ASSESSING THE CONSERVATION STATUS OF EUROPEAN UNION HABITATS
– RESULTS OF THE COMMUNITY REPORT WITH A CASE STUDY
OF THE GERMAN NATIONAL REPORT

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ABSTRACT - The EU Habitats Directive requires all member states to report every 6 years on the implementation of the Directive. The report covering the period 2000 – 2006 included for the first time an assessment of the conservation status of the habitats and species listed on annexes I, II, IV & V of the Habitats Directive following an agreed format. Based on national reports submitted from member States the European Topic Centre on Biological Diversity has prepared assessments for each biogeographical region at EU-level. The majority of the habitats of Annex I are not at favourable status although there is much variation both between countries and regions and between habitats. The results will be discussed at European level and at member state level with a case study of the German national report. At the same time a number of methodical problems became apparent both in Germany and at EU-level. Work is already under way to improve the next report for the period 2007 – 2012. The dimension of management needs, threats and pressures and the time scale for improvements of the conservation status are discussed. Habitats linked to agriculture appear to be particularly unfavourable.

KEY WORDS - EU HABITATS DIRECTIVE, NATURA 2000, REPORTS, HABITAT ASSESSMENT, CONSERVATION STATUS, EUROPEAN UNION, GERMANY.

INTRODUCTION

The 1992 EC Habitats Directive requests all Member States to undertake surveillance of habitats and species considered to be of Community interest and listed in Annexes I, II, IV & V. Article 17 of the Directive requires that Member States prepare reports to be sent to the European Commission every 6 years on the implementation of the Directive following an agreed format. The first reports were for the period 1994-2000 and primarily addressed the transposition of the Directive into national laws and the progress towards identifying and designating Special Areas of Conservation. The report for the period 2001-2006 for the first time includes assessments on the conservation status of the habitats and species of Community interest. The assessments are for the 216 habitats and 1 182 species listed in Annexes in their entirety and not just for the habitats and species within the Natura 2000 network (Sites of Community Interest / Special Areas of Conservation).

Discussions for a reporting format began in 2004
with discussions held by the EC Habitats Committee and its Scientific Working Group together with dedicated workshops organised by the European Topic Centre on Biological Diversity (ETC/BD). This led to the reporting format being adopted by the Habitats Committee in March 2005 (European Commission, 2005). Further discussions resulted in an agreed methodology for preparing assessments for biogeographical regions based on the Member State reports (European Topic Centre on Biological Diversity 2008).

The Article 17 reports prepared by Member States have three sections; (i) general information about the implementation of the Directive, (ii) the assessments of conservation status of species and (iii) for habitats. Conservation status was assessed using a standard methodology which was to facilitate aggregation and comparisons between Member States and biogeographical regions. The parameters for habitats are range, area, structure and functions and future prospects. Member States were encouraged to use expert opinions where there was insufficient data to inform judgements. However, if data were largely missing it was also possible to report the conservation status as ‘unknown’. The assessments of the four parameters were combined following an agreed method to give an overall assessment of conservation status.

A separate assessment was carried out for each biogeographical region present in a Member State. Where a Member State is entirely within one region, such as Luxembourg, only one report was required.

Figure 1: The biogeographical and marine regions used for Article 17 reporting
If a Member State is present in two or more biogeographical regions a separate report was required for each biogeographical region. For example for 7110 - Active raised bogs the report prepared by Germany provided separate assessments for the habitat for the Alpine, Atlantic and Continental biogeographical regions as the habitat is found in all three regions.

For marine habitats and species reports were made for four marine regions: marine Atlantic, marine Baltic, marine Macaronesian and marine Mediterranean. These regions are based on reported Economic Exclusion Zones or other territorial claims and were prepared purely for reporting under Article 17.

**MATERIAL AND METHODS**

The declared aim of the Habitats Directive is “to maintain or restore the favourable conservation status, natural habitats and species of wild fauna and flora of Community interest” (Art. 2 (2)). “Conservation Status” and “Favourable Conservation Status” are thus very important terms and concepts for creating and maintaining the Natura 2000 network. A basic definition is given in the definitions-section of the Directive itself, Art. 1 i for species and Art. 1 e for natural habitats respectively.

Standardized assessments of conservation status require the use of well-defined methods and comparable concepts in all Member States. The definition of ‘Favourable Conservation Status’ in Article 1 forms the legal background for assessment matrices (one each for species and habitats) that have been developed as part of the agreed reporting format (European Commission, 2005). These matrices assess each of 4 parameters separately (habitat range, area, specific structures and functions and future prospects), and these are combined to give an overall assessment. Each parameter is assessed according to a “traffic-light scheme” as favourable (FV, green), unfavourable-inadequate (U1, amber), unfavourable-bad (U2, red). The matrix defines the thresholds between green, amber and red assessments in two different combined methodical approaches: a) the decline or quantitative change within the reporting period is assessed and b) a comparison is made to a favourable situation (being the theoretical minimum necessary for maintaining or reaching favourable status in the long term, or at least the minimum resource when the Directive came into force). For practical reasons, the assessment of typical species is included in the assessment of structures and functions. Guidelines were produced to try to ensure compatible methods were used by all member states (European Commission, 2006).

It is important to note that the reporting format not only requires Member States to deliver the final results of their assessments of each parameter, but also a number of data, such as the area and range in km², GIS-maps of the area occupied and range, an indication of data quality and favourable reference values used.

These data and assessment results are an integral part of the national reports produced by the Member States and constitute at the same time the information for the Composite report at EU level and to assess the conservation status for each habitat and species over the whole biogeographic regions.

**Method for community assessment**

The European Topic Centre on Biological Diversity (ETC/BD) estimated that for approximately half of the species and habitats covered by the Article 17 reports the biogeographical assessments will be equal to the national assessment(s) – as the habitats/species are restricted to one single country or occurring in several countries but having the same assessment (e.g. all ‘favourable’). For the other half, the assessments of conservation status needed additional work and the development of a specific methodology using the data provided by Member States in their reports.
A number of possible methods for assessing the conservation status of Annex I habitats and species listed on Annexes II, IV and V based on the Article 17 reports from the Member States were discussed at meetings of the Scientific Working Group (SWG) and at workshops held by the ETC/BD in 2007 and 2008.

Following those discussions, a paper documenting the approach used to assess conservation status at the biogeographical or marine region levels was produced by the ETC/BD (European Topic Centre on Biological Diversity, 2008). Three possible methods were identified to assess conservation status of habitats at the regional level (biogeographical and marine) based on data and conclusions from Member States assessments:

**METHOD 1 - AGGREGATION OF DATA:** aggregate data provided by Member States for quantitative parameters and aggregate conservation status for some qualitative parameters:

i) Aggregate data on ‘range’ and ‘population’ from Annex D and use the evaluation matrix (Annex E) to obtain the conservation status of these parameters

ii) For ‘structure and functions’ and ‘future prospects’ the conservation status is obtained by weighted aggregation of the respective national assessments

iii) Finally, the overall status is calculated by using the rules given in the last line of the evaluation matrix

**METHOD 2 - AGGREGATION OF INDIVIDUAL PARAMETERS:** weighted aggregation of each of the four conservation status parameters with an overall assessment using the rules given in the last line of the evaluation matrix

**METHOD 3 - AGGREGATION OF OVERALL STATUS:** this method uses a weighted aggregation of the overall conservation status and will be used when data on individual parameters is missing or unusable.

All three methods rely, at least partially, on using an area to weight assessments at national level together with ‘thresholds’ for assessing the conservation status of either each parameter or the overall assessment.

The overall conservation status of a habitat type should reflect the status and proportion of that habitat type present in each Member State and biogeographical/marine region. Weighting is therefore a fundamental aspect of the process of assessing conservation status at regional level for habitats present in more than one Member State. The sequence of the three methods (1,2,3) listed below indicates the preferred weighting for each parameter; the choice of method took into account the availability and quality of the data provided by Member States, in particular it was clear that the Member States had used a variety of methods used for estimating range.

For example, table 2 shows how the parameter ‘future prospects’ has been reported by the countries in the Boreal biogeographical region for habitat ‘2110 Embryonic shifting dunes’, together with the proportion of the habitat area in each country.

Overall, 43% (18 + 25) of the habitat has been reported as ‘favourable’ and 57% as ‘unfavourable – inadequate’.

Following discussion at the EC in November 2007 and at a workshop held by the ETC/BD in March 2008 the following thresholds were used; they work as a series of sieves or filters, each applied in sequence.

If the proportion of a habitat reported as ‘Unfavourable – Bad’ (U2, red) is greater or equal than

<table>
<thead>
<tr>
<th>Order of preference</th>
<th>Data to be used for weighting parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1°</td>
<td>Area (from MS data)</td>
</tr>
<tr>
<td>2°</td>
<td>Area (from GIS data)</td>
</tr>
<tr>
<td>3°</td>
<td>Range (from MS data)</td>
</tr>
<tr>
<td>4°</td>
<td>Range (from GIS data)</td>
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</tbody>
</table>

Table 1. Agreed preferences for choice of parameter to be used for weighting assessments.
25% the habitat is considered ‘Unfavourable – Bad’ (U2, red) for the region.

If the proportion of a habitat reported as ‘Favourable’ (FV, green) is greater or equal than 75% the habitat is considered ‘Favourable’ (FV, green) for the region.

If the proportion of a habitat reported as ‘Unknown’ (XX) is greater or equal than 25% the habitat is considered ‘Unknown’ (XX) for the region.

Any other combination is considered as ‘Unfavourable – Inadequate (U1, ‘amber’)

Although to some extent these are arbitrary, testing showed that most regional assessments were not sensitive to the threshold chosen.

Methods for national assessment in Germany

The data for required for the habitat assessments were collected by each of the Länder and combined in a standardized German reporting database including GIS. The conservation status of the relevant habitat types was first assessed by weighting the relative range and area to compile a draft report by the Bundesamt für Naturschutz (BfN, Federal Agency for Nature Conservation). For Structures and functions the area of polygons in each category of the conservation status was reported using the A-B-C assessment scheme of the Standard Data Form (a form describing each Natura 2000 site) and subsequently transferred to the EU traffic light system. A series of biogeographic joint assessment seminars was held by the BfN, the Länder and the Federal Environment Ministry in order to systematically check the draft report and to validate the assessments. These took place for the Continental Region on 27-31 August, for the Atlantic Region on 18-21 September and for the Alpine Region on 24-25 October 2007. The final report was then transferred and uploaded into the EU-reporting database. The second National Report (http://cdr.eionet.europa.eu/de/eu/art17/envr0qzdw) of Germany was formally submitted to the EU Commission on 7 December 2007.

RESULTS

Assessment Results at EU level

At the end of 2008 the EU’s Natura 2000 network consisted of 21 612 Sites of Community Interest (SCI) / Special Areas of Conservation (SAC) under the Habitats directive (approximately 570 000 km² covering 13% of the EU terrestrial area and 88 000 km² of sea) and 5004 Special protected areas (SPA) under the Bird Directive (approximately 451 000

<table>
<thead>
<tr>
<th>Member State</th>
<th>% of total area of habitat in each country</th>
<th>Assessment for the parameter ‘future prospects’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estonia</td>
<td>18</td>
<td>Favourable</td>
</tr>
<tr>
<td>Finland</td>
<td>10</td>
<td>Unfavourable – inadequate</td>
</tr>
<tr>
<td>Latvia</td>
<td>13</td>
<td>Unfavourable – inadequate</td>
</tr>
<tr>
<td>Lithuania</td>
<td>25</td>
<td>Favourable</td>
</tr>
<tr>
<td>Sweden</td>
<td>34</td>
<td>Unfavourable – inadequate</td>
</tr>
</tbody>
</table>

Table 2. An example of weighting the Member States assessments to derive a regional assessment - ‘2110 Embryonic shifting dunes’ in the Boreal biogeographical region.
km² covering 10% of the EU terrestrial area and 66,000 km² of sea). The whole Natura 2000 network covers 15% of the terrestrial area of the European Union. The network is expected to increase in area over the next few years, particularly for marine sites.

The ETC/BD made biogeographical assessments for 213 Annex I habitat types across 11 regions. In total 701 assessments were made for habitat types. It should be noted that several assessments were not possible due to the lack of data or major deficiencies with the data provided by Member States; these represent approximately 1% of the habitats assessments.

Figure 2 shows that the majority of habitat assessments are unfavourable; 70% of the 701 assessments are either unfavourable-inadequate or
unfavourable-bad and only 17% of the assessments are favourable.

There is considerable variation between regions (Fig. 3) and between habitat groups (Fig. 4). Due to the small number of marine habitats (5 in total, with only 3 or 4 in most marine regions) they have been omitted from Figure 3. The Alpine region has the highest proportion of habitats assessed as ‘Favourable’. The region with the lowest proportion of habitats assessed as unfavourable is the Mediterranean although this is due to the very high proportion of ‘unknown’ assessments in this region. The Pannonic region has the highest proportion of unfavourable assessments.

Rocky habitats have the highest proportion of assessments as favourable while ‘dunes’, ‘grasslands’ and ‘bogs, fens & mires’ all have high proportions of assessments as unfavourable.


The national level – Germany as a case study

National reports and data according to Art. 17(1) from Member States are the basis for assessing conservation status at EU level. For Germany the Habitats Directive lists in total 91 habitat types on Annex I. With 3 biogeographical regions (Atlantic 20%, Continental 79% and Alpine 1% of Germany) many habitats had to be assessed separately for 2 or 3 regions (677 reports). Site selection and reporting is based on a number of technical handbooks such as a German interpretation habitat manual (Ssymank et al. 1998, Ssymank et al. 2008) and agreed assessment matrices for the conservation status of each habitat at local or site level (e.g. Doerpinghaus et al. 2003, Bewertungsschemata BfN, http://www.bfn.de/0316_bewertungsschemata.html).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>In/Out</th>
<th>range</th>
<th>area/population</th>
<th>Struct. &amp; functions</th>
<th>future prospects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update SDFs</td>
<td>i</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Biotope/Habitats mapping</td>
<td>i/o</td>
<td>+</td>
<td>+</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>Species inventories</td>
<td>i/o</td>
<td>+</td>
<td>+</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>Monitoring (statistical Art. 11 approach)</td>
<td>i/o</td>
<td></td>
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<tr>
<td>Expert mapping</td>
<td>i/o</td>
<td>+</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>National forestry inventory</td>
<td>i/o</td>
<td>+</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
</tbody>
</table>

Table 3. Data sources & data requirements used by Germany for assessing habitats. Legend: SDF Standard Data Forms (official site description), In/Out: data available inside or outside the Natura 2000 sites, + usually delivering substantial data, (+) indicative data or only partly relevant for the parameter.
The Natura 2000 network in Germany consists of 4622 SCI/SAC’s under the Habitats directive (approximately 33,000 km² of land (9.3% of Germany’s terrestrial area) and 21,000 km² of sea) and 736 SPA’s under the Bird Directive (approximately 451,000 km² of land (11.2% of Germany’s terrestrial area) and 20,000 km² of sea).

The whole German Natura 2000 network covers 15.3% of the terrestrial area. With the exception of some large sites especially along the coasts, in the Economic Exclusion Zone and in the Alps, Germany has proposed a large number of relatively small and often fragmented sites compared to other Member States. Data needs for assessing conservation status according to the agreed formats are relatively high and data quality is variable depending on existing mapping schemes and inventories or available expertise in Member States. In Germany the main data sources are biotope mapping, a status quo mapping and updating of the Standard Data Forms which describe each Natura 2000 site, species inventories and expert mapping / assessments. All these data sources only cover the data needs of certain parameters of the assessment, certain spatial areas or have different qualities partly varying among the Federal States (see Table 3) and will need constant updating. For future reporting, statistical monitoring as required by article 11 (now being implemented) and supplementary data from the national forest inventory will be added.

The results of the overall assessment of habitats vary clearly within biogeographical regions: while Continental and Atlantic region roughly have a quarter in favourable status (green, 25% and 28% respectively), the Alpine region is much better off with 60% in favourable condition. The percentage of unfavourable bad is with 7% lowest in the Alpine, reaches 21% in the Continental region and is alarmingly high in the Atlantic region with 42%

Figure 6: - Examples of the assessment of two grassland habitats in Germany (R = range, A = area, S = structure & functions, F = future prospects)

Figure 7: Assessments for habitat groups in Germany
(in Germany mainly the north-western lowlands). However to analyse the situation in more detail it is necessary to look at the results of the 4 parameters (Fig. 5), to identify which parameter is responsible for the overall assessment (Doc. Hab. 04-04 rev. 3, Annex E). Some 5-7% of the assessments were reported as “Unknown” due to missing data, a relatively low proportion compared to many other Member States.

Range is for most habitats in Germany nowadays relatively stable (historical losses where only partly taken into account for defining Favourable Conservation Status) and was assessed favourable for most habitat types. The losses in some habitat types like for example in the lowland and mountain hay meadows (6510, 6520) even resulted in an unfavourable-inadequate range. Losses in area are often occurring within the range and result in a lower absolute surface or density of occurrences which can in some cases also influence the distribution of habitat types since the Directive came into force are reflected in percentages of 40% or more unfavourable (amber and red) in the Atlantic and Continental regions. An example is the Mesobromion meadows (habitat 6210) in Germany. Changes in quality of the habitats due to rising pressures and intensification of land-use are mainly reflected in bad assessments in structures and functions and partly in the assessment of future prospects. These are the same general patterns as observed before at EU-level.

Two examples of grassland habitats illustrate this. Dry calcareous grasslands (Mesobromion, habitat code 6210, Fig. 6) have their main occurrences in the Jurassic mountain ranges in the Continental region and in the Alps. The range was assessed as favourable, while intensification, abandonment and direct loss of area for various reasons all resulted in loss of area and a fragmentation of remaining occurrences. The habitat type is red-listed in the German National Red Data Book (Riecken et al. 2006) as category 2 (heavily endangered) with restoration difficult and a declining trend. For the national report in the Continental region area and future prospects were assessed as unfavourable-inadequate. The situation for the habitat type 6410 (Molinion-meadows) is even worse as changes in land-use have resulted in massive losses which even touched upon the range and resulted in an unfavourable-inadequate for this parameter. The national Red Data Book lists them as category 1 (threatened by extinction, equivalent to the IUCN ‘Critically endangered’) with restoration difficult and a declining trend. Area was consequently assessed as unfavourable-bad, future prospects with unfavourable-inadequate. Structures and functions were not assessed (unknown), as the data outside the protected areas and outside Natura 2000 are missing or inconsistent, but most probably the situation is unfavourable. The small still existing remnants within protected sites (inside Natura 2000) have received much attention from nature conservation and are usually under conservation management and actually more or less stable in their species composition, therefore the structures and functions inside were estimated to be favourable. However the overall assessment clearly remains unfavourable-bad.

Looking at the different groups of habitats (Fig. 7) there are large differences in their conservation status: rocky habitats with chasmophytic vegetation...
and screes were largely assessed as favourable (>90%) in all regions, while especially bogs, freshwater habitats and open terrestrial habitats (grasslands, heath and others) are the groups where a large percentage (approximately 80%) are more or less unfavourable. All these habitat types suffer from changes in hydrology (drainage, modification of natural flooding regime, lowering of groundwater table etc.) and/or changes in land-use and modern agriculture. Marine habitats and forests show an intermediate situation.

The German National Report is available on the BfN website (Nationaler Bericht Deutschland, http://www.bfn.de/0316_bericht2007.html). A printed report in 2 volumes with the main results for every species and habitat and a brochure for the wider public is available (BMU & BfN 2009, BfN 2009).

**DISCUSSION**

Although a standard method was used by all 25 countries with guidance to assist those responsible for the national assessments, it is clear that there are differences between countries, both in the precision of data reported (e.g. area of habitat), the criteria used for assessments and the use of expert judgement to avoid reporting ‘unknown’. For example almost all forest types in Denmark have been reported as ‘favourable’ whereas very few other countries in the Atlantic and Continental regions have assessed more than a few of their forests as favourable. It appears this is due to the criteria used to assess ‘structure and function’ for forests in Denmark being different from those used elsewhere.

For some Mediterranean countries such as Italy and Greece data was only available from protected sites for many habitats (Ministero dell’Ambiente e della Tutela del Territorio e del Mare - Direzione per la Protezione della Natura, 2008) and this may be partly responsible for the high proportion of assessments as ‘favourable’ in these countries. The proportion of assessments as ‘unknown was also higher in this region, both for species and habitats. Data quality is discussed in more detail in a paper by the ETC/BD (European Topic Centre on Biological Diversity, 2009).

**Regeneration ability of habitats**

Restoring habitats to a favourable conservation status is not just a matter of money and appropriate management: In most cases restoration will take a long time, well beyond one or two reporting periods and thus short term programmes are not likely to really help. The analysis of trends might show quicker results (trend decreasing, stable or increasing, while the Conservation Status is still unfavourable). In Germany regeneration ability was assessed for all biotope types in the National Red Data book for biotopes in 5 different categories. As this list is largely compatible with Annex I habitats (although often several biotope types belonging to one habitat type) it was possible to assign regeneration ability to German Annex I habitats (Fig. 8) with 3 broad classes. These are quick regeneration possible (less than 15 years required), medium regeneration ability (15-150 a) and none or long term regeneration ability (over 150 years). Based on this classification the analysis of conservation status is very alarming: The majority of unfavourable inadequate and unfavourable bad assessments over all biogeographic regions is within the habitats with medium and long term regeneration ability (Fig. 9).

**Threats and pressures for habitats**

The EU-reference-list used in 2007 (taken from the explanatory notes to the standard data form (European Commission, 1997) includes 176 activities / threats under 9 different headings but is not consistently hierarchical and has been used in a heterogeneous way by member states during the last reporting period. In particular, the activities / threats were not ranked in order of importance. Thus it is difficult to analyse these results and interpretation is difficult as some threats were systematically missing (e.g. climate change).
For Germany the report lists in total 3688 threats and pressures for the habitat types of Annex I. A preliminary analysis is given in Fig. 9.

The largest percentage of threats and pressures identified can be attributed to intensive land-use (agriculture and forestry, see also Schröder et al. 2008) with 28%, changes in water balance and hydrology range with 20% on the second place and changes in land-use with 17% (e.g. turning grassland into arable fields or forests). Pollution is with 11% probably underestimated and eutrophication does with its 7% only account mainly for direct active nutrient input. Many changes in land-use, the lowering of the ground-water table or intensification of land-use usually also result in indirect eutrophication, which still is a major player in the conservation status of habitats in Germany. Critical loads have not been taken into account systematically for assessing the conservation status in Germany in the national report and are exceeded in many cases.

Future pressures on many habitats will probably increase. Climate change may in the long term be a factor changing the species composition and possibly also the functional relationships of many habitat types. However climate change will certainly not reduce the value of the EU-wide Natura 2000 network: most sites are multi-interest sites and even if some species migrate the European scale of the network and the often broad habitat definitions (for example including similar beech forests from Italy to southern Sweden under one habitat type) ensure that the network will be valuable even in a changing environment. Rather the contrary, Natura 2000 will help buffer climate change (many forests and most bog systems are included as biological CO₂ stores), the network allows for migrations and includes in many cases the potential sites for newcomers or for an adaption of the habitats (low intensity of land use, low nutrient and pollutant input...). Additional coherence via application of Article 10 will of course be needed and some sites could be enlarged to include the whole range altitudinal belts, management planning should take climate change into account. However over the coming decades the immediate threats to biodiversity and Natura 2000 are changes in land-use which play a major role: there is an increasing demand for bio energy (bio fuel, biomass-production), new techniques and privatization in forestry make resources such as so far untouched ravine forests (habitat 9180) economically interesting for complete “harvesting”, the use of GMO’s in agriculture are new challenges and first evidence of a decline in pollinators in Europe are alarming (Food and Agriculture Organisation, FAO, 2008). The possibilities for functional compensation or regeneration of habitats are still largely overestimated in many impact assessments (appropriate assessments) with a risk of a slow permanent loss of high quality habitat areas within Natura 2000. Eutrophication and fragmentation are still increasing in many European countries. Thus careful management of Natura 2000-sites and redefining sustainable land-use in terms of maintaining the biodiversity and not only the sustainability of the desired products are key issues of the success of maintaining European biodiversity for future generations.

Conservation status of habitats linked to agriculture

Ostermann (1998) listed Annex I habitats he con-
sidered to be dependent on agriculture, for example grasslands dependent on extensive grazing. This list has been revised by the EEA-ETC/BD to include habitats added to the annex in 2004 and 2007 following the enlargement of the European Union from 15 to 27 countries (Halada et al., unpublished). The proportion of assessments for biogeographical regions falling into each class ('Favourable', etc) was calculated for these habitats and of the non-agricultural habitats and the results are shown in Figure 10.

The proportion of assessments for biogeographical regions falling into each class ('Favourable', etc) was calculated for these habitats and of the non-agricultural habitats and the results are shown in Figure 10.

It is clear that the habitat types linked to agriculture, in general, have a worse conservation status with only 7% favourable compared to 21% for non-agricultural habitats. There is variation between regions with no Member State reporting a habitat dependent on agriculture as favourable in the Atlantic region. Excluding Macaronesia, which has very few habitats dependent on agriculture, the highest percentage of favourable is in the Continental with 9% followed by the Alpine and Boreal regions which both have 7% (see table 4). The trends observed at a European scale can also be seen within Germany (Figure 11) suggesting the pattern observed is real and not an artefact of the methodology used to produce the regional assessments.

It is difficult to compare the Mediterranean with other regions as the proportion of unknown is very high although the data would suggest these habitats are more favourable in this region than elsewhere. However, it is not clear that the same criteria have been applied by countries such as Italy and Greece as elsewhere in Europe when assessing conservation status and in both countries data was only available from protected sites (Ministero dell’Ambiente e della Tutela del Territorio e del Mare - Direzione per la Protezione della Natura, 2008).

The bad conservation status of agricultural habitats in the Atlantic region could be linked to the pressures in this region which includes a high proportion of farmland including some of the most intensively farmed land in the European Union. The Pannonic region also has a very high proportion of its agricultural habitats assessed as unfavourable with 82% as Unfavourable-bad.

Other studies have shown that populations of species associated with farming tend to be declining faster than other groups, for example Heer, Kapos & Brink (2005) reported a 25% decline in farmland species since 1970, with other species groups showing declines of 5% or less. The same study reported greater declines in the EU15 compared to the EU10 which is consistent with declines in both species populations and the poor conservation status of habitats associated with agriculture being linked to the high proportion of land in Western Europe, in particular the Atlantic region, used for intensive agriculture. Similar trends have been reported for birds (Gregory et al., 2005) and butterflies (Van Dyke et al., 2009).

Improvements required for future reporting

There are clearly important gaps in the data required for assessing the conservation status of the Annex I habitats, in some countries even basic inventory data seems unavailable for some habitats and information on trends is often lacking. Several countries have said that the Article 17 reporting process has helped them identify weaknesses in existing monitoring programmes and many countries are cur-
Currently establishing biodiversity monitoring networks (e.g. Latvia, see http://www.lva.gov.lv/monitor/vnmp.htm) and better information should be available for the next Article 17 report in 2013.

Although guidelines were provided it is clear that they were not sufficient to ensure that the data reported was compatible across the European Union, this has been recognised by the European Commission and a working group on reporting has been established which, among other topics, will provide improved guidelines for future reports.

Standardisation is particularly needed for:

- Definition of Range
- Reporting of ‘structure & function’, including the treatment of typical species
- Format for spatial data

The reporting of threats and pressures needs improving and a revised list has been prepared (Circa library, reporting group, http://circa.europa.eu/Public/irc/env/monnat/library?l=/expert_reporting/work-package_revision/pressures_threats&vm=detailed&sb=Title), threats and pressures also need to ranked or only the most important reported.

**CONCLUSION**

This is the first time that the conservation status of habitats has been assessed across such a large area encompassing so many countries, earlier evaluations of similar areas in the USA and Australia (Nicholson *et al.*, 2009) only cover single countries. Many problems were encountered, both in sourcing the
required data and in the method used for assessments. However gaps in data have been identified and work is already underway to improve the reporting process, in particular, to improve data compatibility where this is clearly needed.

Despite these problems, it is clear that many habitats in the European Union cannot be described as being in a favourable condition and that changes to policy and improved management of sites are required if the European Union is to achieve its stated aim of stopping the loss of biodiversity by 2010 or to address the issues raised in the European Commission’s “Message from Athens”.

ACKNOWLEDGEMENTS

The German National Report was scientifically and technically coordinated and prepared by the Natura 2000-team in the Federal Agency for Nature Conservation (Götz Ellwanger, Marion Ersfeld, Thomas Isselbächer, Ulrike Raths, Eckhard Schröder, Mareike Vischer-Leopold, Marco Zimmermann). Iurie Maxim, Lubos Halada, Peter Gajdos, Giulia Mo, Sabina Agnesi, Carlos Romao, Brian MacSharry were responsible for data management and analysis at the ETC/BD while Soren Roig and colleagues at the European Environment Agency provided technical support.

REFERENCES


Food and Agriculture Organization (FAO) (2008). - Rapid assessment of ‘pollinators’ status: a contribution to the international initia-


Annex I: - List of the Habitat Directive Annex I habitats depending on agricultural practices in the EU

Legend: D – dependent on agricultural management; f – fully dependent, p – partly dependent. N – relationship with extensive farming practices only holds true for only some sub-types or for part of their distribution or doubts exist on the habitat type’s dependence on agricultural management.

<table>
<thead>
<tr>
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<tr>
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<td>Pannonian salt steppes and salt marshes</td>
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<td>Decalcified fixed dunes with <em>Empetrum nigrum</em></td>
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<td>Atlantic decalcified fixed dunes (<em>Calluna-Ulicetea</em>)</td>
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<td>Dunes with <em>Hippoppaë rhamnoides</em></td>
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<td><em>Juniperus communis</em> formations on heaths or calcareous grasslands</td>
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<td><em>Sarcopoterium spinosum</em> phryganas</td>
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<td>Species-rich <em>Nardus</em> grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in continental Europe)</td>
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<td>Nordic alvar and precambrian calcareous flatrocks</td>
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<td>Fennoscandian wooded meadows</td>
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<td>Depressions on peat substrates of the <em>Rhynchosporion</em></td>
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<td>Calcareous fens with <em>Cladium mariscus</em> and species of the <em>Caricion davallianae</em></td>
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<td>Siliceous rock with pioneer vegetation of the <em>Sedo-Scleranthion</em> or of the <em>Sedo albi-Veronicion dilleni</em></td>
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<td>9070</td>
<td>Fennoscandian wooded pastures</td>
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</tbody>
</table>
Annex II: Habitat types of Annex I habitats directive in Germany with their management needs and regeneration ability

Legend: M – dependent on management and or appropriate land-use: f – fully dependent, p – partly dependent or in some sub-types dependent, n – not dependent.

R – regeneration ability: 1 – quick (< 15 years), 2 – medium (15-150 years), 3 none/long term regeneration (> 150 years).

Note: Dependency on management is not identical with the dependency on agriculture as listed in Annex I for the EU for two major reasons. Firstly, the German assessment includes all types of management/land-use, for example forestry and forest habitat types secondly, some habitat types display regionally different characteristics and may be completely independent of management in Germany, while in other Member States certain subtypes are partially dependent. Not dependent on management or land-use means that without any human intervention the habitat type can develop and will stay or develop into a good conservation status. This does not exclude that some kind of land-use may be possible.

<table>
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<td>Large shallow inlets and bays</td>
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<td>Annual vegetation of drift lines</td>
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<td>Perennial vegetation of stony banks</td>
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<td>Vegetated sea cliffs of the Atlantic and Baltic Coasts</td>
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<td>Calcareous fens with Cladium mariscus and species of the Caricion davallianae</td>
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<tr>
<td>7220</td>
<td>Petrifying springs with tufa formation (Cratoneuron)</td>
<td>n</td>
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<tr>
<td>7230</td>
<td>Alkaline fens</td>
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<td>7240</td>
<td>Alpine pioneer formations of the Caricion bicoloris-atrosfusae</td>
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<tr>
<td>8110</td>
<td>Siliceous screes of the montane to snow levels (Androsaceta alpinae and Galeopsictalia ladanii)</td>
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<tr>
<td>8120</td>
<td>Calcareous and calcishist screes of the montane to alpine levels (Thlaspietia rotundifolii)</td>
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<td>8150</td>
<td>Medio-European upland siliceous screes</td>
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<tr>
<td>8160</td>
<td>Medio-European calcareous screes of hill and montane levels</td>
<td>n</td>
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</tr>
<tr>
<td>8210</td>
<td>Calcareous rocky slopes with chasmophytic vegetation</td>
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<tr>
<td>8220</td>
<td>Siliceous rocky slopes with chasmophytic vegetation</td>
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<tr>
<td>8230</td>
<td>Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Veronicion dillenii</td>
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<tr>
<td>8310</td>
<td>Caves not open to the public</td>
<td>n</td>
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<tr>
<td>8340</td>
<td>Permanent glaciers</td>
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<tr>
<td>9110</td>
<td>Luzulo-Fagetum beech forests</td>
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<tr>
<td>9120</td>
<td>Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)</td>
<td>p</td>
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<tr>
<td>9130</td>
<td>Asperulo-Fagetum beech forests</td>
<td>n</td>
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<tr>
<td>9140</td>
<td>Medio-European subalpine beech woods with Acer and Rumex arifolius</td>
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<td>Medio-European limestone beech forests of the Cephalanthero-Fagion</td>
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<td>9160</td>
<td>Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli</td>
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<td>9170</td>
<td>Galio-Carpinetum oak-hornbeam forests</td>
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<tr>
<td>9180</td>
<td>Tilio-Acerion forests of slopes, screes and ravines</td>
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<tr>
<td>9190</td>
<td>Old acidophilous oak woods with Quercus robur on sandy plains</td>
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<tr>
<td>91D0</td>
<td>Bog woodland</td>
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<tr>
<td>91E0</td>
<td>Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)</td>
<td>n</td>
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<tr>
<td>91F0</td>
<td>Riparian mixed forests of Quercus robur, Ulmus laevis and Ulmus minor, Fraxinus excelsior or Fraxinus angustifolia, along the great rivers (Ulmion minoris)</td>
<td>n</td>
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<tr>
<td>91G0</td>
<td>Pannonic woods with Quercus petraea and Carpinus betulus</td>
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<tr>
<td>91T0</td>
<td>Central European lichen Scots pine forests</td>
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<tr>
<td>91U0</td>
<td>Sarmatic steppe pine forest</td>
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<td>Acidophilous Picea forests of the montane to alpine levels (Vaccinio-Piceeta)</td>
<td>n</td>
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</tr>
<tr>
<td>9420</td>
<td>Alpine Larix decidua and/or Pinus cembra forests</td>
<td>n</td>
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