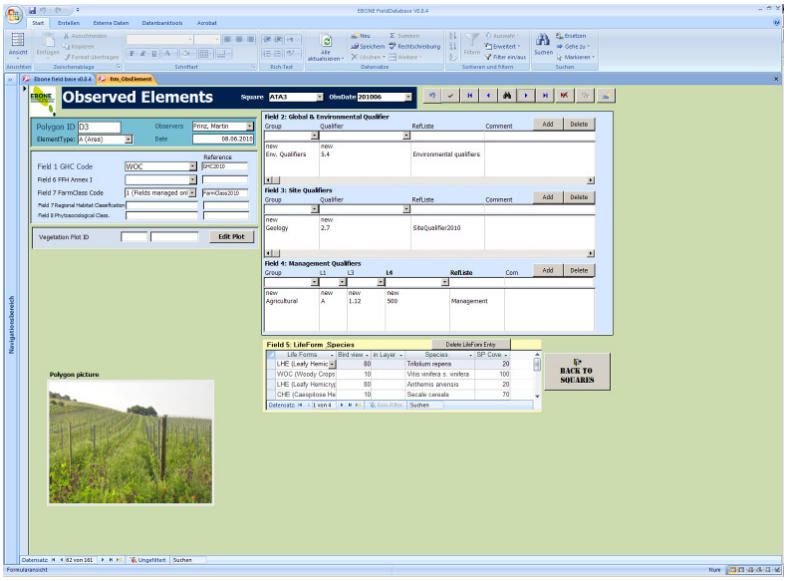


Figure 17 – Habitat mapping tool on a tablet computer using GHCs. The observed habitat is a vineyard (Wooded Crop (WOC) with grass undergrowth. The element is identified by code, GPS position and photograph.

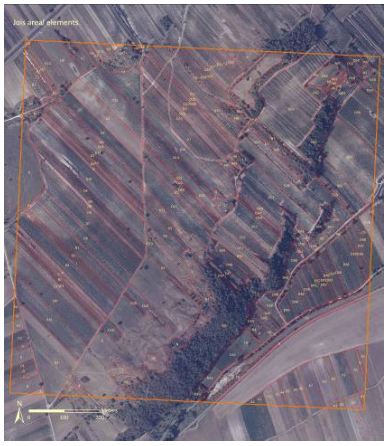


Figure 18 – Jois km square (Austria) with mapped areal features, both natural and agricultural

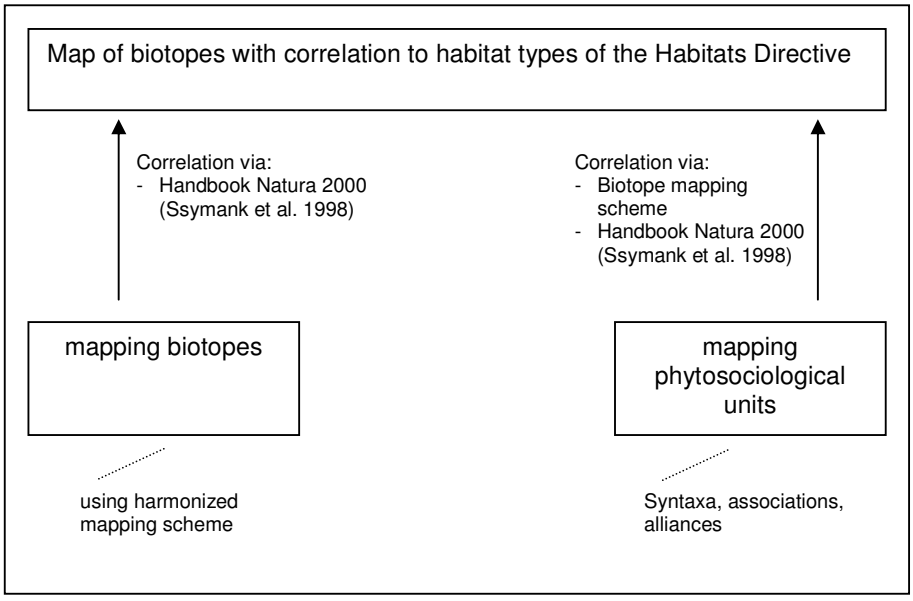
B.4 Mapping of habitats and biotopes in Germany (Status quo compilation of habitats and biotopes in a site of community interest (SCI) in Germany)

The compilation of the status quo of habitats and biotopes in protected sites is very important for the management of these sites and also necessary for *impact regulation under nature protection law*.
The scenario describes how mapping of German habitats and biotopes works. Data on the occurrence of biotopes are collected in the field. A biotope is an abstract habitat typifying an entire class of similar natural habitats whose ecological conditions offer living communities largely uniform circumstances different from those offered by other types. Biotopes are defined with reference to abiotic factors and biotic factors. Some 690 biotopes can be distinguished in Germany. Data on the occurrence of phytosociological vegetation are also collected.

Use Case Description	
Name	Mapping of habitats and biotopes in Germany (Status quo compilation of habitats and biotopes in a site of community interest (SCI) in Germany).
Primary actor	Data collector (mapper)
Goal	Management of of habitats and biotopes in protected sites and also necessary for *impact regulation under nature protection law*.
System under consideration	
Importance	High
Description	The mapping of stock of biotopes in Germany is mostly harmonized in the 16 states. Each of it has its own mapping scheme (Biotopkartierung). There is also a German check list and red list of biotopes. The data are collected e.g. in a site of community interest (SCI). A local code list of the state is used to identify the special biotopes. Phytosociological mapping is done too.
Pre-condition	Harmonized standards for data collection.
Post-condition	The map of the status quo of habitats and biotopes in the protected site may be used for the planning of the management to improve the conservation status. Because of the harmonized mapping method, the result can be compared with a mapping e.g. 6 years later.
Flow of Events – User 1	
Step 1	Mapping of biotopes in the protected site (using a special mapping scheme) → biotope-types.
Step 2	Mapping of phytosociological vegetation in the protected site (maybe in an other part of the site) → vegetation association.
Step 3	Giving additional information about the conservation status of the biotope types.
Step 4	Information about position and size of the biotope types.
Step 5	Correlation of the vegetation associations to biotope types (biotope-mapping-scheme) and to habitat types of the Habitats Directive (Ssymank et al. 1998).
Step 6	For European comparison: correlation of the vegetation associations to alliances; after that correlation of the alliances and biotope-types to EUNIS Codes via Rodwell et al. 2002 and Riecken et al. 2006.
Step 7	Quality assessment of the collected data. Digitalisation of the data and transfer to common database.
Flow of Events – Alternative Paths	
Step m.	None
Data set: local data set	

Use Case Description	
Description	Data set created by a local institution or agency.
Type	output
Data provider	Local institution / agency
Geographic scope	Germany
Thematic scope	Habitat mapping and surveillance
Scale, resolution	Different, 1:2500
Delivery	Several German institutions /agencies
Documentation	Riecken, U., Finck, P., Raths, U., Schröder, E. & Ssymank, S. (2006): Rote Liste der gefährdeten Biotoptypen Deutschlands. – Naturschutz und Biologische Vielfalt 34. 318 S.ISBN: 987-3-7843-3934-4 Ssymank, A., Hauke, U., Rückriem, C & Schröder, E. (1998): Das europäische Schutzgebietssystem Natura 2000. – Schriftenreihe für Landschaftspflege und Naturschutz 53. 558 S. ISBN: 3-89624-113-3 Rodwell, J., S., Schaminée, J., H., J., Mucina, L., Pignatti, S., Dring, J & Moss, D. (2002): The Diversity of European Vegetation. An overview of phytosociological alliances and their relationships to EUNIS habitats. Wageningen, NL. EC-LNV. Report EC-LNV nr. 2002/054. 167 S. ISBN: 90-75789-10-6 Biotope-mapping-schema example: http://www.naturschutz-fachinformationssysteme-nrw.de

Diagram: Mapping habitats and biotopes in a protected site in Germany.



B.5 Remote Sensing based support of heathland-habitat monitoring in Germany

For the fulfilment of Natura 2000 monitoring obligations in Germany the federal states update Natura 2000 data every six years by terrestrial mapping campaigns.
The uses case describes how mapping of German Natura 2000 heathland habitats can be supported by Remote Sensing. Data on the occurrence of habitats and biotopes are collected in the field.

Remote Sensing data is used as basic information for terrestrial mapping of habitats to enhance the workflow efficiency.

Use Case Description	
Name	Remote Sensing based support of heathland-habitat monitoring in Germany.
Primary actor	Analyst
Goal	Remote sensing data usage in order to support mapping of German Natura 2000 heathland habitats.
System under consideration	
Importance	High
Description	The monitoring of Natura 2000 habitats in Germany is mostly harmonized in the 16 federal states. Each of it has its own mapping scheme mostly based on biotope mapping (Biotopkartierung) and national guidelines for Natura 2000 monitoring defined by the German federal agency for nature protection (BfN). In the case of heathland habitats Remote Sensing can be used to detect vegetation structures (e.g. percentage of total plant cover, percentage of bare soil) which support the terrestrial mapping campaign (Frick 2006, Buck et al. 2011). The data are collected e.g. in a Site of Community Interest (SCI). A local code list of the state is used to identify habitats and special biotopes.
Pre-condition	Harmonized standards for data collection.
Post-condition	The map of the status quo of habitats in the protected site may be used for planning and/or management to improve its conservation status. Because of the harmonized mapping method, the result can be re-iterated and compared with a mapping e.g. 6 years later.
Flow of Events – User project planning/ implementation and appropriate assessment	
Step 1	Automatic detection of habitat structures by remote sensing analysis using satellite images and aerial images.
Step 2	Production of digital or analogue field maps including habitat structures form Step 1.
Step 3	Terrestrial mapping campaign using field maps from Step 2 and collecting additional information about the conservation status of the heathland habitats.
Step 4	If necessary, correction of Information about position and size of the habitat.
Step 5	Correlation of vegetation classification to biotope types (biotope-mapping-scheme) and to habitat types of the Habitats Directive (Ssymank et al. 1998).
Step 6	For European comparison: correlation of the vegetation classification on alliance level; followed by a correlation of the alliances and biotope-types to EUNIS Codes via Rodwell et al. 2002 and Riecken et al. 2006.
Step 7	Quality assessment of the collected data. Digitalisation of the data and transfer to a common database.
Flow of Events – Alternative Paths	
Step m.	None
Data set: local data set	
Description	Data set created by a local institution or agency.
Type	output
Data provider	Local institution / agency
Geographic scope	Germany
Thematic scope	Natura 2000 Habitat mapping and surveillance.
Scale, resolution	Different, 1:2,500

Use Case Description	
Delivery	Several German institutions /agencies
Documentation	Buck, O., Peter, B., Völker, A., & Donning, A. (2011). Object based image analysis to support environmental monitoring under the European Habitat Directive: a case study from DECOVER. ISPRS Hannover Workshop 2011: High-Resolution Earth Imaging for Geospatial Information, Hannover, Germany, June 14 to June 17, 2011. Frick, A. (2006): Beiträge höchstauflösender Satellitenfernerkundung zum FFH-Monitoring. Entwicklung eines wissensbasierten Klassifikationsverfahrens und Anwendung in Brandenburg. – Dissertation, TU Berlin. Riecken, U., Finck, P., Raths, U., Schröder, E. & Ssymank, S. (2006): Rote Liste der gefährdeten Biotoptypen Deutschlands. – Naturschutz und Biologische Vielfalt 34. 318 S.ISBN: 987-3-7843-3934-4 Ssymank, A., Hauke, U., Rückriem, C & Schröder, E. (1998): Das europäische Schutzgebietssystem Natura 2000. – Schriftenreihe für Landschaftspflege und Naturschutz 53. 558 S. ISBN: 3-89624-113-3 Rodwell, J., S., Schaminée, J., H., J., Mucina, L., Pignatti, S., Dring, J & Moss, D. (2002): The Diversity of European Vegetation. An overview of phytosociological alliances and their relationships to EUNIS habitats. Wageningen, NL. EC-LNV. Report EC-LNV nr. 2002/054. 167 S. ISBN: 90-75789-10-6 Biotope-mapping-schema example: http://www.naturschutz-fachinformationssysteme-nrw.de