# Reporting under Article 17
# of the Habitats Directive



# Explanatory Notes and Guidelines

# for the period 2013–2018

Final version – May 2017

These guidelines have been compiled by the European Environment Agency (EEA) and its European Topic Centre on Biological Diversity (ETC/BD). They have been developed through a collaborative work of the Expert Group on Reporting under the Nature Directives, its ad-hoc groups, and the Expert Group on the Birds and the Habitats Directives (NADEG).

DG Environment. 2017. Reporting under Article 17 of the Habitats Directive: Explanatory notes and guidelines for the period 2013-2018. Brussels. Pp 188

Cover photo: Dry heaths, © Frédéric Bioret, European Red List of Habitats / EC

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# INTRODUCTION

Article 17 paragraph 1 of the Habitats Directive[1] (hereafter 'the Directive') states: 'Every six years from the date of expiry of the period laid down in Article 23, Member States shall draw up a report on the implementation of the measures taken under this Directive. This report shall include in particular information concerning the conservation measures referred to in Article 6(1) as well as evaluation of the impact of those measures on the conservation status of the natural habitat types of Annex I and the species in Annex II and the main results of the surveillance referred to in Article 11.'

Article 17 paragraph 2 requires the European Commission to prepare a composite report based on the national reports and to make it available for the other EU institutions and the public in general.

The first report in 2000 focused on the legal transposition and general implementation of the Directive; the second and third reports from the Member States in 2007 and 2013 (covering the periods 2001–2006 and 2007–2012 respectively) were focused on the conservation status of the habitat types and species included in the Annexes to the Directive.

Reporting under Article 17 of the EU Habitats Directive uses a format approved by Member States' representatives as part of the Habitats Committee after discussion and consultation in the Expert Group on the Birds and the Habitats Directives (NADEG). The **Report format aims at standardising and harmonising the content of the reports across Member States** to allow the aggregation of national data to produce the EU report. After each reporting period, a revision of the formats and associated guidelines is undertaken by DG Environment, the European Environment Agency and its European Topic Centre on Biological Diversity in collaboration with the Member States. The Expert Group on Reporting under the Nature Directives – which also includes representatives of stakeholders – is tasked with proposing and discussing the improvement and modification of the formats and the guidelines published in 2006 and 2011. In order to help this process several ad hoc groups were set up in order to facilitate a harmonised understanding between Member States, using scientific and pragmatic approaches.

The format was initially approved by the Habitats Committee in 2003[2] and first used for the period 2001–2006. Experience gained during that report led to some changes for the report for 2007–2012; in particular, sections were added to help assess the role of the Natura 2000 network in reaching the goals of the Directive. Further experience with the 2007–2012 reports has led to further changes, some of which aim to simplify the report. The major additions are questions on the nature of changes aimed to help measure progress towards the targets in the EU's 2020 Biodiversity Strategy and for information on the exploitation of Annex V species.

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[1] Council Directive 92/43/EEC
http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:01992L0043-20070101
[2] Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive (DocHab-04-03/03 ver.3). DG Environment, 2004.

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**Box 1: How to use these explanatory notes & guidelines**

These guidelines are aimed primarily at those responsible for compiling the national Article 17 reports for the period 2013–2018, but may also be of interest to others who wish to use or to better understand the results.

The guidelines are organised in three parts: a short introduction, a practical step-by-step guidance on how to fill in the different fields of the reports, and a part describing the concepts and methods used in more detail.

The technical specifications for the data to be reported will be given in specific delivery manuals; code lists with codes for standardised entry of information in the Report formats will be available on the Reference Portal. The delivery manuals and code lists complement these Explanatory Notes & Guidelines.

**Technical documents and reference lists**

The Reference Portal[3] contains documents and other material related to the information provided in the Report formats under Article 17 of the Habitats Directive.

It includes:

- the Report formats for the period 2013–2018;

- these Explanatory Notes & Guidelines;

- reference material, e.g. checklists for species and habitat types, maps of biogeographical regions, marine area of pSCIs, SCIs and SACs, agreed population units, list of pressures and threats, list of conservation measures, and the European grids (10x10 km ETRS) used for mapping the distribution and range;

- additional examples illustrating the guidance provided in these Explanatory Notes & Guidelines;

- IT applications (reporting and range tools) for preparing and delivering the reporting dataset.

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**Content of the Article 17 report**

The reports under Article 17 of the Habitats Directive provide information on the conservation status of habitats and species listed in the Annexes to the Directive. **Conservation status is the overall assessment of the status of a habitat type or a species at the scale of a Member State's biogeographical or marine region**.

**Favourable conservation status (FCS)**

The assessment of the conservation status of a habitat type or species is related to the concept of Favourable conservation status (FCS). Favourable conservation status is the overall objective to be reached for all habitat types and species of Community interest (i.e. the habitats and species listed in Annexes I, II, IV and V of the Directive) and it is defined in Article 1 of the Habitats Directive. It can be simply described as **a situation where a habitat type or species is prospering (in both quality and**

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[3] http://cdr.eionet.europa.eu/help/habitats_art17

**extent/population) and with good prospects to continue to do so in the future**. The conservation status objective of the Directive is defined in positive terms, oriented towards a favourable situation, which needs to be defined, reached and maintained. It is therefore aimed at achieving far more than trying to avoid extinctions.

The conservation status of a species in the Habitats Directive (Article 1(i)) will be taken as 'favourable' when:

- *population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and*
- *the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and*
- *there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*

The conservation status of a habitat in the Habitats Directive (Article 1(e)) will be taken as 'favourable' when:

- *its natural range and areas it covers within that range are stable or increasing; and*
- *the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and*
- *the conservation status of its typical species is favourable as defined in (i);*

The agreed method for the evaluation of conservation status assesses separately each of the parameters of conservation status (Table 1), with the aid of an evaluation matrix (see Annexes C and E of the Report format), and then combines these assessments to give an overall assessment of conservation status.

**Table 1: Parameters for the conservation status assessment of species and habitat types**

| Parameters for the conservation status assessment of species | Parameters for the conservation status assessment of habitat types |
|---|---|
| Range | Range |
| Population | Area |
| Habitat for the species | Structure and functions |
| Future prospects | Future prospects |

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**Box 2: How is the information on conservation status used?**

Regular reporting using an agreed format is an obligation under Article 17 of the European Union's Habitats Directive. It is essential that the reports from the Member States are harmonised, otherwise it is not possible to aggregate reports to produce a composite report for the EU as required by the Directive.

**Evaluation of the EU Biodiversity Strategy**

The reports give an overview of the state of the EU's biodiversity and form an important component of evaluating EU policies, in particular, in measuring progress towards the 2020 targets set under the EU Biodiversity Strategy. Results from the 2007–2012 reporting period are described in *State of nature in the EU* (EEA, 2015).

**Link with other biodiversity assessments**

The EU Water Framework and Marine Strategy Framework Directives use the terms 'Good Ecological Status' and 'Good Environmental Status', respectively, which are broadly comparable to FCS. However, their definitions are different and they assess different aspects of biodiversity. Clearly in many instances the same data will be used for reporting under two or more Directives[4] [5], and Member States are encouraged to develop links between work for reporting under all three Directives. Work is also ongoing at EU level to ensure synergies in definition of the various concepts.

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[4] The final draft of Water Framework Directive Reporting Guidance can be found here : http://cdr.eionet.europa.eu/help/WFD/WFD_521_2016/Guidance/Guidance/WFD_ReportingGuidance.docx
[5] The draft guidance for reporting under articles 8, 9 & 10 for the Marine Strategy Framework Directive can be found here : https://circabc.europa.eu/sd/a/fd664852-41b1-468f-a007-a3005c06050c/DIKE_15-2017-02_MSFD2018ReportingGuidance_v2.0.doc

# PART 1. THE REPORT FORMAT FIELD-BY-FIELD GUIDANCE

Part 1 of these guidelines (The Report format field-by-field guidance) provides a practical step-by-step guidance on how to fill in the different fields of the Report format. It gives a detailed description of the nature of information to be reported in each field (e.g. a number, a period) and the basic requirements to be met by the information (e.g. 'short-term trends should ideally be reported over the last 12 years, but some flexibility is permitted').

More detailed descriptions of concepts and methods for reported information are provided in Part 2 (Definitions and methods).

## GENERAL INTRODUCTION AND STRUCTURE OF THE REPORT FORMAT

The Article 17 Report format consists of five distinct Annexes (A–E)

**Annex A – General report:** gives an overview of the implementation and general measures taken under the Habitats Directive.

**Annex B – Report format on the 'main results of the surveillance under Article 11' for Annex II, IV and V species (Species reports):** gives background information for assessment of the conservation status of a species.

**Annex C – Assessing conservation status of a species (Species evaluation matrix):** the evaluation matrix used to assess the conservation status of a species using the information in the Annex B reports. The assessment conclusions for each species are also reported in the respective Annex B report.

**Annex D – Report format on the 'main results of the surveillance under Article 11' for Annex I habitat types (Habitat type reports):** gives background information for assessment of the conservation status of a habitat.

**Annex E – Assessing conservation status of a habitat type (Habitat type evaluation matrix):** the evaluation matrix used to assess the conservation status of a habitat type using the information in the Annex D reports. The assessment conclusions (i.e. for each parameter and the overall assessment) for each habitat type are also reported in the respective Annex D report.

The information reported in Annexes B and D includes data used for the assessments of conservation status for each biogeographical or marine region at the Member State and EU levels. Therefore, the habitat and species reports have a short 'national' section to be completed for each habitat type or species of Community interest present in the Member State, followed by a 'biogeographical or marine region' section. This should be completed for each biogeographical or marine region in the Member State where the habitat or species is present according to the checklists available from the Article 17 Reference Portal.

## ANNEX A - GENERAL REPORT FORMAT

## Field-by-field guidance

The general report or 'Annex A' uses a very brief structured format aimed at summarising the most important facts and figures on the general implementation of the Directive, including links to more detailed information sources. It is mainly targeted at the interested public, but also at informing the Commission.

Each Member State is expected to submit one general report covering its entire European territory. It includes obligatory information about several provisions of the Habitats Directive. In addition, the main achievements under the implementation of the Directive and the main measures taken to ensure the coherence of the Natura 2000 network should be briefly described. The report should give information of relevance for the period 2013–2018.

Language – any EU official language can be used. The Report format tries to minimise the difficulties of using different languages by requesting numerical information wherever possible. The use of English is recommended for the free text fields.

All Internet addresses in the reporting fields should be given in full, including the initial 'http://' or 'https://', if applicable.

## 0      Member State

Select the two-digit code for your Member State from ISO 3166. For the United Kingdom, use 'UK' instead of 'GB', in accordance with the list to be found on the Reference Portal[6].

## 1      Main achievements under the Habitats Directive

This section aims to inform the interested public about the main achievements under the Habitats Directive and the Natura 2000 network in the respective Member State during the reporting period. The information should primarily be given in the national language (field 1.1), with a translation into English if possible (field 1.2), as this information is likely to be of interest to readers in other Member States.

### 1.1     Text in national language

Describe briefly the main achievements under the Habitats Directive during the reporting period, with a special emphasis on the Natura 2000 network. This can include, for example:

- demonstrated benefits for different habitats and species;
- experiences with new or improved management techniques;
- positive changes in public acceptance of biodiversity protection;
- improved cooperation between authorities, nature conservationists and other interest groups;
- initiatives to combine establishment of Natura 2000 sites and the local economy.

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[6] http://cdr.eionet.europa.eu/help/habitats_art17

The text should be kept to a maximum of two pages. If a Member State wishes to add further documentation to that requested, it should note these annexes and their filenames at the end of this field, and upload the relevant files to the EEA's Central Data Repository together with the rest of the report.

## 1.2 Translation into English (optional)

This is an optional field to translate the information provided in field 1.1 into English (where it was reported in another language).

# 2 General information sources on the implementation of the Habitats Directive – links to information sources of the Member State

This section aims to inform the interested public where they can find information relating to the Habitats Directive and the Natura 2000 network of the Member States. In general, only links to Internet addresses are required. However, free text can also be used where there is a need to explain how to access the information source, e.g. in the case of multiple sources of information. All of the following fields should be completed.

## 2.1 General information on the Habitats Directive

Provide links to general information on the Habitats Directive (e.g. portal presenting EU Nature Directives).

## 2.2 Information on the network of pSCIs, SCIs and SACs

Provide links to general information on the network of pSCIs, SCIs and SACs (e.g. an online database of Natura 2000 sites, publications presenting the network).

## 2.3 Monitoring schemes (Article 11)

Provide links to general information on monitoring (e.g. portal presenting national monitoring scheme(s), monitoring guidelines).

## 2.4 Protection of species (Articles 12–16)

Provide links to general information on species protection (e.g. links to systems for monitoring the incidental capture and killing of animal species listed in Annex IV, Article 12.4).

## 2.5 Impact of measures referred to in Article 6.1 on the conservation status of Annex I habitats and Annex II species (Article 17.1)

Provide links to general information on the implementation of conservation measures within the Natura 2000 sites and their impact on conservation status.

## 2.6 Transposition of the Directive (legal texts)

Provide links to general information on transposition of the Directive.

# 3    Natura 2000 (pSCIs, SCIs & SACs) – site designation (Article 4)

Member States should provide information at the national level on the numbers and surface area of proposed Sites of Community Importance (pSCIs), Sites of Community Importance (SCIs) and Special Areas of Conservation (SACs) at the end of the reporting period.

## 3.1    All sites

Provide the total number and surface area of pSCIs, SCIs and SACs and separately the number and surface area of SACs.

## 3.2    Terrestrial area of sites (excluding marine area)

Provide the terrestrial surface area of pSCIs, SCIs and SACs and separately the terrestrial surface area of SACs.

## 3.3    Marine sites

Provide the total number and marine surface area of marine pSCIs, SCIs and SACs and separately the number and marine surface area of marine SACs.

**Marine sites** are any sites which include any area of sea (seaward side of the coastline).

**Marine area of sites** is the area on the seaward side of the coastline. The definition of the coastline used to define the marine boundary should follow international[7] or national legislation. This approach is the same as that adopted for the Standard Data Forms (SDFs) for individual Natura 2000 sites. Thus, a site located on the coast and stretching out into the sea should be counted as a 'marine site', although it might include a terrestrial component (to be included in the figure to be reported in field 3.2) as well as a marine component (to be included in the figure to be reported in field 3.3; see map in Figure 1).

**Terrestrial area of sites** is any area of a site which is not marine (as defined above). In the Report format the terrestrial area of sites in km$^2$ (field 3.2) plus the area of marine sites in km$^2$ (field 3.3) together should give the total area of all sites (field 3.1).

## 3.4    Date of database used

This is normally the date of the last database delivered to the European Commission (uploaded to the EEA Central Data Repository) during the reporting period (2013–2018). Normally, the total number and total area of Natura 2000 sites (pSCIs, SCIs and SACs) correspond to numbers and areas provided in this database. However, it is understood that occasionally later sources are used to fill in information under this section, e.g. to provide the number and area of SACs if some of them were designated after the database submission. Please supply this information in the DD/MM/YYYY format.

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[7] UN Convention on the Law of the Sea (UNCLOS).

**Figure 1:        Examples of terrestrial and marine Natura 2000 sites. 'A' is a terrestrial site (the site is located in the terrestrial domain only). 'B' is a marine site and is located in the marine domain only. 'C' is located in a coastal area, and should be counted as a marine site: it consists of both terrestrial (yellow) and marine (blue) areas, to be reported in fields 3.2 and 3.3 respectively.**



A - terrestrial site
B - marine site
C - terrestrial and marine site
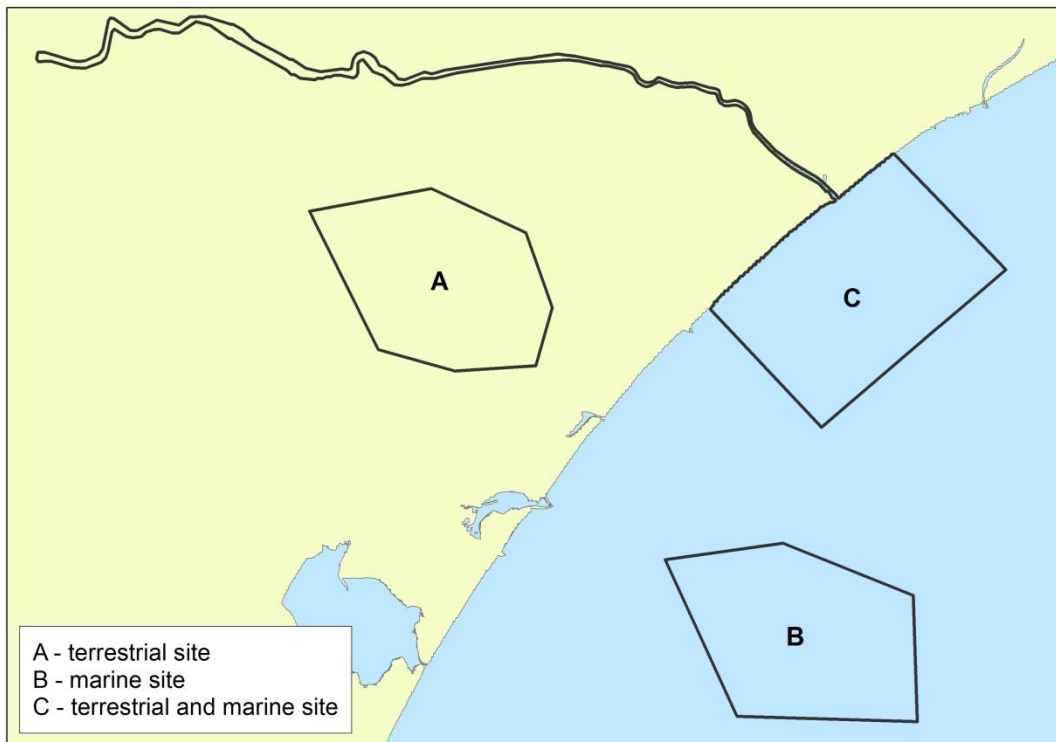
# 4    Set of conservation measures and management plans for Natura 2000 sites (SACs) (Article 6(1))

'Conservation measures and management plans' are considered to be operational instruments that outline practical measures to achieve the conservation objectives for the sites in the network.

Conservation measures within the network can fall under, but are not limited to, LIFE programmes, Rural Development Plans, Structural Funds or other domestic programmes. Ensure that all relevant management plans or instruments have been fully accounted for.

## 4.1    Necessary conservation measures have been established according to Article 6(1) and are applied

Give the number of sites and the proportion of the network area within the Member State for which necessary conservation measures have been established (i.e. for which there exists a statutory, administrative or contractual framework and for which the measures are being implemented).

Only sites where all necessary measures have been identified and are implemented should be included. Do not include sites where conservation measures do not target all of the habitats and species (e.g. with measures targeting only forest habitats and species, although measures are also

needed for other habitats and species) or where not all of the necessary measures have been implemented.

## 4.2    Conservation measures have been set out in a comprehensive management plan or a similar instrument

Give the number of sites and the proportion of the network area within the Member State for which a comprehensive management plan or a similar instrument is in place. Although the Standard Data Form (SDF) for each individual site includes information on management plans (i.e. 'Yes/no/in preparation'), it is also useful to have information about the overall number of comprehensive management plans or similar instruments. To put this number in context, the proportion of the network area that is covered by such plans is also requested.

For this purpose, only management plans covering all parts of a Natura 2000 site (or sites) and all habitats and species for which the site(s) is/are designated (i.e. comprehensive management plans) should be taken into account. Such plans should fulfil the following minimum requirements:

- indicate all the habitat types and/or species and their localities for which conservation measures are necessary and planned;
- identify the actual status of the habitat types and species and the desired status which should be reached through the conservation measures;
- define clear and achievable conservation objectives;
- identify the necessary measures together with the means and a time schedule which can contribute to meeting those objectives.

# 5    Measures taken in relation to approval of plans & projects (Article 6.4)

This section concerns projects and plans for which compensatory measures according to Article 6(4) were decided on during the reporting period. Any sites affected in this way should be reported under this section. Repeat fields as necessary for each combination of site and project/plan[8].

## 5.1    Site code
Provide the site code of a site with project(s) or plan(s) in need of compensatory measures.

## 5.2    Site name
Provide the site name.

## 5.3    Title of project/plan
Provide the title of the project/plan.

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[8] Further guidance on Article 6 may be found at DG Environment's website (e.g. the document *Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*, published by DG Environment in 12 EU languages):
http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm#art6

### 5.4    Year Commission was informed of compensatory measures

Provide the year when the Commission was informed about compensatory measures.

### 5.5    Year project/plan was started

Provide the year when implementation of the project/plan started.

### 5.6    Commission opinion requested?

Indicate whether a Commission opinion was requested ('Yes/no').

### 5.7    Impact of projects requiring compensatory measures on conservation status (optional)

Describe the impact of such projects/plans on the conservation status of habitat types and species.

# 6    Measures taken to ensure coherence of the Natura 2000 Network (Article 10)

This section is for a general description of the main measures taken to ensure the coherence of the Natura 2000 network according to Article 10 of the Habitats Directive. Give an overview at national level of activities taken (including legal measures, or systematic studies); do not give detailed site-by-site descriptions. If relevant, give references to published reports, scientific papers or websites.

# 7    Reintroduction of Annex IV species (Article 22(a))

This section is to report on the reintroduction of Annex IV species previously considered extinct or regionally extinct in the Member State/region. Therefore, it concerns both species still present in the Member State (but not in the area or region where it is being reintroduced) and species not present currently. For each species repeat fields 7.1 to 7.8 as needed.

### 7.1    Species code

Provide the species code as given in the species checklist on the Reference Portal[9].

### 7.2    Species scientific name

Provide the species scientific (Latin) name, as given in the species checklist on the Reference Portal.

### 7.3    Alternative species scientific name (optional)

Provide an alternative scientific name (synonym).

### 7.4    Common name (optional)

Provide a common name in the national language or English.

### 7.5    Reintroduction period

Provide a reintroduction period.

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[9] http://cdr.eionet.europa.eu/help/habitats_art17

### 7.6     Reintroduction location and number of individuals reintroduced

Provide name of the reintroduction location (field 7.6(a)) and number of individuals reintroduced (field 7.6(b)). Location can be, for example, a small region, a mountain range, or a Natura 2000 site.

### 7.7     Is the reintroduction successful?

Indicate whether the reintroduction has been successful ('Yes/no/too early to say'). A successful reintroduction implies natural reproduction has already taken place and the population is growing.

### 7.8     Additional information on the reintroduction (optional)

Additional information on the reintroduction can be given in this optional free-text field.

# ANNEX B - REPORT FORMAT ON THE 'MAIN RESULTS OF THE SURVEILLANCE UNDER ARTICLE 11' FOR ANNEX II, IV AND V SPECIES

## Species to be reported

In general, each Member State should report (either a full or a partial report) for all species listed in Annexes II, IV and V of the Habitats Directive for every biogeographical or marine region in which they occur[10]. This includes all regularly occurring species, marginal, vagrant and occasional species, species that started to occur only recently (newly arriving species) and species extinct after the Directive came into force. The report is optional for species with a scientific reserve. A checklist of species covered by the Habitats Directive and their occurrence per biogeographical or marine region and Member State is available on the Article 17 Reference Portal[11].

### Taxonomical changes

Since the original Annexes of the Habitats Directive were published in 1992, there have been taxonomical revisions of several of the taxa listed, and several species are now considered to be two or more species. Conversely, other species listed in the Annexes are now included in other newly defined species, often losing their specific or even subspecific status.

Wherever feasible (e.g. the species can be determined in the field), when the Directive species is now considered to be two or more species, there should be one Article 17 report for each currently recognised species. In cases, where a species listed in the Annex(es) is now included in other newly defined species, Member States should consider the interpretation of the species at the time when the Annexes of the Directive were drafted or amended and provide an Article 17 report corresponding to the meaning of the species name in the Directive. Where two species listed in the Directive were merged into one currently recognised species a joint report including both Directive species should be provided using the currently valid species name (provided in the species checklist).

More detailed information can be found in Section 'Taxonomical changes and names to be used for reporting' (in 'Species to be reported' chapter in 'Definitions and methods for species reporting' part).

For some species the taxonomy remains unclear or was ambiguous at the time the Annexes of the Directive were drafted. For these species the link between the currently recognised valid names and the names listed in the Directive is not implicit. A few species listed in the Directive are currently considered to be taxonomical errors. These situations are highlighted in the species checklist. An overview of the taxonomy related categories used in the species checklist with an indication of whether a report is expected or not is provided in Table 2.

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[10] For the habitat types and species which do not occur in the area of Cyprus where the Community acquis applies at present, no report is expected but the species should remain in the checklist.
[11] http://cdr.eionet.europa.eu/help/habitats_art17

**Table 2: Taxonomy related categories used in the species checklist**

| Species category (code) | Report |
|---|---|
| **Taxonomical uncertainty (TAX)**<br><br>The taxonomy of the species remains unclear or was ambiguous at the time the Annexes of the Directive were drafted. | Mandatory |
| **Taxonomical error (NTAX)**<br><br>Species listed in the Directive is currently proved to be a taxonomical error. This does not apply to species which were recognised as such in the past and which are now included under other taxa. | No report |

## Names to be used for reporting

The Member States are requested to use the species names as indicated in the species checklist available on the Reference Portal. This list has been updated for the reporting period 2013–2018 following available scientific knowledge and taking into account recommendations from the Member States. Since there is no up-to-date single taxonomical reference covering all species groups in Europe, proposed/recommended species names are based on available scientific literature and available information from global taxonomical references (e.g. Catalogue of Life, Fauna Europea, Eur+Med PlantBase), regional or national databases (e.g. DynTaxa in Sweden, TaxRef in France), and regional or national checklists. In most cases (unless there were serious doubts about the valid name or in cases where a species was a single country endemic) the species names having a valid status in these global or regional taxonomical references have priority over names used in different Member States.

## Species with marginal or irregular occurrence, extinct species

In some situations it is impossible to provide a complete assessment of the conservation status (within a Members State's biogeographical or marine region) using the methods outlined in the evaluation matrix and this guidelines document. This is particularly the case for irregularly occurring or marginal species, whose conservation status depends on the status in the neighbouring main population, and for extinct species. To reflect the problems of reporting in these situations the species checklist distinguishes several categories of species (or more correctly, several categories of species occurrence). In general, for these categories it is often not necessary (and not possible) to fill in a complete report. An overview of the categories, indicating whether a report is expected and which parts of the report remain mandatory, is provided in Table 3. A more detailed definition of species categories can be found in Section 'Occurrence categories used in the species checklist' (in 'Species to be reported' chapter in 'Definitions and methods for species reporting'part).

**Table 3:         Categories of species occurrence within the biogeographical/marine region and indication of the expected content of the Article 17 report**

| Species category | Report | Mandatory information for report |
|---|---|---|
| **Present regularly (PRE)** | Mandatory[12] | Full report. |
| **Occasional (OCC)** | Mandatory partial report | Whenever possible provide information for any of the fields listed below:<br><br>• Distribution map (field 2.3)<br>• Actual range – surface area (field 5.1)<br>• Population – size estimate (field 6.2), date (field 6.1) and method used (field 6.6)<br>• any other relevant information, e.g. whether a species had been recorded during the reporting period or an explanation why a species is treated as an occasional species (field 13.3). |
| **Newly arriving species (ARR)** | Mandatory partial report | Whenever possible provide information for any of the fields listed below:<br><br>• Distribution map (field 2.3)<br>• Actual range – surface area (field 5.1)<br>• Population – size estimate (field 6.2), date (field 6.1) and method used (field 6.6)<br>• Any other relevant information, e.g. information related to the potential range expansion or an explanation of why a species is treated as a newly arriving species (field 13.3). |
| **Marginal (MAR)** | Mandatory partial report | Whenever possible provide information for any of the fields listed below:<br><br>• Distribution map (field 2.3)<br>• Actual range – surface area (field 5.1)<br>• Population – size estimate (field 6.2), date (field 6.1) and method used (field 6.6)<br>• Information on occurrence of main population (field 13.3). |
| **Species extinct after entry into force of the Habitats Directive (EXa)** | Mandatory | • Section 11 'Conclusions'. The overall conservation status is 'unfavourable-bad'. |

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[12] For the habitat types and species which do not occur in the area of Cyprus where the Community acquis applies at present, no report is expected but the species should remain on the checklist (using category NPRE in the checklist).

| Species category | Report | Mandatory information for report |
|---|---|---|
| **Species extinct prior to entry into force of the Habitats Directive (EXp)** | Mandatory for species with restoration project and for species of particular interest with recent signs of recolonisation | Whenever possible provide information for any of the fields listed below:<br>• Distribution map (field 2.3)<br>• Actual range – surface area (field 5.1)<br>• Population – size estimate (field 6.2), date (field 6.1) and method used (field 6.6)<br>• Section 11 'Conclusions'<br>• Any other relevant information, e.g. information on reintroduction project or information related to recolonisation (field 13.3). |
| **Scientific reserve (SCR)** | Optional | • Any other relevant information, e.g. information on survey conducted or related to probability that the species will/will not be refound in the region (field 13.3). |

## Reporting for species groups

The Annexes include several species groups, for example Annex II has '*Alosa* spp.' while Annex IV has 'Microchiroptera – All species'. All species included in these groups should be reported separately, except *Cladonia* subgenus *Cladina, Lycopodium* and *Sphagnum.* For example, there should be separate reports per region for *Alosa agone*, *A. alosa, A. fallax, A. killarnensis,* etc. For Annex V '*Acipenseridae* – All species not mentioned in Annex IV', reports should be produced for *Acipenser gueldenstaedtii, A. ruthenus, Huso huso,* etc. The species to be included under each group are shown in Table 14:     Species listed in the Directive for which separate or joint reports are expected for currently recognised species provided in chapter 'Species to be reported' (in 'Definitions and methods for species reporting') and the species checklist available from the Article 17 reporting Reference Portal[13].

For *Cladonia* subgenus *Cladina, Lycopodium* spp. and *Sphagnum* spp.*,* Member States should submit a single report per group per region. It is also possible to report individual species in these groups (where it is thought that a species needs special attention) as an optional report, but in this case they should also be included in the report on the genus. For example, if Germany considers that *Sphagnum pulchrum* in the Atlantic region is of special concern, it can submit a report for that species. However, the overall assessment for *Sphagnum* spp. for the region should also take *Sphagnum pulchrum* into account.

If a Member State wishes to give information on population size, either for the group or an individual species, the report should be made using reporting units from the Reference Portal[11] (see Section 6     Population' (in 'Definitions and methods for species reporting').

For these three species groups, a report giving only the overall assessment of conservation status and its trend (fields 11.6 and 11.7 of Annex B) is acceptable and no map of distribution is required. Overall assessment of conservation status should look at the species group as a whole using the criteria from the evaluation matrix.As it may be difficult to conclude the overall assessment if there are species with different conservation status, the Member State should  explain the variation in field 11.8 'Additional information'. If there is a species of particular conservation concern (e.g. in bad

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[13] http://cdr.eionet.europa.eu/help/habitats_art17

conservation status), Member States are encouraged to submit an additional optional report[14] or note this fact in field 11.8 'Additional information'.

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**Box 3: Species to be included in *Cladonia, Lycopodium* and *Sphagnum***

*Cladonia* subgenus *Cladina* – All European species (i.e. occurring in the EU) in the subgenus according to Ahti (1961 and pers. comm.): *Cladonia arbuscula* (including *Cl. mitis* and *Cl. squarrosa*), *Cl. ciliata* (including *Cl. tenuis*), *Cl. conspicua*, *Cl. portentosa* (*Cl. implexa*), *Cl. rangiferina*, *Cl. stellaris* (*Cl. alpestris*), *Cl. stygia*, *Cl. azorica*, *Cl. macaronesica* and *Cl. mediterranea*.

*Lycopodium* – Listing in Annex V relates to commercial exploitation and commerce is not limited to the genus *Lycopodium*. For Article 17 reporting *Lycopodium* should be interpreted as all species in the family *Lycopodiaceae* (*Lycopodium alpinum, L. annotinum, L. clavatum, L. complanatum, L. issleri, L. madeirense, L. oellgaardii, L. tristachyum, L. zeilleri, Huperzia dentata, H. selago, H. suberecta, Lycopodiella cernua, L. inundata;* following EURO + MED PlantBase[15]).

*Sphagnum* – All European (i.e. occurring in the EU) species in the genera *Sphagnum* except *Sphagnum pylaesii* (Annexes II) according to Hodgetts (2015).

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## Geographical exceptions from the Annexes of the Directive

Several Member States have an exception from all Annexes where the species is listed, but a report should be submitted for those species, as they are nevertheless species of Community interest according to Articles 1 and 2. It should be noted that this legal interpretation is also justified in technical terms because, in order to understand and assess the EU-wide/biogeographical situation of such species, the Commission needs information on the status of the species in all EU territory (including the territory of the Member States with geographical restrictions).

## Hybrid populations

If hybrids between two Directive species occur, then the hybrid population(s) should be taken into account in the reports of both Directive species concerned. If a hybrid is between a Directive species and a native but non-Directive species, the hybrid population should be considered part of the population in the biogeographical region if hybridisation is a part of species evolutionary history (e.g. syntopic populations of *Triturus montandoni* and *T. vulgaris* hybridise and introgression of genes resulting from hybridisation may play a role in natural selection). On the other hand, if hybridisation between a Directive species and a native but non-Directive species represents a threat to the Directive species (e.g. loss of fertility), in this case the hybrid population should be excluded and hybridisation should be considered as a threat or pressure to species populations. If a hybrid is between a Directive species and an alien species or a feral population, the report should not cover the hybrid population, but where appropriate this should be noted as a threat or pressure. For example, many fish species (such as *Alburnus albidus*) are threatened by hybridisation with introduced species (in this case with congeneric *A. arborella*) or wild cat populations are threatened by hybridisation with feral cats.

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[14] In some situations Member States may complete additional report formats for habitats (subtypes of marine habitats) or species (e.g. distinct species of genus *Lycopodium*) not listed in the Member State's checklist and submit these optional reports together with the mandatory reporting dataset.

[15] http://www.emplantbase.org/home.html

# Field-by-field guidance for completing 'Annex B' species reports

NB: To be completed for each Annex II, IV and V species present[16]. The species Report format ('species report') comprises 13 sections. Sections 1 to 3 should be provided at the national level; the remaining sections are to be provided at the level of biogeographical or marine region.

NATIONAL LEVEL

1. General information
2. Maps
3. Information related to Annex V species (Article 14)

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions
5. Range
6. Population
7. Habitat for the species
8. Main pressures and threats
9. Conservation measures
10. Future prospects
11. Conclusions
12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species
13. Complementary information

In general, all sections should be completed for each Annex II, IV and V species present[16]. However, Section 3 'Information related to Annex V species (Article 14)' should only be provided for species listed in Annex V; Sections 9 'Conservation measures' and 12 'Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species' should be completed for Annex II species only.

Even though not all data used in the report will be collected during the reporting period, the report should give information of relevance for the period 2013–2018.

It is recommended that any free-text information provided is written in English, to facilitate the use of the information during the EU analysis and to allow a wider readership.

## NATIONAL LEVEL

The information below is to be provided at the national level.

# 1      General information

The following information should be provided for each species, as well as for species from groups (e.g. *Alosa* spp., and all species of Microchiroptera).

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[16] A checklist of species thought to be present in each Member State for which a report is expected is available at http://cdr.eionet.europa.eu/help/habitats_art17

## 1.1     Member State

Select the two-digit code for your Member State from ISO 3166. For the United Kingdom, use 'UK' instead of 'GB', in accordance with the list to be found on the Reference Portal[17].

## 1.2     Species code

Use codes (four-character sequential code) as given in the species checklist available on the Reference Portal. New codes will be allocated as necessary (for example, for species that were recently split and which are not yet included in the checklist) to ensure that all species are covered. More information on the species code list and possible amendments can be found on the Reference Portal.

## 1.3     Species scientific name

Use the scientific name as listed in the species checklist ('recommended name'; the checklist is available on the Reference Portal). In a small number of cases, the entry for scientific name includes the English phrase such as 'all others or Complex', to indicate that the taxonomic unit in question includes all of the remaining (newly recognised) species not explicitly listed in the checklist. This is for situations where due to problems of determination or due to unclear taxonomy joint report covering several newly recognized species is requested. More information is provided in Sections 'Names to be used for reporting' and 'Taxonomical changes' (in 'Species to be reported' chapter in 'Field-by-field guidance for species reports').

## 1.4     Alternative species scientific name (optional)

If the scientific name given under field 1.3 differs from that in general national usage, Member States may enter an alternative here. Similarly, if the name of a species used in the Annexes of the Habitats Directive differs from that in the complete species checklist on the Reference Portal, e.g. due to recent taxonomical changes, then the alternative (Directive) name may be entered here.

## 1.5     Common name (optional)

If Member States wish to enter the common (vernacular) name of the species (or subspecies) used nationally, they may do so here. This could be useful if the draft report will be circulated for comments to people who may not be familiar with the scientific name, or when communicating the report with the public.

## 2     Maps

This section contains information on maps to be submitted together with the tabular information as a part of the Article 17 report. Apart from the mandatory distribution map, other kinds of maps with information relevant for understanding the assessment of conservation status can also be provided.

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[17] http://cdr.eionet.europa.eu/help/habitats_art17

## 2.1    Sensitive species

Some species are particularly subject to, for example, illegal collecting, and making information on their distribution widely available may be detrimental to their conservation. Where information on distribution, if reported according to the specifications in field 2.3, is considered 'sensitive', this can be indicated by entering 'Yes' in this field.

If a species is marked as 'sensitive', the Commission and EEA will not disclose its distribution to the public (for instance, by posting this information on a publicly available database or Internet-based site).

## 2.2    Year or period

Enter the year (e.g. 2015) or period (e.g. 2013–2017) when the distribution was last determined.

Many reports will involve periods, because a mapping of the species distribution in most cases involves several years of fieldwork and may extend beyond the limits of the current reporting period (2013–2018). The year or period reported should cover the actual period during which the data were collected.

In some cases the distribution map will be elaborated based on data from the previous reporting period or using older distribution data that has been updated with the results of regular monitoring or using data from online-systems for collecting data. The year or period reported should be that which the reported distribution relates to.

More detailed information on year or period of data used for the distribution map can be provided in field 5.12 'Additional information'.

## 2.3    Distribution map

Submit a distribution map, together with the relevant metadata (projection, datum, scale). The standard is:

> **10x10 km ETRS89 grid, projection ETRS LAEA 5210**

The distribution map should provide information about the actual occurrences of the species, which should preferably be based on the results of a comprehensive national mapping or inventory of the species wherever possible (see Section '2    Maps' (in 'Definitions and methods for species reporting'). If field data on actual occurrences of the species are not sufficient, modelling and extrapolation should be used whenever feasible[18]. The distribution map will be though composed of grids with both the actual (mapped) and presumed species occurrences.

The distribution map will consist of 10x10 km ETRS89 grid cells in the ETRS LAEA 5210 projection[19]. The gridded dataset will consist only of the 10-km grid cells where the species is recorded or estimated as occurring; the use of attribute data to indicate the presence or absence of a species in a grid cell is not permitted. The period over which the distribution data were collected should be

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[18] If modelling or exceptionally expert opinion are used this should be noted in the field 2.4 Method used
[19] European Terrestrial Reference System 1989; Lambert Azimuthal Equal Area Latitude of origin 52N, Longitude of origin (central meridian) 10E.

included in the metadata, following the INSPIRE guidelines[20]. The technical specifications for distribution maps are given on the Reference Portal.

If more precise maps giving more detailed species distribution are available, these can be submitted as additional maps.

In some exceptional cases, such as widely ranging but poorly known cetaceans, it may be relevant to submit maps using a 50x50 km grid. For small Member States, such as Luxembourg, Malta and Cyprus (or for other small territories such as the Canary, Madeira or the Azores islands), a 1x1 km grid (or 5x5 km) is allowed; these will then be aggregated by ETC/BD to 10x10 km for visualisation at European level.

The grids for individual Member States are available for download from the Reference portal[21].

## 2.4    Method used

Choose one of the following categories:

   a) complete survey or a statistically robust estimate (e.g. a dedicated mapping or survey or a robust predictive model with representative sample of occurrence data, calibration and satisfactory evaluation of its predictive performance using good data on environmental conditions across entire species range);
   b) based mainly on extrapolation from a limited amount of data (e.g. other predictive models or extrapolation using less complete sample of occurrence and environmental data);
   c) based mainly on expert opinion with very limited data;
   d) insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

The 'Method used' should be reported as '(d) Insufficient or no data available' if the reported distribution map obtained as a result of comprehensive mapping, modelling or extrapolation or, exceptionally, expert interpretation covers less than 75 % of the presumed actual species distribution (i.e. the resulting map is incomplete in relation to the presumed species distribution)..

## 2.5    Additional maps (optional)

Member States may also submit additional maps, for example giving more detailed distribution data (e.g. at higher resolution) or a range map (see Section '5    Range' (in 'Definitions and methods for species reporting'). Any additional maps must be accompanied by the relevant metadata and details of the projection used. Note that this is an optional field and does not replace the need to provide a map in field 2.3.

Maps at a resolution other than 10x10 km or with grids other than the ETRS89 LAEA 5210 grid, or close to 10x10 km, may be reported here.

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[20] For the period 2013-2018 it is not obligatory or expected to provide the Article 17 spatial dataset compliant with INSPIRE requirements.
[21] http://cdr.eionet.europa.eu/help/habitats_art17

# 3 Information related to Annex V species (Article 14)

Annex V lists species whose taking in the wild and exploitation may be subject to management measures. This section aims to identify which Annex V species that are not at Favourable conservation status are taken or exploited and for which, if any, relevant conservation measures are being implemented.

## 3.1 Is the species taken in the wild/exploited?

Indicate whether the species is taken in the wild or exploited ('Yes/No').

This field indicates if a species is being taken in the wild or hunted in practice. For example, if a species is not classified as huntable by national/regional legislation (so it cannot be hunted or exploited) or if there is a permanent prohibition (for huntable species) on taking or exploiting the species, the answer should be 'No'. More information can be provided in field 3.5 'Additional information'.

The remaining fields in this section are only filled in if the response is 'Yes' and the conservation status of the species is 'unfavourable' (U1 or U2) in at least one biogeographical or marine region where the species occurs. Complete fields 3.2 to 3.4 in this case.

## 3.2 Which of the measures in Article 14 have been taken?

For species taken in the wild or exploited, indicate if any of the measures noted in Article 14 of the Directive have been taken. This information is only requested for species that are taken in wild or exploited and which are in 'unfavourable' (U1 or U1) status (as reported in field 11.5 'Overall assessment of conservation status') for one or more regions.

- a) Regulations regarding access to property;
- b) Temporary or local prohibition on the taking of specimens in the wild and exploitation;
- c) Regulation of the periods and/or methods of taking specimens;
- d) Application of hunting and fishing rules which take account of the conservation of such populations;
- e) Establishment of a system of licences for taking specimens or of quotas;
- f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens;
- g) Breeding in captivity of animal species as well as artificial propagation of plant species;
- h) Other measures; in this case please describe the measure(s).

## 3.3 Hunting bag or quantity taken in the wild for mammals and *Acipenseridae* (fish)

Provide information on the hunting bag or quantity taken in the wild. Use the same population units as in field 6.2 'Population size'(basically individuals) [22]. These data are provided per year/season over the length of the reporting period. For species with defined hunting, seasons report per season (if national counts are also done per season). Season 1 is 2012/2013 (starting in autumn 2012 and ending in spring 2013); Season 6 is 2017/2018. For species which do not have hunting seasons or

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[22] The 'reporting unit' from the Article 17 checklist available on the Reference Portal http://cdr.eionet.europa.eu/help/habitats_art17 .

where national counts are elaborated per year (e.g. sturgeons), provide counts per calendar year; year 1 is 2013 and year 6 is 2018.

The raw data should be provided for the hunting bag or quantity taken and where a precise number is known this should be filled in both the 'Min.' and 'Max.' fields. If only minimum or only maximum numbers are available these should be reported in respective fields 'Min.' and 'Max.' Where the hunting bag is unknown this should be indicated in a separate field.

In cases where bag statistics are only available for a group of species (mainly catches for sturgeons), without a reliable breakdown per species the proportion (e.g. 0–5% for each minority species; 50–90% for a majority one) for each species should be estimated and reported as 'Min.' and 'Max.' values under 3.3. The appropriate explanation should be provided in field 3.5 'Additional information' (e.g. 'Bag statistics (min-max) were obtained for a group of species ([species 1], [species 2], [species x]), but probably >90% relate to the species in this report'*).* The method used (field 3.4) should reflect the fact that actual figures reported are an approximation and should be 'b' or 'c' respectively.

### 3.4    Method used

Use this field to provide information on the method used to quantify the hunting bag or quantity taken in the wild reported in field 3.3. Choose one of following methods:

a)   complete survey or a statistically robust estimate;
b)   based mainly on extrapolation from a limited amount of data;
c)   based mainly on expert opinion with very limited data;
d)   insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

### 3.5    Additional information (optional)

This field is optional and allows Member States to report, as free text, any information which is felt relevant, such as the regulation in force for the considered species in the country.

## BIOGEOGRAPHICAL LEVEL

The following sections should be completed for each biogeographical or marine region in which the species occurs. So, for example, if a species occurs in three biogeographical regions within a Member State, three separate reports are required.

## 4 Biogeographical and marine regions

### 4.1 Biogeographical or marine region where the species occurs

Biogeographical region or marine region concerned within the Member State.

- Use the following names for biogeographical regions:

| | | |
|---|---|---|
| Alpine | Boreal | Macaronesian |
| Atlantic | Continental | Pannonian |
| Black Sea | Mediterranean | Steppic |

- Use the following names for marine regions:

| | | |
|---|---|---|
| Marine Atlantic | Marine Black Sea | Marine Mediterranean |
| Marine Macaronesian | Marine Baltic Sea | |

Maps and boundaries of biogeographical and marine regions can be found on the Reference Portal[23].

More information on marine regions and on species which should be reported in marine regions can be found in Section 'Marine species' (in 'Definitions and methods for species reporting').

### 4.2 Sources of information

For information from published sources related to Sections 5–7 (including the published sources related to distribution maps, on which the range calculation is based) and Sections 9–13, provide bibliographic references or links to an Internet site(s). Use the order: author, year, title of publication, source, volume, number of pages, web address.

All Internet addresses in the reporting fields should be given in full, including the initial 'http://' or 'https://', if applicable.

## 5 Range

This section provides information on range surface area, range trends and favourable reference range.

Range is defined as 'the outer limits of the overall area in which a habitat type or species is found at present' and it can be considered as an envelope within which areas actually occupied occur.

The range should be calculated based on the map of the actual distribution using a standardised algorithm. A standardised process is needed to ensure repeatability of the range calculation in different reporting rounds.

It is not necessary to submit a map of the range, but the area of the range and trend in area are required to assess this parameter. However, a map can be submitted in field 2.5 'Additional maps'.

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[23] http://cdr.eionet.europa.eu/help/habitats_art17

Complementary information and methods for range calculation can be found in Section '5    Range' (in 'Definitions and methods for species reporting').

## 5.1    Surface area

This is the total surface area (in km²) of the current range (outer limits of the species distribution) within the biogeographical or marine region concerned. The range in the biogeographical or marine region concerned is represented by grids (10x10 km) which occur entirely or partly within the region (i.e. grids intersected by the boundaries of the biogeographical or marine regions are counted under both regions). In general the surface area is provided in 10x10 km resolution and the minimum area should be 100 km$^2$. For localised species with a very small range it is possible to report using a finer resolution; for example, for species restricted to a single location, range is the area of a locality where species occurs, which can be sometimes several square metres. Decimals are allowed, as the range of some species can be very small.

The method for estimating the surface area of range is described in Section 'Calculation of range' (in '5 Range' chapter in 'Definitions and methods for species reporting' part) is recommended.

## 5.2    Short-term trend period

Give the dates for the beginning and end of the period for which the trend has been reported. The short-term trend should be evaluated over a period of 12 years (two reporting cycles). For the 2013–2018 reports, this means the period is 2007–2018 or a period as close as possible to this. Thus, some flexibility is permitted, so that while trends would ideally be reported for 2007–2018, data from e.g. 2004–2015 will be accepted if the best available data relate to surveys in those years.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for species reporting').

## 5.3    Short-term trend direction

Trend is a (measure of a) directional change of a parameter over time. The range trend shows changes in the overall extent of species distribution. Although rare for range, a fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend. Indicate if range trend over the period reported in field 5.2 was:

stable / increasing / decreasing / uncertain / unknown.

Report 'uncertain' if some data are available but are not enough to accurately determine direction. Use 'unknown' where there are no data available.

The short-term trend information is used in the evaluation matrix to undertake the conservation status assessment. Any large-scale deviation from this should be explained in field 5.12 'Additional information'.

If there is an apparent change in direction of the trend resulting from a change in monitoring methodology or improved knowledge about species distribution, it should not be considered a trend. This apparent change should be indicated in field 5.11 'Change and reason for change in surface area of range'.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for species reporting').

## 5.4      Short-term trend magnitude (optional)

If possible, quantify the percentage change (with range at the beginning of the reporting period as 100 %) over the period reported in field 5.2. It can be given as a precise figure (e.g. 27 %) or a banded range (e.g. 20–30 %). If it is a precise figure, give the same value under 'minimum' and 'maximum' (field 5.4(a) and (b)).

## 5.5      Short-term trend – Method used

Choose one of the following categories:

a)   complete survey or a statistically robust estimate (e.g. comparing two range maps based on accurate distribution data, or a dedicated monitoring of a species' distribution with good statistical power);

b)   based mainly on extrapolation from a limited amount of data (e.g. trends derived from species occurrence data collected for other purposes, or from data collected from only a part of the geographical range of a species, or trends based on measuring some other predictors of species distribution, such as land-cover changes or prey availability);

c)   based mainly on expert opinion with very limited data;

d)   insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

## 5.6      Long-term trend period (optional)

The long-term trend should be evaluated over a period of 24 years (four reporting cycles). For the 2013–2018 reports, this means the period is 1994–2018 or a period as close as possible to this. Indicate the period in this field. For the 2013–2018 reports this information, and the associated fields 5.7 and 5.8, is optional.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for species reporting').

For guidance in filling in fields **5.7 'Long-term trend direction', 5.8 'Long-term trend magnitude'**, and **5.9 'Long-term trend – Method used'** see fields 5.3 to 5.5 (Short-term trend).

## 5.10    Favourable reference range

Favourable reference range is the range within which all significant ecological variations of the species are included for a given biogeographical region and which is sufficiently large to allow the long-term survival of the species. This information is needed to evaluate conservation status using the matrix in Annex C. In many cases it is not possible to estimate a value for favourable reference range (option a) but it is clear that the favourable reference range is greater (or much greater) than the present-day value. Using operators (option b) 'greater than' (>) and 'much greater than' (>>) is preferable to reporting a parameter as 'unknown'.

The following information is requested:

a)   area in km²; or
b)   if operators (≈, >, >>) were used for the assessment, indicate here with the relevant symbol (≈ 'approximately equal to', > 'more than', >> 'much more than'); or
c)   if the favourable reference range is unknown, use 'x' for the reference range; and
d)   indicate the method used' to set the reference value (free-text field).

The field 'indicate method used' (d) is mandatory if (a) area is provided, but Member States are encouraged to describe the method used also when (b) operators were used.

The use of (b) operators should help to reduce the use of 'unknown' to a minimum:

•   if an operator (b) is used, then there is no need to insert a value in field 5.10(a) area in km²; operators indicate that the reference value is 'approximately equal to', 'more than' or 'much more than' the current value provided in field 5.1 'Surface area (of range)';
•   if the value is provided for area in km² (a) no operator should be used.

Where the reference value has changed in comparison to the previous reporting period, this should be explained in field 5.12 'Additional Information'.

Favourable reference values and use of operators are discussed in more detail in Section 'Favourable reference values' (in 'Definitions and methods for species reporting').

## 5.11   Change and reason for change in surface area of range

This field is used to indicate if there is any change since the previous reporting period (2007–2012) in the range surface area reported and, if so, to describe the nature of this change.

First answer the question: 'Is there a change between reporting periods?' (i.e. is area of range different from the last reporting period?) YES/NO.

If the answer is 'Yes', indicate which of the following options apply (it is possible to reply 'Yes' to more than one of the options a–c, but at least one option 'Yes' must be selected for options a–d)[24]:

a)   yes, due to genuine change;
b)   yes, due to improved knowledge/more accurate data;
c)   yes, due to the use of different methods (including taxonomical change or use of different thresholds);
d)   yes, but there is no information on the nature of change.

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[24] In some cases the actual value reported for range surface area has increased, reflecting both a genuine increase in range (positive range trend) and better knowledge or data. Both options ('genuine change' and 'improved knowledge or more accurate data') above should be selected. In other situations the actual value reported for range surface area has increased since the previous period due to better knowledge or data. Nevertheless, it may still be clear that the species range is actually declining, based on analyses of data from sites. The option 'improved knowledge or more accurate data' above should be selected. Field 5.12 'Additional information' allows a Member State to provide further details on why a range estimate has increased, even though a range decline is reported.

Finally, indicate whether any difference is mainly due to (select one option):

- genuine change;
- improved knowledge or more accurate data;
- the use of a different method.

If a Member State wishes to give further information (e.g. cases where range surface area does not change, but its borders are shifting), this can be done in field 5.12 'Additional information'.

## 5.12   Additional information (optional)

Additional information to help understand the information given on range can be reported here (for example, details on the use of old distribution data, use of data from the previous reporting period, use of different gap distance or range calculation method than that recommended).

# 6      Population

This section provides information on population size, population trends and favourable reference population.

## 6.1      Year or period

Enter the year or period during which the population size was last determined: YYYY (for year) and YYYY–YYYY (for period).

Many reports will involve periods, because species inventories in most cases involve several years of fieldwork and may extend beyond the limits of the current reporting period (2013–2018). The year or period reported should cover the actual period during which the data were collected.

In some cases the population size will be estimated based on a complete species census or inventory which took place during the previous reporting period or even before and that has been updated with the results of regular monitoring. The year or period reported should be that which the reported estimate of population size relates to.

More detailed information on year or period of data used for the population size can be provided in field 6.17 'Additional information'.

## 6.2      Population size (in reporting unit)

This field refers to the total population in the biogeographical region or marine region of the Member State concerned. For all species, except species restricted to a single country, the population size must be reported using the reporting unit noted in the Article 17 species checklist available on the Reference Portal[25]. The reporting unit specified in the checklist is individuals or number of occupied 1x1 km grids or other agreed unit for a few arthropods and non-vascular plants. The summary of species groups for which either individuals or 1x1 km grids or alternative units are used is provided in Table 20:   Population units for each species group  in Section '6 Population' (in 'Definitions and methods for species reporting' part).

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[25] http://cdr.eionet.europa.eu/help/habitats_art17

This means that, while, for the assessment of conservation status at national level, Member States should use the most suitable unit for their monitoring of individual species, they should, if necessary, convert this unit into a 'reporting' unit to be reported in field 6.2 and to be used later for EU biogeographical assessments. If a Member State wishes to report population size using a different unit this can be reported in field 6.4, but this must be in addition to the reporting unit specified in the checklist and not as an alternative.

For species occurring only in one Member State, a reporting unit harmonised across all the Member States is not required, so the Member State can decide which reporting unit to use from the list of population size units[26] on the Reference Portal. In this case the population size should be reported under field 6.2 'Population size (in reporting unit)' and not under field 6.4 'Additional population size'. If a species occurs in several biogeographical regions the same unit should be used across all regions. Field 6.4 'Additional population size' can be used if needed, for example to provide population size in more precise units if this is available from only one region.

Further information on the use of reporting units is provided in Section '6    Population'                (in 'Definitions and methods for species reporting').

If a different reporting unit is used for the assessment, the Member State should ensure that it can capture trends and is biologically suitable for expressing the favourable reference population.

The population size can be reported as an interval (for example, minimum and maximum value from repeated census) and/or as a best available single value. The interval size estimate (fields 6.2(b) and (c) should be given as minimum and maximum numbers. Minimum and maximum should always be entered together, i.e. not as only the minimum /only the maximum.

There is also a 'best single value' field (6.2(d)) where a single value (a precise value or an estimate) can be entered. In a situation where only a minimum (or maximum) value of the population size is known (e.g. through expert opinion) this should be entered in the '(d) Best single value' field and NOT the '(b) Minimum' or '(c) Maximum' fields. The source of this estimate can then be clarified in field 6.3 (see below). The numbers reported should not be rounded.

Both interval and a best single value can be provided together for example where the interval coming from the survey data is quite large (e.g. minimum and maximum values) and an expert evaluation of the actual population size is available. An expert evaluation of survey data can result in a more accurate single value to be used in the EU assessments. In other situations, the point estimate (best single value) is available and Member State wishes to provide the confidence limits. The confidence interval can be entered in the minimum and maximum fields. If both, interval and best single values are provided this should be explained in field 6.17 'Additional information'.

If the population size reported in field 6.2 was estimated by converting the information reported in field 6.4, information on the conversion should be given in field 6.17 'Additional information'.

For wide-ranging highly mobile marine species (e.g. whales, dolphins, turtles), use population estimates from i) regional marine Agreements such as ACCOBAMS and ASCOBANS; ii) Regional Sea

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[26] The list of population size units to be used in field 6.2 'Population size (in reporting unit)' for species restricted to a single country or in field 6.4 'Additional population size' is available on the Reference Portal http://cdr.eionet.europa.eu/help/habitats_art17 .

Conventions (OSPAR, Helsinki, Barcelona, Bucharest); or any other estimates made in cooperation between Member States sharing the same population (e.g. SCANS[27]) if available. Each Member State should report the results for their territory (i.e. a respective proportion of the regional population). Complementary information about assessment of trasnboundary species populations can be found in Section 'Transboundary populations' (in 'Definitions and methods for species reporting').

## 6.3    Type of estimate

The type of estimate for the reported interval in fields 6.2(b) and (c) or the best single value in field 6.2(d) should be outlined here. The options for reporting this are: best estimate, multi-year mean, 95 % confidence interval, or minimum:

- best estimate – the best available single figure (including where only the maximum value of the population size is available) or interval, derived from e.g. a population census, a compilation of figures from localities, modelled population size based on population densities and distribution data or expert opinion, but for which 95 % confidence interval could not be calculated. Whether a best estimate comes from the monitoring data, modelling or an expert opinion should be entered in field 6.6;
- multi-year mean – average value or interval where population size is monitored several times during the period provided in field 6.1;
- 95 % confidence interval – estimates derived from sample surveys or a model in which 95 % confidence limits could be calculated;
- minimum – where insufficient data exist to provide even a loosely bounded estimate, but where a population size is known to be above a certain value, or where the reported interval estimates come from a sample survey or monitoring project which probably underestimates the real population size.

If both interval (field 6.2(b) 'Minimum' and field 6.2(c) 'Maximum') and a single value (field 6.2(d) 'Best single value') are provided, field 6.5 'Type of estimate' should correspond to the more accurate estimate. This should be noted in field 6.17 'Additional information'.

## 6.4    Additional population size (optional)

This field allows the Member State to report population size using units other than the unit given in the species checklist. The guidance on reporting the numbers is the same as for field 6.2. If this unit was used for the assessment of the parameter Population, the Member State should ensure that it can capture trends and is biologically suitable for expressing the favourable reference population.

The list of population size units to be used in field 6.4 'Additional population size' (or in field 6.2 'Population size (in reporting unit)' for species restricted to a single country) is available on the Reference Portal.

If the population size reported in field 6.2 was estimated by converting the information reported in field 6.4, give information on the conversion in field 6.17 'Additional information'. Field 6.4 is not a substitute for field 6.2.

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[27] Hammond et al., 2013

### 6.5     Type of estimate (optional)

See instructions for field 6.3.

### 6.6     Population size – Method used

This field is used to describe the methodology used for calculating population size in field 6.2 or the additional population size reported in field 6.4 (in a situation where the population size in field 6.2 is converted from the value in field 6.4). Choose one of the following categories:

a)   complete survey or a statistically robust estimate (e.g. repeated direct counts of entire population; repeated counting based on indices of species presence; from previous complete inventory updated with robust monitoring data on trends);

b)   based mainly on extrapolation from a limited amount of data (e.g. based on mark-recapture methods; using models based on abundance and distribution data; using extrapolation from sample surveys of parts of the population; or from previous inventory updated with good trend data);

c)   based mainly on expert opinion with very limited data;

d)   insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

If both interval (field 6.2(b) 'Minimum' and field 6.2(c) 'Maximum') and a single value (field 6.2(d) 'Best single value') are provided, field 6.6 'Method used' should correspond to the more accurate of both estimates. This should be noted in field 6.17 'Additional information'.

### 6.7     Short-term trend period

Give the dates of the beginning and end of the period for which the trend has been reported. The short-term trend should be evaluated over a period of 12 years (two reporting cycles). For the 2013–2018 reports, this means the period is 2007–2018 or a period as close as possible to this. Thus, some flexibility is permitted, so that while trends would ideally be reported for 2007–2018, data from e.g. 2004–2015 will be accepted if the best available data relate to surveys in those years.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for species reporting').

### 6.8     Short-term trend direction

Trend is a (measure of a) directional change of a parameter over time. The trend in population size shows changes in the overall numbers of individuals in the biogeographical population of a species. Fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend.

Indicate if the population trend over the reported period in field 6.7 was:

stable / increasing / decreasing / uncertain / unknown.

Report 'uncertain' if some data are available but they are not enough to accurately determine direction. Use 'unknown' where there are no data available.

The short-term trend information is used in the evaluation matrix to assess the conservation status. Any large-scale deviation from this should be explained in field 6.17 'Additional information'.

If there is an apparent change in direction of the trend resulting from a change in monitoring methodology or improved knowledge about the size of a species population, it should **not** be considered a trend. This apparent change should be indicated in field 6.16 ´Change and reason for change in population size'.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for species reporting').

## 6.9    Short-term trend magnitude (optional)

If possible, quantify the percentage change (with range at the beginning of the reporting period as 100 %) over the period reported in field 6.7. It can be given as a precise figure (e.g. 27 %) or a banded range (e.g. 20–30 %). If a precise figure is available give the same value under 'minimum' and 'maximum' (fields 6.9(a) and (b)). Where a statistically robust method has been used (see field 6.10) please provide the confidence interval (e.g. 95 %) in field 6.9(c) with the upper and lower confidence interval limits in fields 6.9(a) and 6.9(b) respectively.

## 6.10   Short-term trend – Method used

Choose one of the following categories:

a)   complete survey or a statistically robust estimate (e.g. a dedicated monitoring of a species' populations with good statistical power);
b)   based mainly on extrapolation from a limited amount of data (e.g. trends derived from data collected from a limited number of sample sites; trends extrapolated from data collected for other purposes; trends extrapolated from some other indirect measurements, such as availability of a habitat);
c)   based mainly on expert opinion with very limited data;
d)   insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

## 6.11   Long-term trend period (optional)

The long-term trend should be evaluated over a period of 24 years (four reporting cycles). For the 2013–2018 reports, this means the period is 1994–2018 or a period as close as possible to this. Indicate the period in this field. For the 2013–2018 reports, this information, together with fields 6.12 to 6.14, is optional.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for species reporting').

For guidance in filling in field **6.12 'Long-term trend direction'**, field **6.13 'Long-term trend magnitude'** and field **6.14 'Long-term trend – Method used'**, see fields 6.8 to 6.10 (short-term trends).

## 6.15   Favourable reference population

Favourable reference population is the population in a given biogeographical region considered the minimum necessary to ensure the long-term viability of the species. This information is needed to undertake the evaluation of conservation status using the evaluation matrix (Annex C). Favourable reference population should be given in the same units as that used for 'Population' (field 6.2 or 6.4). In many cases it is not possible to estimate a value for favourable reference population (option a) but it is clear that the favourable reference population is greater (or much greater or, in exceptional situations, lower) than the present-day value. Using operators (option b) 'greater than' (>), 'much greater than' (>>) or 'lower than'(<) is preferable to reporting a parameter as 'unknown'.

The following information is requested::

a)   the population size; or

b)   if operators (≈, >, >>, <) were used for the assessment, indicate here with the relevant symbol (≈ 'approximately equal to', > 'more than', >> 'much more than', < 'less than'); or

c)   if the favourable reference population is unknown, use 'x' for the reference population; and

d)   indicate the method used to set the reference value (free-text field).

The field 'indicate method used' (d) is mandatory if (a) population size is provided, but Member States are encouraged to describe the method used also when (b) operators were used.

If an operator is used to estimate a favourable reference population, it should be compared with the minimum population size estimate

The operator 'less than' (<) can be used only in limited cases; where a species might have developed - due to exceptional circumstances such as supplementary feeding - an exceptionally high population level far beyond that considered as favourable in normal circumstances and which is unlikely to be sustainable or which may even be detrimental to other species or habitats. If used, an explanation must be provided in field 6.17 'Additional information'.

The use of (b) operators should help to reduce the use of 'unknown' to a minimum:

- if an operator (b) is used, then there is no need to insert a value in field 6.15(a) 'Population size'; operators indicate that the reference value is 'approximately equal to', 'more than', 'much more than' or 'less than'the current value provided in fields 6.2 or 6.4 respectively;

- if the value is provided for population size (a) no operator should be used.

Where the reference value has changed in comparison to the previous reporting period, the reason for this should be explained in field 6.17 'Additional information'.

Favourable reference values and use of operators are discussed in more detail in Section 'Favourable reference values' (in 'Definitions and methods for species reporting').

## 6.16   Change and reason for change in population size

This field is used to indicate if there is any change since the previous reporting period (2007–2012) in the population size reported and, if so, to describe the nature of this change.

First answer the question: 'Is there a change between reporting periods (i.e. is population size different from the last reporting period)?' YES/NO.

If the answer is 'Yes', indicate which of the following options apply (it is possible to reply 'Yes' to more than one of the options a–c, but at least one option 'Yes' must be selected for options a–d)[28]:

    a) yes, due to genuine change;

    b) yes, due to improved knowledge or more accurate data;

    c) yes, due to the use of a different method (including taxonomical change or use of different thresholds);

    d) yes, but there is no information on the nature of the change.

Finally, indicate whether any difference is mainly due to (select one option):

- genuine change;
- improved knowledge or more accurate data;
- the use of a different method.

If a Member State wishes to give further information this can be done in field 6.17 'Additional information'.

### 6.17   Additional information (optional)

Additional information to help understand the information given on population can be reported here as free text (for example, any information on connectivity, reproduction, mortality, age structure, and genetic structure and if they deviate from normal, and how they were considered in the assessment of the status of the population).

# 7      Habitat for the species

This section provides information on sufficiency of habitat for the species and habitat trends.

Habitat for the species refers to the resources necessary at all stages in the life cycle of the species, for example both wintering and summer roosts, plus foraging areas, for bats. The meaning of 'habitat' in 'habitat for the species' is different to 'habitat types' defined under Annex I and 'habitat' for habitat classifications such as EUNIS, which are more correctly biotopes. Habitat quality includes elements like the availability of prey but also fragmentation where appropriate for the species; further guidance is given in Section '7      Habitat for the species' (in 'Definitions and methods for species reporting').

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[28] In some cases the actual value reported for population size has increased, reflecting both a genuine increase in size (positive population trend) and better knowledge or data. Both options ('genuine change' and 'improved knowledge or more accurate data') above should be selected. In other situations the actual value reported for population size has increased since the previous period due to better knowledge or data. Nevertheless, it may still be clear that the species population is actually declining, based on analyses of data from sites. The option 'improved knowledge or more accurate data' above should be selected. Field 6.17 'Additional information' allows a Member State to provide further details on why a population size estimate has increased, even though a population decline is reported.

## 7.1    Sufficiency of area and quality of occupied habitat

   a)  Are area and quality of the occupied habitat sufficient (for long-term survival)? YES/NO/Unknown.
   b)  If 'No', is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)? YES/NO/Unknown.

The Report format asks for information on the sufficiency of habitat area and quality. These questions are aimed at identifying species for which habitat area and/or habitat quality is a limiting factor for not achieving Favourable conservation status.

While area and quality are treated separately at national level, it is necessary to combine these two factors when reporting at a biogeographical level, which is why they are addressed together in field 7.1. Any further information, including the separate assessment of sufficiency of habitat area and quality, can be provided in field 7.9 'Additional information'.

## 7.2    Sufficiency of area and quality of occupied habitat – Method used

Choose one of the following categories:

   a)  complete survey or a statistically robust estimate (e.g. complete mapping or inventory of habitat for the species including assessment of habitat quality, or inventory of a species' habitats combined with robust extrapolation of habitat quality, or previous complete inventory updated with information from robust monitoring);
   b)  based mainly on extrapolation from a limited amount of data (e.g. using modelling or extrapolation from detailed surveys of parts of the species' distribution);
   c)  based mainly on expert opinion with very limited data;
   d)  insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

## 7.3    Short-term trend period

Give the dates of the beginning and end of the period for which the trend has been reported. The short-term trend should be evaluated over a period of 12 years (two reporting cycles). For the 2013–2018 reports, this means the period is 2007–2018 or a period as close as possible to this. Thus, some flexibility is permitted, so that while trends would ideally be reported for 2007–2018, data from e.g. 2004–2015 will be accepted if the best available data relate to surveys in those years.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for species reporting').

## 7.4    Short-term trend direction

Trend is a (measure of a) directional change of a parameter over time. The trend in habitat for the species describes changes in overall area and quality of the occupied habitat. Fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend.

Indicate if the trend in habitat for the species over the reported period in field 7.3 was:

stable / increasing / decreasing / uncertain / unknown.

The assessment of habitat for the species considers both quality and area. Trend direction should be assessed by using the combinations in Table 4 below (area/quality).

**Table 4:        Assessing trend direction of habitat for the species**

| Reported trend | Relation to area/quality status |
|---|---|
| stable | **Both trends are stable**<br><br>Area 'stable' /quality 'stable' |
| increasing | **One or both trends are increasing or stable**<br>Area 'increasing' / quality 'increasing'<br>Area 'increasing' / quality 'stable'<br>Area 'stable' / quality 'increasing' |
| decreasing | **One or both trends are decreasing**<br><br>Area 'decreasing' / quality 'decreasing'<br>Area 'decreasing' / quality 'stable'<br>Area 'decreasing' / quality 'unknown'<br>Area 'stable' / quality 'decreasing'<br>Area 'unknown' / quality 'decreasing' |
| unknown | **At least one trend is unknown and non-decreasing or there is no dominating trend**<br><br>Area 'unknown' / quality 'unknown'<br>Area 'unknown' / quality 'increasing'<br>Area 'unknown' / quality 'stable'<br>Area 'increasing' / quality 'unknown'<br>Area 'stable' / quality 'unknown'<br>Area 'increasing' / habitat 'decreasing' (if better data are not available)<br>Area 'decreasing' / habitat 'increasing' (if better data are not available) |

Note: 'unknown' in the table above includes both 'unknown' and 'uncertain'.

The short-term trend information should be used in the evaluation matrix to undertake the conservation status assessment. Any large-scale deviation from this should be explained in field 7.9 'Additional information'.

If there is an apparent change in the direction of the trend resulting from a change in monitoring methodology or improved knowledge about area or quality of habitat for species, it should not be considered a trend.

### 7.5    Short-term trend – Method used

Choose one of the following categories:

a)  complete survey or a statistically robust estimate (e.g. dedicated monitoring of both habitat area and quality with good statistical power);

b)  based mainly on extrapolation from a limited amount of data (e.g. trends derived from data collected from a limited number of sample sites; trends extrapolated from data collected for other purposes; trends extrapolated from some other indirect measurements);

c)  based mainly on expert opinion with very limited data;

d)  insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose ate the category for the most important source of data.

### 7.6    Long-term trend period (optional)

The long-term trend should be evaluated over a period of 24 years (four reporting cycles). For the 2013–2018 reports, this means the period is 1994–2018 or a period as close as possible to this. Indicate the period in this field. For the 2013–2018 reports this information is optional. Fields 7.7 and 7.8 are optional as well.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for species reporting').

For guidance in filling in field **7.7 'Long-term trend direction'** and field **7.8 'Long-term trend method used'**, see fields 7.4 and 7.5 (short-term trends).

### 7.9    Additional information (optional)

Additional information to help understand the information given on habitat for the species can be reported here (for example information on fragmentation).

# 8      Main pressures and threats

This section provides information on main pressures and threats. A list of pressures and/or threats should be provided and for each pressure/threat a ranking of its impact on the conservation status of species is also required.

Pressures have acted within the current reporting period and they have an impact on the long-term viability of the species or its habitat(s); threats are future/foreseeable impacts (within the next two reporting periods) that are likely to affect the long-term viability of the species and/or its habitat(s) (see Table 5). The threats should not cover theoretical threats, but rather those issues judged to be reasonably likely. This may include continuation of pressures.

**Table 5:        Definition of pressure and threat (in the context of Article 17 reporting)**

|  | Period of action/definition | Time-frame |
|---|---|---|
| Pressure | Acting now and/or during (any part of or all of) the current reporting period. | Current six-year reporting period. |
| Threat | Factors expected to act in the future after the current reporting period. | Future two reporting periods, i.e. within 12 years following the end of the current reporting period. |

## 8.1    Characterisation of pressures/threats

Provide a list of pressures and/or threats and a ranking of their impact: list a maximum of 10 pressures and a maximum of 10 threats . Only pressures/threats of high ('H') and of medium ('M') importance, as defined in Table 6 below, should be reported.

For each species:

   a) select from the list of pressures/threats a maximum of 10 entries for each of pressures and threats using the code at the second level of the hierarchical list. The list of pressures and threats is available on the Reference Portal[29];

   b) for each pressure and threat, indicate its ranking, i.e. 'H' for High, 'M' for Medium, under both 'Pressure' and 'Threat'. For example if a factor selected from the list represents both a pressure and a threat, 'H' or 'M' should be reported under both headings as appropriate. If it represents a pressure but not a threat, 'H' or 'M' should be reported under 'Pressure' and 'Threat' left blank. A maximum of five high-level pressures and five high-level threats should be noted. This will make it possible to identify the most important factors at a European scale.

**Table 6:        Definition of High and Medium ranked pressures/threats**

| Code | Meaning | Comment |
|---|---|---|
| H | High importance/impact | Important direct or immediate influence and/or acting over large areas (a pressure is the major cause or one of the major causes, if acting in combination with other pressures, of significant decline of population size, range or habitat area or deterioration of habitat quality at the biogeographical scale; or pressure acting over large areas preventing the species population or habitat from being restored at Favourable conservation status at the biogeographical scale). |
| M | Medium importance/impact | Medium direct or immediate influence, mainly indirect influence and/or acting over moderate part of the area/acting only regionally (other pressure not directly or immediately causing  significant declines). |

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[29] http://cdr.eionet.europa.eu/help/habitats_art17

The impact of the pressure should reflect the influence of a pressure or threat on conservation status of the species. Only pressures that have an important direct or immediate influence on one or several parameters of conservation status at the biogeographical scale (causing significant decline or deterioration or preventing species from reaching favourable status, see Table 6 above) should be ranked as 'high'. However, it is likely that species with Favourable conservation status or where only very localised or slight declines were recorded will not have high importance pressures (unless the pressures are counteracted with measures). The maximum number of 'high' ranked pressures and/or threats that can be reported is five, even if more could be considered. This, together with any other information related to pressures and threats, can be noted in field 8.3 'Additional information'

Table 7 provides an example of pressures and threats characterisation using a maximum of five pressures of High importance.

**Table 7:        An example of pressures and threats characterisation.**

| Characterisation of pressures/threats | | |
|---|---|---|
| **a) Pressure/threat**<br><br>*List a maximum of 10 pressures and a maximum of 10 threats using the code list provided on the Reference Portal* | **b)       Ranking of pressure/threat**<br><br>*Indicate whether the pressure/threat is of:*<br>*H = high importance (maximum 5 entries for pressures and 5 entries for threats)*<br><br>*M = medium importance* | |
| | **Pressure** | **Threat** |
| A14 Application of synthetic fertilisers | H | H |
| A22 Active abstractions from groundwater, surface water or mixed water for agriculture | M | - |
| B05 Clear-cutting, removal of all trees | H | M |
| D01 Roads, paths railroads and related infrastructure (e.g. bridges, viaducts, tunnels) | H | H |
| D05 Electricity and communication infrastructure (e.g. phone lines, masts and antennas) | H | M |
| E01 Conversion from other land uses to housing and settlement areas (excl. drainage) | M | H |
| I02 Problematic native plants and animals | H | H |
| K04 Natural processes of eutrophication or acidification | - | M |

Note that the example is only illustrative since it uses draft codes that may not be retained as such in the final list of pressures and threats.

Keeping in mind that some of the species move over quite large areas (or are migratory), status and trends reported in a particular Member State may reflect the effects of pressures and threats from outside the Member State (e.g. the impact of hunting in a neighbouring Member State on marginal species population) or even from beyond the EU. Likewise, species can be affected by pressures and

threats originating from outside the Member State (e.g. pollution or nitrogen deposition). The list of pressures and threats has codes to address the transboundary effect of pressures and threats: 'XO threats and pressures from outside the Member State' and 'XE threats and pressures from outside the EU territory'.

More detailed guidance on reporting pressures and threats is provided in Section '8      Main pressures and threats' (in 'Definitions and methods for species reporting') and in the notes in the list of pressures and threats available from the Reference Portal.

## 8.2    Sources of information (optional)

Provide sources of information relevant to Section 8 (optional) with URL, metadata, or supporting evidence for the highest ranking pressures only (i.e. High importance).

## 8.3    Additional information (optional)

If a Member State wishes to give additional information on the nature of a certain pressure/threat, this can be provided in this field.

# 9      Conservation measures

This section concerns information on conservation measures, including management plans, taken to maintain or to restore the species at Favourable conservation status. Conservation measures are only mandatory for Annex II species but whenever available Member States are encouraged to provide this information also for Annex IV species.

The section contains a list of measures and their evaluation. The evaluation is an overall assessment and not a measure-by-measure evaluation.

## 9.1    Status of measures

Select whether measures are needed or not. If the answer is 'Yes, measures are needed', then proceed to answer the following three questions:

a)   measures identified but none yet taken? (YES/NO); or
b)   measures identified and taken? (YES/NO); or
c)   measures needed but cannot be identified? (YES/NO).

Measures may be implemented at different points in time. Choose option (a) if the majority of the most important measures identified have not yet been taken; Choose option (b) if the majority of the most important measures have already been or are being implemented.

## 9.2     Main purpose of the measures taken

Indicate the main purpose of the measures taken. This part should only be filled in if the conservation measures have been taken (field 9.1(b) 'Measures identified and taken' is marked 'Yes'). Even if several purposes can be identified, please indicate only the main one in terms of implementing the measures.

a)   maintain the current range, population and/or habitat for the species;
b)   expand the current range of the species (related to 'Range');
c)   increase the population size and/or improve population dynamics (improve reproduction success, reduce mortality, improve age/sex structure) (related to 'Population');
d)   restore the habitat of the species (related to 'Habitat for the species').

## 9.3     Location of the measures taken

If the reply to field 9.1(b) 'Measures identified and taken' is 'Yes', indicate where the measures are mostly being implemented:

a)   only inside Natura 2000;
b)   both inside and outside Natura 2000;
c)   only outside Natura 2000.

This field tries to capture where the main focus of the conservation action is taking place. Therefore, choose option (a) if all, or the vast majority, of the conservation measures are restricted to Natura 2000, option (b) if there is a proportional investment in the implementation of measures inside and outside Natura 2000, and option (c) if all, or the vast majority, of the measures are taken outside Natura 2000.

## 9.4     Response to the measures

Provide an estimate of when the measures taken will start, or are expected to start, to neutralise the pressure and to produce positive effects (with regard to the main purpose of the measures indicated in field 9.2). Choose one option from:

a)   short-term results (within the current reporting period, 2013–2018);
b)   medium-term results (within the next two reporting periods, 2019–2030);
c)   long-term results (after 2030).

## 9.5     List of main conservation measures

List a maximum of 10 conservation measures using the code provided on the Reference Portal[30].

More detailed guidance on the use of conservation measures is provided in Section '9   Conservation measures' (in 'Definitions and methods for species reporting') and in the notes in the list of conservation measures available from the Reference Portal.

## 9.6      Additional information (optional)

Additional information to help understand the information given on conservation measures can be reported here.

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[30] http://cdr.eionet.europa.eu/help/habitats_art17

# 10    Future prospects

This section provides information on the future prospects of three parameters (Range, Population and Habitat of the species). Future prospects indicate the direction of expected change in conservation status in the near future based on a consideration of the current status, reported pressures and threats, and measures being taken for each of the other three parameters (Range, Population and Habitat of the species).More information si provided in Section '10    Future prospects' (in 'Definitions and methods for species reporting').

## 10.1    Future prospects of parameters

For each parameter (Range, Population and Habitat for the species) indicate if the prospects are 'good', 'poor', 'bad' or 'unknown'. Future prospects of each of the three parameters should principally reflect the future trends which are the result of the balance between threats and conservation measures. The future prospects should be assessed in relation to the current conservation status. For example, the impact of future improvement on the assessment of future prospects of a parameter will be different if the current status is 'favourable' or 'unfavourable-bad'.

An evaluation method is provided in Section 'Assessing future prospects' (in '10 Future prospects' chapter in 'Definitions and methods for species reporting' part).

## 10.2    Additional information (optional)

Additional information to help understand how future prospects were assessed can be reported here.

# 11    Conclusions

This section includes the assessment of conservation status at the end of the reporting period in the biogeographical region or marine region concerned. It is derived from the matrix in Annex C.

Give the result of the assessment for each parameter of conservation status using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

The conservation status of parameters is assessed using the criteria in the evaluation matrix (Annex C of the Report format). Sections 11.1 to 11.5 provide an overview of the assessment criteria for each of the parameters of conservation status. In addition, several complementary assumptions and criteria are outlined in these guidelines which aim at harmonising and facilitating the assessment of conservation status. For each parameter these complementary assumptions and criteria are summarised under the heading 'Complementary remarks'.

## 11.1   Range

Give the result of the assessment of the status for Range using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

| Conservation status | Assessment criteria |
|---|---|
| Favourable (FV) | According to the evaluation matrix (Annex C) the status of Range is 'favourable' if:<br><br>• the trend is stable (loss and expansion in balance) or increasing; and<br>• range surface area (field 5.1) is not smaller than the favourable reference range (field 5.10).<br><br>Complementary remarks:<br><br>1. The trend over the short-term trend period (field 5.2) should be used for the status assessment.<br><br>2. The status of Range should not be favourable if any large-scale changes resulting from human pressures but not impacting the range surface area (e.g. shifts of range boundaries) were recorded. |
| Unfavourable-inadequate (U1) | According to the evaluation matrix (Annex C) the status of Range is 'unfavourable-inadequate' if:<br><br>• any other combination (other combination of criteria than for 'favourable' or 'unfavourable-bad')<br><br>Complementary remarks:<br><br>1. The evaluation matrix does not include explicit criteria for 'unfavourable-inadequate' status of Range. However, taking into account the criteria for 'favourable' and 'unfavourable-bad', the status of Range should be considered as 'unfavourable-inadequate' if:<br><br>• a decline equivalent to a loss of less than 1 % per year; or<br>• range surface area (field 5.1) is less than 10 % below favourable reference range (field 5.10).<br><br>2. The trend over the short-term trend period (field 5.2) should be used for the status assessment. |
| Unfavourable-bad (U2) | According to the evaluation matrix (Annex C) the status of Range is 'unfavourable-bad' if:<br><br>• a large decline equivalent to a loss of more than 1 % per year within the period specified by the Member State; or<br>• range surface area (field 5.1) is more than 10 % below favourable reference range (field 5.10).<br><br>Complementary remarks:<br><br>The trend over the short-term trend period (field 5.2) should be used for the status assessment. |
| Unknown (XX) | According to the evaluation matrix (Annex C) the status of Range is 'unknown' if:<br><br>• there is no or insufficient reliable information available. |

## 11.2  Population

Give the result of the assessment of the status of Population using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

| Conservation status | Assessment criteria |
|---|---|
| Favourable (FV) | According to the evaluation matrix (Annex C) the status of Population is 'favourable' if:<br><br>• population size (fields 6.2 or 6.4) is not smaller than the favourable reference population (field 6.15); and<br>• the age structure, mortality and reproduction are not deviating from normal.<br><br>Complementary remarks:<br><br>1. Age structure, mortality and reproduction not deviating from normal are those of a natural, self-sustaining population (for example, with no recorded or anticipated problems with recruitment).<br><br>2. Although the evaluation matrix does not explicitly mention population trend as a criterion for 'favourable' status (unlike for two other parameters), situations where the population trend is negative and the population status is still 'favourable' will be rare. A population decline often reflects a negative impact of pressures on mortality and/or reproduction. Furthermore, Article 1(i) of the Directive requires that population dynamics data of the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats. Therefore, for a species to be in a 'favourable status', the population trend should not be declining unless the actual population size is safely above the favourable reference population size. As for the remaining parameters, the trend over the short-term trend period (field 6.7) should be used for the status assessment.<br><br>3. Although the evaluation matrix does not explicitly mention the genetic variability of the species, the requirement for long-term maintenance of a species (Article 1 (i)) suggests that the genetic variability should be that of a self-sustaining population. |
| Unfavourable-inadequate (U1) | According to the evaluation matrix (Annex C) the status of Population is 'unfavourable-inadequate' if:<br><br>• any other combination (other combination of criteria than for 'favourable' or 'unfavourable-bad').<br><br>Complementary remarks:<br><br>1. The evaluation matrix does not include explicit criteria for 'unfavourable-inadequate' status of Population. However, taking into account criteria for 'favourable' and 'unfavourable-bad', the status of Population should be considered 'unfavourable-inadequate' if:<br><br>• a moderate decline equivalent to a loss of less than 1 % per year and equal to or below 'favourable reference population'; or<br>• a large decline equivalent to a loss of more than 1 % per year and above or equal to 'favourable reference population'; or<br>• population size (fields 6.2 or 6.4) is less than 25 % below favourable reference population (field 6.15); or<br>• age structure somehow different from a natural, self-sustaining population.<br><br>2. The trend over the short-term trend period (field 6.7) should be used for the status |

| | assessment. |
|---|---|
| Unfavourable-bad (U2) | According to the evaluation matrix (Annex C) the status of Population is 'unfavourable-bad' if:<br><br>• a large decline equivalent to a loss of more than 1 % per year within the period specified by the Member State and below 'favourable reference population'; or<br>• population size (fields 6.2 or 6.4) is more than 25 % below favourable reference population (field 6.15); or<br>• reproduction, mortality and age structure are markedly different from normal.<br><br>Complementary remarks:<br><br>1. Reproduction, mortality and age structure markedly different from normal should be interpreted as markedly different from a natural, self-sustaining population (for example, a higher than normal proportion of old individuals or a lack of reproducing adults or a lack of offspring).<br><br>2. The trend over the short-term trend period (field 6.7) should be used for the status assessment. |
| Unknown (XX) | According to the evaluation matrix (Annex C) the status of Population is 'unknown' if:<br><br>• there is no or insufficient reliable information available. |

## 11.3   Habitat for the species

Give the result of the assessment of the status of Habitat for the species using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

| Conservation status | Assessment criteria |
|---|---|
| Favourable (FV) | According to the evaluation matrix (Annex C) the status of Habitat for the species is 'favourable' if:<br><br>• area of the habitat is sufficiently large (field 7.1); and<br>• area of the habitat is stable or increasing; and<br>• habitat quality is suitable for the long-term survival of the species (field 7.1).<br><br>Complementary remarks:<br><br>1. The area of habitat can be considered 'sufficiently large' and habitat quality 'suitable' if any of the questions under field 7.1 'Sufficiency of area and quality of occupied habitat' are answered 'Yes' ('Are area and quality of the occupied habitat sufficient for long-term survival?' And 'If no, is there a sufficiently large area of unoccupied habitat of suitable quality for long-term survival?'). If the answer to any of these questions is 'Yes', it is likely that the habitat availability or quality is not a limiting factor for the long-term viability of the species.<br><br>2. The trend in habitat for the species used for the assessment of the status (field 7.4) has both a qualitative and quantitative component, so the status can only be 'favourable' if there is neither decline in habitat area nor deterioration of habitat quality.<br><br>3. The trend over the short-term trend period (field 7.3) should be used for the status assessments. |

| | 4. Although the evaluation matrix does not mention fragmentation of habitat, this should not be having a negative impact on the functioning of population. As such, fragmentation should be considered when evaluating the quality of the habitat. |
|---|---|
| Unfavourable-inadequate (U1) | According to the evaluation matrix (Annex C) the status of Habitat for the species is 'unfavourable-inadequate' if:<br><br>• any other combination (other combination of criteria than for 'favourable' or 'unfavourable-bad').<br><br>Complementary remarks:<br><br>The evaluation matrix does not include explicit criteria for 'unfavourable-inadequate' status of Habitat for the species. However, taking into account criteria for 'favourable' and 'unfavourable-bad', the status of Habitat for the species should be considered 'unfavourable-inadequate' if:<br><br>• area of habitat is not sufficiently large in some way to ensure the long-term survival of the species; or<br>• habitat quality is not adequate, in some way not allowing long-term survival of the species; or<br>• habitat area is declining or habitat quality is deteriorating. |
| Unfavourable-bad (U2) | The status of Habitat for the species is 'unfavourable-bad' if:<br><br>• the area of habitat is clearly not sufficiently large to ensure the long-term survival of the species; or<br>• habitat quality is bad, clearly not allowing long-term survival of the species. |
| Unknown (XX) | According to the evaluation matrix (Annex C) the status of Habitat for the species is 'unknown' if:<br><br>• there is no or insufficient reliable information available. |

## 11.4  Future prospects

Give the result of the assessment of the status of Future prospects using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

| Conservation status | Assessment criteria |
|---|---|
| Favourable (FV) | According to the evaluation matrix (Annex C) the status of Future prospects is 'favourable' if:<br><br>• main pressures and threats to the species are not significant and species will remain viable in the long-term.<br><br>Complementary remarks:<br><br>The Future prospects should be assessed as 'favourable' if all parameters have good prospects (field 10.1), or if prospects of one parameter are 'unknown' while the other parameters have good prospects. The matrix for combining the prospects of three parameters to give overall status of Future prospects is provided in Table 26:  Combining the evaluation of the three parameters to give Future prospects for a species in Section '10 Future prospects' (in 'Definitions and methods for species reporting' part). |

| Unfavourable-inadequate (U1) | According to the evaluation matrix (Annex C) the status of Future prospects is 'unfavourable-inadequate' if: <br><br> • any other combination (other combination of criteria than for 'favourable' or 'unfavourable-bad'). <br><br> Complementary remarks: <br><br> The evaluation matrix does not include explicit criteria for 'unfavourable-inadequate' status of Future prospects. However, taking into account the method for assessing the Future prospects proposed in these guidelines, the status should be considered 'unfavourable-inadequate' if the prospects of one or more parameters (field 10.1) are poor, none has bad prospects and there is at most one parameter with 'unknown' prospects. |
|---|---|
| Unfavourable-bad (U2) | According to the evaluation matrix (Annex C) the status of Future prospects is 'unfavourable-bad' if: <br><br> • there are severe influence of pressures and threats to the species, prospects for its future are very bad and long-term viability is at risk. <br><br> Complementary remarks: <br><br> The Future prospects should be assessed as 'unfavourable-bad' if one or more parameters have bad prospects (field 10.1). |
| Unknown (XX) | According to the evaluation matrix (Annex C) the status of Future prospects is 'unknown' if: <br><br> • there is no or insufficient reliable information available. <br><br> Complementary remarks: <br><br> The Future prospects should be assessed as 'unknown' if two or more parameters have 'unknown' prospects and no parameter has bad prospects (field 10.1). |

## 11.5  Overall assessment of conservation status

Give the result of the overall assessment of conservation status using the four categories available: 'favourable', 'unfavourable-inadequate', 'unfavourable-bad' and 'unknown', based on the evaluation matrix for assessing conservation status for a species.

| Status of parameters | All 'favourable', or three 'favourable' and one 'unknown' | One or more 'inadequate', but no 'bad' | One or more 'bad' | Two or more 'unknown' combined with 'favourable' or all 'unknown' |
|---|---|---|---|---|
| **Overall assessment of CS** | 'favourable' | 'unfavourable-inadequate' | 'unfavourable-bad' | 'unknown' |

## 11.6   Overall trend in conservation status

If the overall assessment of conservation status reported in field 11.5 is 'favourable', 'inadequate' or 'bad', indicate its trend (qualifier) as follows:

improving / deteriorating / stable / unknown.

The qualifier should be based on trends (for Range, Population and Habitat for the species) over the reporting period (2013–2018). As the trends over the reporting period are often not available, short-term trends can be used to assess the trend in the conservation status, unless there is evidence that the trend during the reporting period is different than a measured short-term trend (e.g. if after past decline of a species population over the reporting period 2007–2012 the population trend has stabilised, the qualifier should be assessed as 'stable' even though the population trend is 'decreasing'; this should be explained in field 11.8 'Additional information'). The (short-term) trends should be combined using Table 8 below.

**Table 8:        Assessing overall trend in conservation status of a species by combining trends for parameters**

| Short-term trend of parameters (Range, Population, Habitat for the species | | | | Overall trend in CS |
|---|---|---|---|---|
| **Number increasing** | **Number stable** | **Number decreasing** | **Number unknown** | |
| 3 | 0 | 0 | 0 | Improving |
| 2 | 1 | 0 | 0 | |
| 1 | 2 | 0 | 0 | *(Only increasing and stable trends)* |
| 0 | 3 | 0 | 0 | Stable |
| 2 | 0 | 1 | 0 | |
| 2 | 0 | 0 | 1 | *(Only stable trends or stable and increasing* |
| 1 | 1 | 1* | 0 | *dominates (there is at least one increasing and* |
| 1 | 1 | 0 | 1 | *only one unknown or decreasing)).* |
| | | | | *\* Trend magnitude should also be considered. The overall trend in CS is stable only in case of moderate declines (< 1 % per year).* |
| 0 | 0 | 3 | 0 | Deteriorating |
| 1 | 0 | 2 | 0 | |
| 0 | 1 | 2 | 0 | *(Decreasing trends dominate)* |
| 0 | 0 | 2 | 1 | |
| 0 | 2 | 1 | 0 | *\* Trend magnitude should also be considered. The overall trend in CS is declining only in case* |
| 1 | 1 | 1* | 0 | *of important declines (> 1 % per year).* |
| 0 | 0 | 0 | 3 | Unknown |
| 1 | 0 | 0 | 2 | |
| 0 | 1 | 0 | 2 | *(Unknown trends dominate)* |
| 0 | 0 | 1 | 2 | |
| 1 | 0 | 1 | 1 | |
| 0 | 1 | 1 | 1 | |

Note: 'unknown' in the table above includes both 'unknown' and 'uncertain'.

## 11.7   Change and reasons for change in conservation status and conservation status trend

This field is used to indicate if there is any change since the previous reporting period (2007–2012) in conservation status and/or in trend in conservation status and, if yes, the reason for this change.

First answer the question '(a) no, there is no difference' (Yes if there is a difference and No if there is not) separately for overall assessment of conservation status and overall trend in conservation status.

If the answer to the initial question is 'Yes', indicate which of the following options apply (separately for the overall assessment of conservation status and overall trend in conservation status; it is possible to reply 'Yes' to more than one of the options b-d , but at least one option 'Yes' must be selected for options b-e):

   b)   yes, due to genuine change;
   c)   yes, due to improved knowledge/more accurate data;
   d)   yes, due to the use of different method (including taxonomical change or use of different thresholds);
   e)   yes, but there is no information on the nature of change.

Finally, indicate (separately for overall assessment of conservation status and overall trend in conservation status) whether any difference is mainly due to:

   • genuine change;
   • improved knowledge or more accurate data;
   • the use of a different method.

If a Member State wishes to give further information, this can be done in field 11.8 'Additional information'.

## 11.8   Additional information (optional)

Additional information to help understand the information in fields 11.1 to 11.7.

# 12   NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

This section provides information on population size and population trend within the Natura 2000 network. This section only concerns Annex II species. The requested information should cover the proposed Sites of Community Importance (pSCIs), the Sites of Community Importance (SCIs) and Special Areas of Conservation (SACs) of the Natura 2000 network within the biogeographical/marine region concerned.

The information relates to all pSCIs/SCIs/SACs where the Annex II species is present, not only those sites where the species is declared as a target species or a conservation objective.

See background information in Section '12   NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex II species' (in 'Definitions and methods for species reporting').

## 12.1    Population size inside the pSCIs, SCIs and SACs network

Indicate the population size within the network in the biogeographical or marine region concerned, including all sites where the species is present. Use the same unit as in field 6.2 'Population size (in reporting unit)' [31] and follow the same guidance as for the population size estimates in field 6.2.

Some species are mainly present inside the network during a period of the year (e.g. wintering or reproducing) and largely outside the network for the rest of the year (bats in particular). As Natura 2000 sites are often the most important sites for these species, the population size within the Natura 2000 network should include populations which are only present within sites for part of the year.

Similarly, different Natura 2000 sites can cover different life stages (there are sites with hibernating or reproducing populations, but also sites which only include foraging habitats). The population size within the Natura 2000 network should include all sites proposed for reproducing, hibernating or foraging/staging populations or individuals.

## 12.2    Type of estimate

The type of estimate for the interval reported in fields 12.1(b) and (c) or the best single value in field 12.1(d) should be outlined here. The options for reporting this are: best estimate, multi-year mean, 95 % confidence interval, or minimum.

Follow the same guidance as for the 'Type of estimate' for the Population size (field 6.3).

## 12.3    Population size inside the network – Method used

Choose one of the following categories:

a) complete survey or a statistically robust estimate (e.g. repeated direct counts of entire population; repeated counting based on indices of species presence; from previous complete inventory updated with robust monitoring data on trends);

b) based mainly on extrapolation from a limited amount of data (e.g. based on mark-recapture methods, or using models based on abundance and distribution data, or using extrapolation from sample surveys of parts of the population, or from previous inventory updated with good trend data);

c) based mainly on expert opinion with very limited data;

d) insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

Follow the same guidance as for the 'Method used' for the Population size (field 6.6).

## 12.4    Short-term trend of population size within the network – Direction

Trend is a (measure of a) directional change of a parameter over time. The trend in population size informs on changes in overall numbers of specimens within the Natura 2000 sites. Fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend.

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[31] The 'reporting unit' from the Article 17 checklist available on the Reference Portal http://cdr.eionet.europa.eu/help/habitats_art17 .

Indicate whether the trend of population size is:

> stable / increasing / decreasing / uncertain / unknown.

Short-term trend within the Natura 2000 network should be assessed over the period indicated in field 6.7.

See instructions for field 6.8 'Short-term trend direction'.

### 12.5   Short-term trend of population size within the network – Method used

Choose one of the following categories:

a) complete survey or a statistically robust estimate (e.g. dedicated monitoring of a species' populations with good statistical power);
b) based mainly on extrapolation from a limited amount of data (e.g. trends derived from data collected from a limited number of sample sites; trends extrapolated from data collected for other purposes; trends extrapolated from some other indirect measurements, such as availability of a habitat);
c) based mainly on expert opinion with very limited data;
d) insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

### 12.6   Additional information (optional)

Additional information to help understand how Natura 2000 covers the species can be reported here.

# 13   Complementary information

This section is optional and is a place to include any additional or supplementary information.

### 13.1   Justification of % thresholds for trends (optional)

The indicative suggested threshold for a large decline given in the evaluation matrix (Annex C) is 1 % per year. If another threshold has been used for the assessment, please give details, including an explanation of why.

### 13.2   Transboundary assessment (optional)

Where a joint conservation status assessment is made between two Member States, i.e. where there is a wide-ranging transboundary species population, further detailed information can be given here. The information to provide is:

- Member States involved (use code list on the Reference Portal) and if any non-EU countries were involved in the assessment;
- parameters assessed in the transboundary area (usually Range and Population);
- the % of the total population in the Member State concerned;
- list of joint management measures;
- references/links, if available.

Further information on assessment of transboudary populations can be found in Section 'Transboundary populations' (in 'Definitions and methods for species reporting').

## 13.3   Other relevant information (optional)

Include any other information thought relevant to the species report and to assessing conservation status.

# ANNEX C – EVALUATION MATRIX FOR ASSESSING CONSERVATION STATUS OF A SPECIES

The matrix is an aid to assessing the conservation status of a species. It shall be used for each biogeographical or marine region in which the species is present. The results of using the matrix have to be provided in Section '11    Conclusions' (in 'Field-by-field guidance for species reports').

# ANNEX D – REPORT FORMAT ON THE 'MAIN RESULTS OF THE SURVEILLANCE UNDER ARTICLE 11' FOR ANNEX I HABITAT TYPES

## Habitats to be reported

In general, each Member State should report all habitats listed in Annex I of the Habitats Directive for every biogeographical or marine region in which they occur[32] (see also next paragraph).

The habitats listed in Annex I can be both biotopes or biotope complexes, and sometimes an Annex I habitat is a component of another Annex I habitat. As a result patches of one or more Annex I habitats can occur within another Annex I habitat. More information on how to report for those overlapping habitats can be found in Section 'Overlapping habitats' (in 'Habitats to be reported' chapter in 'Definitions and methods for habitat reporting' part).

A report is optional for habitats with a scientific reserve. A checklist of habitats covered by the Habitats Directive and their occurrence per biogeographical or marine region and Member State is available on the Article 17 Reference Portal[33].

Most habitats are clearly present or absent, but to cover all possibilities the habitats checklist also distinguishes habitats with 'marginal occurrence' and where there is some uncertainty of status ('scientific reserve'). An overview of the categories in the habitat checklist, with an indication of whether a report is expected and which parts of the report remain mandatory, is given in Table 9. A detailed definition of habitat categories can be found in Section 'Occurrence categories used in the habitat checklist' (in 'Habitats to be reported' chapter in 'Definitions and methods for habitat reporting' part).

**Table 9:** **Categories of habitat occurrence within the biogeographical/marine region of the Member State and indication of the expected content of the Article 17 report**

| Habitat category (code) | Report | Mandatory information for report |
|---|---|---|
| **Present regularly (PRE)** | Mandatory | Full report. |
| **Marginal (MAR)** | Mandatory partial report | Whenever possible provide information for any of the fields listed below:<br>• Distribution map (field 2.2)<br>• Actual range – surface area (field 4.1).<br>• Area covered by habitat - surface area (field 5.2) and date (field 5.1) and method used (field 5.4). |
| **Scientific reserve (SCR)** | Optional | • Any other relevant information, e.g. related to the problems of habitat interpretation (field 12.2). |

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[32] For For the habitat types and species which do not occur in the area of Cyprus where the Community acquis applies at present, no report is expected but the species should remain in the checklist (using category NPRE in the checklist).

[33] http://cdr.eionet.europa.eu/help/habitats_art17

# Field-by-field guidance for completing 'Annex D' Habitat reports

NB: To be completed for each Annex I habitat present[34].

It is recommended that the free text information in the different fields is written in English to facilitate the further use of information in the EU analysis and to allow a wider readership.

Even though not all data used in the report will be collected during the reporting period, the report should give information of relevance for the period 2013–2018.

## NATIONAL LEVEL

The following information is to be provided at the national level:

# 1    General information

### 1.1    Member State
Select the two-digit code for your Member State from ISO 3166. For the United Kingdom, use 'UK' instead of 'GB', in accordance with the list to be found on the Reference Portal[35].

### 1.2    Habitat code
Use the code given in the habitats checklist (see the Reference Portal, these are the same codes as given in the 2013 edition of the Interpretation Manual[36]). Do not use any other coding systems.

Reports are expected for each biogeographical region for which the habitat type is listed in the checklist for reporting under the Nature Directives (for marginal occurrence see 'Habitats to be reported' (in 'Definitions and methods for habitat reporting')).

# 2    Maps

This section contains information on maps to be submitted together with the tabular information as a part of the Article 17 report. Apart from the mandatory distribution map, other kinds of maps with information relevant for understanding the assessment of conservation status can also be provided.

### 2.1 Year or period
Enter the year (e.g. 2015) or period (e.g. 2013–2017) when the distribution was last determined.

Many reports will involve periods, because a mapping of the habitat distribution in most cases involves several years of fieldwork and may extend beyond the limits of the current reporting period (2013–2018). The year or period reported should cover the actual period during which the data were collected.

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[34] A checklist of habitats thought to be present in each Member State for which a report is expected is available at http://cdr.eionet.europa.eu/help/habitats_art17
[35] http://cdr.eionet.europa.eu/help/habitats_art17
[36] *Interpretation manual of European Union habitats - EUR 28*. DG Environment - Nature and Biodiversity . http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf

In some cases the distribution map will be elaborated based on data from the previous reporting period or using older distribution data that has been updated with the results of regular monitoring or using data from online-systems for collecting data. The year or period reported should be that which the reported distribution relates to.

More detailed information on year or period of data used for the distribution map can be provided in field 4.12 'Additional information'.

## 2.2     Distribution map

Submit a distribution map, together with the relevant metadata (projection, datum, scale). The standard is:

| **10x10 km ETRS89 grid, projection ETRS LAEA 5210** |
|:---:|

The distribution map should provide information about the actual occurrences of the habitat, which should preferably be based on the results of a comprehensive national mapping or inventory of the habitat wherever possible (see Section '2    Maps' (in 'Definitions and methods for habitat reporting')). If field data on actual occurrences of the habitat are not sufficient, modelling and extrapolation should be used whenever feasible[37]. The distribution map will be though composed of grids with both the actual (mapped) and presumed habitat occurrences.

The distribution map will consist of 10x10 km ETRS89 grid cells in the ETRS LAEA 5210 projection[38]. The gridded dataset will consist only of the 10-km grid cells where the habitat is recorded or estimated as occurring; the use of attribute data to indicate the presence or absence of a habitat in a grid cell is not permitted. The period over which the distribution data were collected should be included in the metadata, following the INSPIRE guidelines[39]. The technical specifications for distribution maps are given on the Reference Portal.

If more precise maps giving more detailed distribution of habitat are available, these can be submitted as additional maps.

For small Member States, such as Luxembourg, Malta and Cyprus (or for other small territories such as the Canary, Madeira or the Azores islands), a 1x1 km grid (or 5x5 km) is allowed; these will then be aggregated by ETC/BD to 10x10 km for visualisation at European level.

The grids for individual Member States are available for download from the Reference Portal[40].

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[37] If modelling or exceptionally expert opinion are used this should be noted in the field 2.3 Method used

[38] European Terrestrial Reference System 1989; Lambert Azimuthal Equal Area Latitude of origin 52N, Longitude of origin (central meridian) 10E. http://www.eionet.europa.eu/gis

[39] For the period 2013-2018 it is not obligatory or expected to provide the Article 17 spatial dataset compliant with INSPIRE requirements.

[40] http://cdr.eionet.europa.eu/help/habitats_art17

## 2.3    Method used

Choose one of the following categories:

a)  complete survey or a statistically robust estimate (e.g. a dedicated mapping or survey or a robust predictive model with representative sample of occurrence data, calibration and satisfactory evaluation of its predictive performance using good data on environmental conditions across the range of the habitat);

b)  based mainly on extrapolation from a limited amount of data (e.g. other predictive models or extrapolation using less complete sample of occurrence and environmental data);

c)  based mainly on expert opinion with very limited data;

d)  insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

If the reported distribution map obtained as a result of comprehensive mapping, modelling or extrapolation or, exceptionally, expert interpretation covers less than 75 % of the presumed actual habitat distribution (i.e. the resulting map is incomplete in relation to the presumed habitat distribution), the 'Method used' should be reported as '(d) Insufficient or no data available'.

## 2.4    Additional maps (optional)

Member States may also submit additional maps, for example giving more detailed distribution data (e.g. at higher resolution) or a range map (See Section '4     Range' (in 'Definitions and methods for habitat reporting')). Any additional maps must be accompanied by the relevant metadata and details of the projection used. Note that this is an optional field and does not replace the need to provide a map in field 2.2.

Maps at a resolution other than 10x10 km or with grids other than the ETRS89 LAEA 5210 grid, or close to 10x10 km, may be reported here.

# BIOGEOGRAPHICAL LEVEL

# 3    Biogeographical and marine regions

The following section should be completed for each biogeographical or marine region in which the habitat occurs. So, for example, if a habitat occurs in three biogeographical regions within a Member State, three separate reports are required.

### 3.1    Biogeographical or marine region where the habitat occurs

Biogeographical region or marine region concerned within the Member State.

- Use the following names for biogeographical regions:

| | | |
|---|---|---|
| Alpine | Boreal | Macaronesian |
| Atlantic | Continental | Pannonian |
| Black Sea | Mediterranean | Steppic |

- Use the following names for marine regions:

| | | |
|---|---|---|
| Marine Atlantic | Marine Black Sea | Marine Mediterranean |
| Marine Macaronesian | Marine Baltic Sea | |

Maps and boundaries of biogeographical and marine regions can be found on the Reference Portal[41].

More information on marine regions and on habitats which should be reported in marine regions can be found in Section 'Marine habitats' (in 'Definitions and methods for habitat reporting').

### 3.2    Sources of information

For information from published sources related to Sections 4–6 (including the published sources related to distribution maps, on which the range calculation is based) and Sections 8–12, provide bibliographic references or links to an Internet site(s). Use the order: author, year, title of publication, source, volume, number of pages, web address.

All Internet addresses in the reporting fields should be given in full, including the initial 'http://' or 'https://', if applicable.

## 4    Range

This section provides information on range surface area, range trends and favourable reference range.

Range is defined as 'the outer limits of the overall area in which a habitat or species is found at present' and it can be considered as an envelope within which areas actually occupied occur.

The range should be calculated based on the map of the actual distribution using a standardised algorithm. A standardised process is needed to ensure repeatability of the range calculation in different reporting rounds.

It is not necessary to submit a map of the range but the area of the range and trend in area are required to assess this parameter. However, a map can be submitted in field 2.4 'Additional maps'.

Complementary information and methods for range calculation can be found in Section '4   Range' (in 'Definitions and methods for habitat reporting').

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[41] http://cdr.eionet.europa.eu/help/habitats_art17

## 4.1    Surface area

This is the total surface area (in km²) of the current range (outer limits of the habitat distribution) within the biogeographical or marine region concerned. The range in the biogeographical or marine region concerned is represented by grids (10x10 km) which occur entirely or partly within the region (i.e. grids intersected by the boundaries of the biogeographical or marine regions are counted under both regions). In general, the surface area is provided in 10x10 km$^2$ resolution and the minimum area should be 100 km$^2$. For localised habitats with a very small range it is possible to report using finer resolution; for example, for habitats restricted to a single location, range is the area of locality where habitat occurs, which can be several square metres. Decimals are allowed, as the range of some habitats can be very small.

The method for estimating the surface area described in Section 'Calculation of range' (in '4 Range' chapter in 'Definitions and methods for habitat reporting' part) is recommended.

## 4.2    Short-term trend period

Give the dates for the beginning and end of the period for which the trend has been reported. The short-term trend should be evaluated over a period of 12 years (two reporting cycles). For the 2013–2018 reports, this means the period is 2007–2018 or a period as close as possible to this. Thus, some flexibility is permitted, so that while trends would ideally be reported for 2007–2018, data from e.g. 2004–2015 will be accepted if the best available data relate to surveys in those years.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for habitat reporting').

## 4.3    Short-term trend direction

Trend is a (measure of a) directional change of a parameter over time. The range trend shows changes in the overall extent of distribution of the habitat. Although rare for range, a fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend.

Indicate if range trend over the period reported in field 4.2 was:

stable / increasing / decreasing / uncertain / unknown.

Report 'uncertain' if some data are available but they are not enough to accurately determine direction. Use 'unknown' where there are no data available.

The short-term trend information is used in the evaluation matrix to undertake the conservation status assessment. Any large-scale deviation from this should be explained in field 4.12 'Additional information'.

If there is an apparent change in direction of the trend resulting from a change in monitoring methodology or improved knowledge about habitat distribution, it should not be considered a trend. This apparent change should be indicated in field 4.11 'Change and reason for change in surface area of range'.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for habitat reporting').

## 4.4     Short-term trend magnitude (optional)

If possible quantify the percentage change over the period indicated in field 4.2. The range at the beginning of the reporting period is taken as 100 %. The figure can be presented as a precise figure (e.g. 27 %) or as a banded figure (e.g. 20–30 %). If providing a precise figure give the same value in the 'minimum' and 'maximum' fields.

## 4.5     Short-term trend – Method used

Choose one of the following categories:

a)   complete survey or a statistically robust estimate (e.g. comparing two range maps based on accurate distribution data, or a dedicated monitoring of a habitat's distribution with good statistical power);

b)   based mainly on extrapolation from a limited amount of data (e.g. trends derived from occurrence data collected for other purposes, or from data collected from only a part of the geographical range of a habitat, or trends based on measuring some other predictors of habitat distribution, such as land-cover changes);

c)   based mainly on expert opinion with very limited data;

d)   insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

## 4.6     Long-term trend period (optional)

The long-term trend should be evaluated over a period of 24 years (four reporting cycles). For the 2013–2018 reports this period is 1994–2018 or a period as close as possible to this. Indicate the period in this field. For the 2013–2018 reports this information and the associated fields 4.6 and 4.7 are optional.

Further guidance is given in 'Trends' (in 'Definitions and methods for habitat reporting').

For guidance in filling in fields **4.7 'Long-term trend direction'**, **4.8 'Long-term trend magnitude'** and **4.9 'Long-term trend – Method used',** please see the guidance for fields 4.2 to 4.5 (short-term trends).

## 4.10    Favourable reference range

Favourable reference range is the range within which all significant ecological variations of the habitat are included for a given biogeographical region and which is sufficiently large to allow the long-term viability of the habitat. This information is needed to undertake the evaluation of conservation status according to Annex E. In many cases it is not possible to estimate a value for favourable reference range (option (a)) but it is clear that the favourable reference range is greater (or much greater) than the present-day value. Using operators (option (b)) 'greater than' (>) and 'much greater than' (>>) is preferable to reporting a parameter as 'unknown'.

The following information is requested:

a) area in km²; or
b) if operators (≈, >, >>) were used for the assessment, indicate here with the relevant symbol (≈ 'approximately equal to', > 'more than', >> 'much more than'); or
c) if the favourable reference range is unknown, use 'x' for the reference range; and
d) indicate the method used to set the reference value (free-text field).

The field 'indicate method used' (d) is mandatory if (a) area is provided, but Member States are encouraged to describe the method used also when (b) operators were used.

The use of operators should help to reduce the use of 'unknown' to a minimum:

- if an operator (b) is used, then there is no need to insert a value in field 4.10(a) area in km²; operators indicate that the reference value is 'approximately equal to', 'more than' or 'much more than' the current value provided in field 4.1 'Surface area (of range)';
- if the value is provided for area in km² (a)-no operator should be used.

Where the reference value has changed in comparison to the previous reporting period, this should be explained in field 4.12 'Additional Information'.

Favourable reference values and the use of operators are discussed in more detail in Section 'Favourable reference value' (in 'Definitions and methods for habitat reporting').

## 4.11   Change and reason for change in surface area of range

This field is used to indicate if there is any change since the previous reporting period (2007–2012) in the range surface area reported and, if so, to describe the nature of this change.

First answer the question: 'Is there a change between reporting periods' (i.e. is area of range different from the last reporting period)? YES/NO.

If the answer is 'Yes', indicate which of the following options apply (it is possible to reply 'Yes' to more than one of the options a–c, but at least one option 'Yes' must be selected for options a–d)[42]:

a) yes, due to genuine change;
b) yes, due to improved knowledge or more accurate data;
c) yes, due to the use of a different method (including use of different thresholds);
d) yes, but there is no information on the nature of change.

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[42] In some cases the actual value reported for range surface area has increased, reflecting both a genuine increase in range (positive range trend) and better knowledge or data. Both options ('genuine change' and 'improved knowledge or more accurate data') above should be selected. In other situations the actual value reported for range surface area has increased since the previous period due to better knowledge or data. Nevertheless, it may still be clear that the habitat range is actually declining, based on analyses of data from sites. The option 'improved knowledge or more accurate data' above should be selected. Field 4.12 'Additional information' allows a Member State to provide further details on why a range estimate has increased, even though a range decline is reported.

Finally, indicate whether any difference is mainly due to (select one of the options):

- genuine change;
- improved knowledge or more accurate data;
- the use of a different method.

If a Member State wishes to give further information (e.g. cases where range surface area does not change, but its borders are shifting), this can be done in field 4.12 'Additional information'.

## 4.12    Additional information (optional)

Additional information to help understand the information given on range can be reported here (for example, details on the use of old distribution data, use of data from the previous reporting period, use of different gap distance or range calculation method than that recommended).

# 5        Area covered by habitat

This section reports on the area covered by the habitat type within the range in the biogeographical or marine region concerned.

## 5.1    Year or period

Enter the year (e.g. 2015) or period (e.g. 2013–2017) when the surface area of the habitat was determined.

Many reports will involve periods, because habitat mapping usually involves several years of fieldwork and may extend beyond the limits of the current reporting period (2013–2018). The year or period reported should cover the actual period during which the data were collected.

In some cases the area covered by habitat will be estimated based on a comprehensive habitat mapping which took place during the previous reporting period or even before and that has been updated with the results of regular monitoring. The year or period reported should be that which the reported estimate of the area covered by habitat relates to.

More detailed information on year or period of data used for the area covered by habitat can be provided in field 5.15 'Additional information'.

## 5.2    Surface area

This refers to the total area (in km$^2$) currently occupied by the habitat within the biogeographical or marine region of the Member State concerned. For overlapping habitats see 'Habitats to be reported' (in 'Definitions and methods for habitat reporting').

The surface area of habitat can be reported as an interval (for example minimum and maximum value or 95 % confidence interval from a model) and/or as a best available single value. The interval surface area estimate (fields 5.2(a) and (b)) should be given as minimum and maximum numbers. Minimum and maximum should always be entered together, i.e. not as only the minimum /only the maximum.

There is also a 'best single value' field (5.2 (c)) where a single value (a precise value or an estimate) can be entered. When only a minimum (or maximum) value of the surface area of the habitat is known (e.g. through expert opinion) this should be entered in the 'Best single value' field and NOT

the '(a) Minimum' or '(b) Maximum' fields. The source of this estimate can then be clarified in field 5.3 (see below). The numbers reported should not be rounded.

Both interval and a best single value can be provided togethe, for example where the interval coming from modelling is quite large (e.g. minimum and maximum values) and an expert evaluation of the actual surface area of habitat is also available. The expert evaluation of modelling results can result in a more accurate single value to be used in the EU assessments. In other situations, the point estimate (best single value) is available and Member State wishes to provide the confidence limits. The confidence interval can be entered in the minimum and maximum fields. If both, interval and best single values are provided this should be explained in field 5.15 'Additional information'.

## 5.3    Type of estimate

The type of estimate for the reported interval in fields 5.2(a) and (b) or the best single value in field 5.2(c) should be outlined here. The options for reporting this are:

- best estimate – the best available single figure (including where only the maximum value of the area covered by habitat is available) or interval, derived from e.g. a survey or a model, a compilation of figures from localities or expert opinion, but for which 95 % confidence limits could not be calculated. Whether a best estimate comes from the monitoring data, modelling or from an expert opinion should be assessed in field 5.4;
- 95 % confidence interval – estimates derived from sample surveys or a model in which 95 % confidence interval could be calculated;
- minimum – where insufficient data exist to provide even a loosely bounded population size estimate, but where a population size is known to be above certain value, or where the reported interval comes from a sample survey or monitoring project which probably underestimates the real population size.

If both interval (field 5.2(a) 'Minimum' and field 5.2(b) 'Maximum') and a single value (field 5.2(c) 'Best single value') are provided, field 5.3 'Type of estimate' should correspond to the more accurate estimate. This should be noted in field 5.15 'Additional information'.

## 5.4    Surface area – Method used

This field is used to detail the methodology used for calculating habitat area in field 5.2. Choose one of the following categories:

a) complete survey or a statistically robust estimate (e.g. complete habitat mapping or data from previous habitat mapping updated with robust monitoring data on trends);
b) based mainly on extrapolation from a limited amount of data (e.g. using modelling or extrapolation from surveys of parts of the habitat distribution; using data from previous complete habitat mapping updated with good trend data);
c) based mainly on expert opinion with very limited data;
d) insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

If both interval (field 5.2(a) 'Minimum' and field 5.2(b) 'Maximum') and a single value (field 5.2(c) 'Best single value') are provided, field 5.4 'Method used' should correspond to the more accurate estimate. This should be noted in field 5.15 'Additional information'.

## 5.5    Short-term trend period

Give the dates of the beginning and end of the period for which the trend has been reported. The short-term trend should be evaluated over a period of 12 years (two reporting cycles). For the 2013–2018 reports, this means the period is 2007–2018 or a period as close as possible to this. Thus, some flexibility is permitted, so that while trends would ideally be reported for 2007–2018, data from e.g. 2004–2015 will be accepted if the best available data relate to surveys in those years.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for habitat reporting').

The short-term trend should be used for the assessment. Any large-scale deviation from this should be explained under field 5.15 'Additional information'.

## 5.6    Short-term trend direction

Trend is a (measure of a) directional change of a parameter over time. The trend in area covered by habitat shows changes in the overall area covered by the habitat. Although rare for habitat area, the fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend.

Indicate if the habitat trend over the reported period in field 5.4 was:

> stable / increasing / decreasing / uncertain / unknown.

Report 'uncertain' if some data are available but they are not enough to accurately determine direction. Use 'unknown' where there are no data available.

The short-term trend information is used in the evaluation matrix to assess the conservation status. Any large-scale deviation from this should be explained in field 5.15 'Additional information'.

If there is an apparent change in direction of the trend resulting from a change in monitoring methodology or improved knowledge about the habitat distribution, it should not be considered a trend. This apparent change should be indicated in field 5.14 'Change and reason for change in surface area'.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for habitat reporting').

## 5.7    Short-term trend magnitude (optional)

If possible, quantify the percentage change (with range at the beginning of the reporting period as 100 %) over the period reported in field 5.4. It can be given as a precise figure (e.g. 27 %) or a banded range (e.g. 20–30 %). If a precise figure is available give the same value under 'minimum' and 'maximum' (fields 5.6(a) and (b)). Where a statistically robust method has been used (see field 5.7) please provide the confidence interval (e.g. 95 %) in field 5.6(c) with the upper and lower CI limits in fields 5.6(a) and 5.6(b) respectively.

## 5.8      Short-term trend – Method used

Choose one of the following categories:

a)   complete survey or a statistically robust estimate (e.g. a dedicated monitoring of a habitat area with good statistical power);

b)   based mainly on extrapolation from a limited amount of data (e.g. trends derived from data collected from a limited number of sample sites; trends extrapolated from data collected for other purposes; trends extrapolated from some other indirect measurements, such as land-cover changes);

c)   based mainly on expert opinion with very limited data;

d)   insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

## 5.9      Long-term trend period (optional)

The long-term trend should be evaluated over a period of 24 years (four reporting cycles). For the 2013–2018 reports, this means the period is 1994–2018 or a period as close as possible to this. Indicate the period in this field. For the 2013–2018 reports, this information, together with fields 5.10 to 5.12, is optional.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for habitat reporting').

For guidance in filling in field **5.10 'Long-term trend direction'**, field **5.11 'Long-term trend magnitude'** and field **5.12 'Long-term trend – Method used'**, see fields 5.6 to 5.8 (short-term trends).

## 5.13    Favourable reference area

Favourable reference area is the surface area in a given biogeographical region considered the minimum necessary to ensure the long-term viability of the habitat type; this should include necessary areas for restoration or development for those habitat types for which the present coverage is not sufficient to ensure long-term viability. This information is needed to undertake the evaluation of conservation status using the evaluation matrix (Annex C). In many cases it is not possible to estimate a value for favourable reference area (option (a)) but it is clear that the favourable reference area is greater (or much greater or, in exceptional situations, lower) than the present-day value. Using operators (option (b)) 'greater than' (>), 'much greater than' (>>) or 'lower than'(<) is preferable to reporting a parameter as 'unknown'.

The following information is requested:

a)   area in km²;

b)   if operators (≈, >, >>, <) were used for the assessment, indicate here with the relevant symbol (≈ 'approximately equal to', > 'more than', >> 'much more than', < 'less than');

c)   if there are no data on the area covered by the habitat, use 'x' for the reference area;

d)   indicate the method used to set the reference value (free-text field).

The field 'indicate method used' (d) is mandatory if (a) area is provided, but Member States are encouraged to describe the method used also when (b) operators were used.

If an operator is used to estimate a favourable reference area, it should be compared with the minimum estimate of surface area given in field 5.2.

The operator 'less than' (<) can be used only in special cases, such as for the habitat type '7120 Degraded raised bog still capable of natural regeneration' or due to a restoration project which results in the change of a non-priority habitat type into a priority habitat type. If used, an explanation must be provided in field 5.15 'Additional information'.

The use of (b) operators should help to reduce the use of 'unknown' to a minimum:

- if an operator (b) is used, then there is no need to insert a value in field 5.13(a) area in km²; operators indicate that the reference value is 'approximately equal to', 'more than',  'much more than' or 'less than' the current value provided in field 5.2 'Surface area (area covered by habitat)';
- if the value is provided for area in km² (a) no operator should be used.

Where the reference value has changed in comparison to the previous reporting period, the reason for this should be explained in field 5.15 'Additional information'.

Favourable reference values and the use of operators are discussed in more detail in 'Favourable reference value' (in 'Definitions and methods for habitat reporting').

## 5.14   Change and reason for change in surface area

This field is used to indicate if there is any change since the previous reporting period (2007–2012) in the area covered by habitat reported and, if so, to describe the nature of this change.

First answer the question: 'Is there a change between reporting periods' (i.e. is area covered by habitat different from the last reporting period)? YES/NO.

If the answer is 'Yes', indicate which of the following options apply (it is possible to reply 'Yes' to more than one of the options a–c, but at least one option 'Yes' must be selected for options a–d)[43]:

a)  yes, due to genuine change;
b)  yes, due to improved knowledge or more accurate data;
c)  yes, due to the use of a different method (including use of different thresholds);
d)  yes, but there is no information on the nature of change.

Finally, indicate whether any difference is mainly due to (select one option):

- genuine change;
- improved knowledge or more accurate data;
- the use of a different method.

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[43] In some cases the actual value reported for area covered by habitat has increased, reflecting both a genuine increase in area (positive trend) and better knowledge or data. Both options ('genuine change' and 'improved knowledge or more accurate data') above should be selected. In other situations the actual value reported for area covered by habitat has increased since the previous period due to better knowledge or data. Nevertheless, it may still be clear that the habitat area is actually declining, based on analyses of data from sites. The option 'improved knowledge or more accurate data' above should be selected. Field 5.15 'Additional information' allows a Member State to provide further details on why an area estimate has increased, even though an area decline is reported.

If a Member State wishes to give further information, this can be done in field 5.15 'Additional information'.

## 5.15   Additional information (optional)

Additional information to help understand the information given on habitat area can be reported here as free text (for example, information on the need to reflect fragmentation in setting favourable reference area).

# 6        Structure and functions

This section provides information on the proportion of the habitat area in 'good' and 'not-good' condition, its trends, and typical species. Habitat structure is considered to be the physical components of a habitat which will more than likely be formed by species both living and dead, but can also include abiotic features.

Complementary information on structure and functions of habitat can be found in Section '6   Structure and functions (including typical species)' (in 'Definitions and methods for habitat reporting').

## 6.1   Condition of habitat

Provide the area (km²) of habitat with 'good', 'not-good' and 'unknown' condition. The condition of the habitat at the biogeographical level is reported as:

   a)   area in good condition;
   b)   area in not-good condition;
   c)   area where condition is not known.

The area is reported in km² and can be reported as a range (minimum and maximum); if a precise value is known this value should be reported for both the 'minimum' and 'maximum' fields.

Further information on estimating habitat area in 'good'/'not good' condition can be found in Section 'Condition of habitat type' (in '6 Structure and functions (including typical species)' chapter in 'Definitions and methods for habitat reporting' part).

## 6.2   Condition of habitat – Method used

Choose one of the following categories:

   a)   complete survey or a statistically robust estimate (e.g. complete habitat mapping including information on habitat conditions, or complete habitat mapping combined with robust extrapolation of habitat conditions or previous complete inventory updated with information from robust monitoring);
   b)   based mainly on extrapolation from a limited amount of data (e.g. using modelling or extrapolation from detailed surveys of parts of the habitat distribution);
   c)   based mainly on expert opinion with very limited data;
   d)   insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

## 6.3    Short-term trend of habitat area in good condition – Period

Give the dates of the beginning and end of the period for which the trend has been reported. The short-term trend should be evaluated over a period of 12 years (two reporting cycles). For the 2013–2018 reports, this means the period is 2007–2018 or a period as close as possible to this. Thus, some flexibility is permitted, so that while trends would ideally be reported for 2007–2018, data from e.g. 2004–2015 will be accepted if the best available data relate to surveys in those years.

Further guidance is given in Section 'Trends' (in 'Definitions and methods for habitat reporting').

## 6.4    Short-term trend of habitat area in good condition – Direction

Trend is a (measure of a) directional change of a parameter over time. The trend of habitat area in good condition should inform on changes in proportions between the habitat areas in good and not-good condition. Although rare in the case of range of habitat area, fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend.

Indicate if the habitat trend over the reported period in field 6.3 was:

stable / increasing / decreasing / uncertain / unknown.

Report 'uncertain' if some data were available but they were not enough to accurately determine direction. Use 'unknown' where there are no data available.

The short-term trend information is used in the evaluation matrix to assess the conservation status. Any large-scale deviation from this should be explained in field 6.8 'Additional information'.

If there is an apparent change in direction of the trend resulting from a change in monitoring methodology or improved knowledge about the habitat condition, it should **not** be considered a trend. An apparent change should be indicated in field 6.8 'Additional information', and the trend should be reported as 'unknown', unless other information also clearly shows a trend.

## 6.5    Short-term trend of habitat area in good condition – Method used

Choose one of the following categories:

a)  complete survey or a statistically robust estimate (e.g. dedicated monitoring of a habitat's condition with good statistical power);
b)  based mainly on extrapolation from a limited amount of data (e.g. trends derived from data collected from a limited number of sample sites; trends extrapolated from data collected for other purposes; trends extrapolated from some other indirect measurements, such as shrub coverage);
c)  based mainly on expert opinion with very limited data;
d)  insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

## 6.6    Typical species

The typical species of the habitat are reported as they are used to assess whether a habitat is at FCS. These are species which occur regularly in the habitat type (as opposed to occasionally occurring species) and are species which are good indicators of favourable habitat quality. The list of 'typical species' chosen for the purpose of assessing conservation status should ideally remain stable over the medium to long term, i.e. across reporting periods. Typical species may be drawn from any species group. The choice of species should not be restricted to the species listed in Annexes II, IV and V of the Habitats Directive.

Indicate if the list of typical species has changed since the previous reporting period (Yes or No).

If the list of 'typical species' has changed, then an additional spreadsheet with an updated list is requested. The spreadsheet should follow the specifications provided on the Reference Portal[44]. Only Latin names should be used. It is recommended to use names from the Pan-European Species directories Infrastructure (PESI[45]) Catalogue of Life (CoL[46]), Eur+Med PlantBase[47], or another international or regional taxonomical reference.

An extensive definition of typical species (and structure and functions) can be found in Section 'Typical Species' (in '6 Structure and functions (including typical species)' chapter in 'Definitions and methods for habitat reporting' part).

## 6.7    Typical species – Method used (optional)

This field allows for changes in the methodology for recording typical species to be noted.

If 'No' was chosen in field 6.6, there is no requirement to complete field 6.7.

## 6.8    Additional information (optional)

Additional information can be provided as free text to help understand the information given on the condition of the habitat or typical species.

# 7    Main pressures and threats

This section provides information on main pressures and threats. A list of pressures and/or threats should be provided and for each pressure/threat a ranking of its impact on the conservation status of habitat is also required.

Pressures have acted within the current reporting period and they have an impact on the long-term viability of the habitat and its typical species; threats are future/foreseeable impacts (within the next two reporting periods) that are likely to affect the long-term viability of the habitat and its typical species (see Table 10). The threats should not cover theoretical threats, but rather those issues judged to be reasonably likely. This may include continuation of pressures

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[44] http://cdr.eionet.europa.eu/help/habitats_art17
[45] http://www.eu-nomen.eu/
[46] http://www.catalogueoflife.org/
[47] http://www.emplantbase.org/home.html

**Table 10:       Definition of pressure and threat (in the context of Article 17 reporting)**

|          | Period of action/definition | Time-frame |
|----------|------------------------------|------------|
| Pressure | Acting now and/or during (any part of or all of) the current reporting period. | Current six-year reporting period. |
| Threat   | Factors expected to act in the future after the current reporting period. | Future two reporting periods, i.e. within 12 years following the end of the current reporting period. |

## 7.1      Characterisation of pressures/threats

Provide the list of pressures and/or threats and a ranking of their impact: list a maximum of 10 pressures and a maximum of 10 threats. Only pressures/threats of high ('H') and of medium ('M') importance, as defined in Table 11, should be reported.

For each habitat:

a) Select from the list of pressures/threats, a maximum of 10 entries for each of pressures and threats using the code at the second level of the hierarchical list. The list of pressures and threats is available on the Reference Portal[48].

b) For each pressure and threat, indicate its ranking, i.e. 'H' for High, 'M' for Medium, under both 'Pressure' and 'Threat'. For example, if a factor selected from the list represents both a pressure and a threat, 'H' or 'M' should be reported under both headings as appropriate. If it represents a pressure but not a threat, 'H' or 'M' should be reported under 'Pressure' and 'Threat' left blank. A maximum of five high-level pressures and five high-level threats should be noted. This will make it possible to identify the most important factors at a European scale.

**Table 11:       Definition of High and Medium ranked pressures/threats**

| Code | Meaning | Comment |
|------|---------|---------|
| H | High importance/impact | Important direct or immediate influence and/or acting over large areas (a pressure is the major cause or one of the major causes, if acting in combination with other pressures, of significant decline of surface area of habitat, range or area of habitat with good conditions; or pressure acting over large areas preventing the habitat from being restored to Favourable conservation status at the biogeographical scale). |
| M | Medium importance/impact | Medium direct or immediate influence, mainly indirect influence and/or acting over moderate part of the area/acting only regionally (other pressure not directly or immediately causing significant declines). |

The impact of the pressure should reflect the influence of a pressure or threat on conservation status of the habitat. Only pressures having important direct or immediate influence on one or several parameters of conservation status at the biogeographical scale (causing significant decline or deterioration or preventing habitat from reaching favourable status, see Table 11) should be ranked

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[48] http://cdr.eionet.europa.eu/help/habitats_art17

as 'high'. However, it is likely that habitats with Favourable conservation status or where only very localised or slight declines were recorded will not have high importance pressures (unless the pressures are counteracted with measures). The maximum number of 'high' ranked pressures and/or threats that can be reported is five, even if more could be considered. This, together with any other information related to pressures and threats, can be noted in field 7.3 'Additional information'

Table 12 provides an example of pressures and threats characterisation using a maximum of five pressures of High importance.

**Table 12:         An example of pressures and threats characterisation**

| Characterisation of pressures/threats | | |
|---|---|---|
| **a) Pressure/threat**<br><br>*List a maximum of 10 pressures and a maximum of 10 threats using the code list provided on the Reference Portal* | **b) Ranking of pressure/threat**<br><br>*Indicate whether the pressure/threat is of:*<br>*H = high importance (maximum 5 entries for pressures and 5 entries for threats)*<br>*M = medium importance* | |
| | **Pressure** | **Threat** |
| A14 Application of synthetic fertilisers | H | H |
| A22 Active abstractions from groundwater, surface water or mixed water for agriculture | M | - |
| B05 Clear-cutting, removal of all trees | H | M |
| D01 Roads, paths railroads and related infrastructure (e.g. bridges, viaducts, tunnels) | H | H |
| D05 Electricity and communication infrastructure (e.g. phone lines, masts and antennas) | H | M |
| E01 Conversion from other land uses to housing and settlement areas (excl. drainage) | M | H |
| I02 Problematic native plants and animals | H | H |
| K04 Natural processes of eutrophication or acidification | - | M |

Note that the example is only illustrative since it uses draft codes that may not be retained as such in the final list of pressures and threats.

Habitats can be affected by pressures and threats originating from outside the Member State (e.g. pollution or nitrogen deposition). The list of pressures and threats has codes for transboundary effect of pressures and threats: 'XO threats and pressures from outside the Member State' and 'XE threats and pressures from outside the EU territory'.

More detailed guidance on reporting pressure/threats is provided in Section '7   Main   pressures and threats' (in 'Definitions and methods for habitat reporting') and in the notes in the list of pressures and threats available from the Reference Portal.

### 7.2    Sources of information (optional)

Provide sources of information relevant to Section 7 (optional) with URL, metadata, or supporting evidence for the highest ranking pressures only (i.e. High importance).

### 7.3    Additional information (optional)

This is an optional field to provide any additional information on the nature of a certain pressure/threat.

# 8    Conservation measures

This section concerns information on conservation measures, including management plans, taken to maintain or to restore the habitats at Favourable conservation status. The section contains a list of measures and their evaluation. The evaluation is an overall assessment and not a measure-by-measure evaluation.

### 8.1    Status of measures

Select whether measures are needed or not. If the answer is 'Yes, measures are needed', then proceed to answer the following three questions:

a)   measures identified but none yet taken? (YES/NO); or
b)   measures identified and taken? (YES/NO); or
c)   measures needed but cannot be identified? (YES/NO).

Measures may be implemented at different points in time. Choose option (a) if the majority of the most important measures identified have not yet been taken, choose option (b) if the majority of the most important measures have already been or are being implemented.

### 8.2    Main purpose of the measures taken

Indicate the main purpose of the measures taken. This part should only be filled in if the conservation measures have been taken (field 8.1(b) 'Measures identified and taken' is marked 'Yes'). Even if several purposes can be identified, please indicate only the main one in terms of implementing the measures:

a)   maintain the current range, surface area or structure and functions of the habitat type;
b)   expand the current range of the habitat type (related to 'Range');
c)   increase the surface area of the habitat type (related to 'Area covered by habitat');
d)   restore the structure and functions, including the status of typical species (related to 'Specific structure and functions').

### 8.3    Location of the measures taken

Indicate where the measures are mostly being implemented. This part should only be filled in if the conservation measures have been taken (field 8.1(b) 'Measures identified and taken' is marked 'Yes'):

a)   only inside Natura 2000;
b)   both inside and outside Natura 2000;
c)   only outside Natura 2000.

This field tries to capture where the main focus of the conservation action is taking place. Therefore, choose option (a) if all, or the vast majority, of the conservation measures are restricted to Natura 2000, option (b) if there is a proportional investment in the implementation of measures inside and outside Natura 2000, and option (c) if all, or the vast majority, of the measures are taken outside Natura 2000.

## 8.4    Response to the measures

Provide an estimate of when the measures taken will start, or are expected to start, to neutralise the pressure and to produce positive effects (with regard to the main purpose of the measures indicated in field 8.2). Choose one option from:

a)  short-term results (within the current reporting period, 2013–2018);
b)  medium-term results (within the next two reporting periods, 2019–2030);
c)  long-term results (after 2030).

## 8.5    List of main conservation measures

List a maximum of 10 conservation measures using the code that is provided on the Reference Portal[49].

More detailed guidance on the use of conservation measures is provided in Section '8  Conservation measures' (in 'Definitions and methods for habitat reporting') and in the notes in the list of conservation measures available from the Reference Portal.

## 8.6    Additional information (optional)

Additional information to help understand the information given on conservation measures can be reported here.

# 9    Future Prospects

This section provides information on the future prospects of three parameters (Range, Area, and Structure and functions). Future prospects indicate the direction of expected change in conservation status in the near future based on a consideration of the current status, reported pressures and threats, and measures being taken for each of the other three parameters (Range, Area, and Structure and functions).

## 9.1    Future prospects of parameters

For each parameter (Range, Area, and Structure and functions), indicate if the prospects are 'good', 'poor', 'bad' or 'unknown'. Future prospects of each of the three parameters should principally reflect the future trends which are the result of the balance between threats and conservation measures. The future prospects should be assessed in relation to the current conservation status. For example, the impact of future improvement on the assessment of future prospects of a parameter will be different if the current status is 'favourable' or 'unfavourable-bad'.

An evaluation method is provided in Section 'Assessing future prospects' (in '9 Future prospects' chapter in 'Definitions and methods for habitat reporting' part).

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[49] http://cdr.eionet.europa.eu/help/habitats_art17

## 9.2    Additional information (optional)

Additional information to help understand how Future prospects were assessed can be reported here.

# 10    Conclusions

This section includes the assessment of conservation status at the end of the reporting period in the concerned biogeographical region or marine region. It is derived from the matrix in Annex E.

Give the result of the assessment for each parameter of conservation status using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

The conservation status of parameters is assessed using the criteria in the evaluation matrix (Annex E of the Report format). Sections 10.1 to 10.5 provide an overview of the assessment criteria for each of the parameters. In addition, several complementary assumptions and criteria are outlined in these guidelines, which aim at harmonising and facilitating the assessment of conservation status. For each parameter these complementary assumptions and criteria are summarised under the heading 'Complementary remarks'.

## 10.1   Range

Give the result of the assessment of the status for Range using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

| Conservation status | Assessment criteria |
|---|---|
| Favourable (FV) | According to the evaluation matrix (Annex E) the status of Range is 'favourable' if:<br><br>• the trend is stable (loss and expansion in balance) or increasing; and<br>• range surface area (field 4.1) is not smaller than the favourable reference range (field 4.10).<br><br>Complementary remarks:<br><br>The trend over the short-term trend period (field 4.2) should be used for the status assessment. |
| Unfavourable-inadequate (U1) | According to the evaluation matrix (Annex E) the status of Range is 'unfavourable-inadequate' if:<br><br>• any other combination (other combination of criteria than for 'favourable' or 'unfavourable-bad').<br><br>Complementary remarks:<br><br>1. The evaluation matrix does not include explicit criteria for 'unfavourable-inadequate' status of Range. However, taking into account the criteria for 'favourable' and 'unfavourable-bad', the status of Range should be considered as 'unfavourable-inadequate' if:<br><br>• a decline equivalent to a loss of less than 1 % per year; or<br>• range surface area (field 4.1) is less than 10 % below favourable reference range (field 4.10). |

| | 2. The trend over the short-term trend period (field 4.2) should be used for the status assessment. |
|---|---|
| Unfavourable-bad (U2) | According to the evaluation matrix (Annex E) the status of Range is 'unfavourable-bad' if:<br><br>• a large decline equivalent to a loss of more than 1 % per year within the period specified by the Member State; or<br>• range surface area (field 4.1) is more than 10 % below favourable reference range (field 4.10).<br><br>Complementary remarks:<br><br>The trend over the short-term trend period (field 4.2) should be used for the status assessment. |
| Unknown (XX) | According to the evaluation matrix (Annex E) the status of Range is 'unknown' if:<br><br>• there is no or insufficient reliable information available. |

## 10.2  Area

Give the result of the assessment of the status for Area covered by the habitat using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

| Conservation status | Assessment criteria |
|---|---|
| Favourable (FV) | According to the evaluation matrix (Annex E) the status of Area covered by habitat is 'favourable' if:<br><br>• the trend is stable (loss and expansion in balance) or increasing; and<br>• area covered by habitat (field 5.2) is not smaller than the favourable reference area (field 5.13); and<br>• there are no significant changes in distribution pattern within the range.<br><br>Complementary remarks:<br><br>1. The trend over the short-term trend period (field 5.5) should should be used for the status assessment.<br><br>2. There may be situations where the habitat area has decreased during the short-term trend period (field 5.5) as a result of management measures (e.g. to restore another Annex I habitat or the habitat of an Annex II species). The habitat area could still be considered at Favourable conservation status, but in such cases give details in field 10.8 'Additional information'.<br><br>3. For dynamic habitats such as shifting dunes the habitat area may have decreased during the short-term trend period (field 5.5), but due to the dynamic nature of the habitat this does not represent a permanent loss of the habitat area. In this situation the habitat area could still be assessed as 'favourable' but details should be given in field 10.8. |

| Unfavourable-inadequate (U1) | According to the evaluation matrix (Annex E) the status of Area covered by habitat is 'unfavourable-inadequate' if:<br><br>• any other combination (other combination of criteria than for 'favourable' or 'unfavourable-bad').<br><br>Complementary remarks:<br><br>1. The evaluation matrix does not include explicit criteria for 'unfavourable-inadequate' status of Area covered by habitat. However, taking into account the criteria for 'favourable' and 'unfavourable-bad' the status of area covered by habitat should be considered as 'unfavourable-inadequate' if:<br><br>• a decline equivalent to a loss of less than 1 % per year; or<br>• area covered by habitat (field 5.2) is less than 10 % below favourable reference area (field 5.13); or<br>• small losses in distribution pattern within range.<br><br>2. The trend over the short-term trend period (field 5.5) should be used for the status assessment. |
|---|---|
| Unfavourable-bad (U2) | According to the evaluation matrix (Annex E) the status of Area covered by habitat is 'unfavourable-bad' if:<br><br>• a large decrease equivalent to a loss of more than 1 % per year within the period specified by the Member State; or<br>• major losses in distribution pattern within range; or<br>• area covered by habitat (field 5.2) is more than 10 % below favourable reference area (field 5.13)<br><br>Complementary remarks:<br><br>The trend over the short-term trend period (field 5.5) should be used for the status assessment. |
| Unknown (XX) | According to the evaluation matrix (Annex E) the status of Area covered by habitat is 'unknown' if:<br><br>• there is no or insufficient reliable information available. |

## 10.3   Specific structure and functions (including typical species)

Give the result of the assessment of the status for Structure and functions using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

| Conservation status | Assessment criteria |
|---|---|
| Favourable (FV) | According to the evaluation matrix (Annex E) the status of Structure and functions is 'favourable' if:<br><br>• structure and functions (including typical species) are in good condition; and<br>• and there are no significant deteriorations/pressures. |

| | Complementary remarks: |
|---|---|
| | 1. The evaluation matrix states that if more than 25 % of the habitat type area in the region being assessed is considered 'unfavourable' (i.e. not in good condition), then the status of Structure and functions is 'unfavourable-bad'. However, it does not give numerical criteria for 'favourable' or 'unfavourable-inadequate'. It appears that in previous reports Member States have used very different thresholds of the proportion of habitat area that must be in good condition to justify assessing Structure and functions as 'favourable'. Ideally, the entire area of a habitat type should be in good condition for Structure and functions to be considered 'favourable'. However, this is hardly achievable in practice and it could be acceptable to have part of the habitat type in 'not-good' condition, but still consider Structure and functions to be assessed as 'favourable'.<br><br>It is recommended to use an indicative value of 90 % of the habitat type area (field 6.1) in 'good' condition as the threshold to conclude on 'favourable' Structure and functions. If Member State uses a different value, this should be noted and explained in field 10.8 Additional information'. This indicative value could, for example, be adapted according to the rarity/abundance of the habitat type (for more guidance see Section 'Condition of habitat type' (in '6 Structure and functions (including typical species)' chapter in 'Definitions and methods for habitat reporting' part).<br><br>2. Although it is not stated clearly in the evaluation matrix, the trend (trend in area in good condition (field 6.4)) must be stable or increasing for Structure and functions to be considered 'favourable'.<br><br>3. Although a full assessment of the conservation status of each typical species is not required, the typical species overall should be 'favourable' (not threatened), at least in this habitat, as species can be typical of more than one habitat.<br><br>4. For a habitat to be considered 'favourable', fragmentation or other conditions are not impacting significantly on ecological processes.<br><br>5. It is possible that restoration has increased the area of habitat, but has decreased the proportion of habitat in 'not good' condition, as the restored area is not yet in 'good' condition. In such cases, if the area in 'good' condition is less than 90 % of the habitat area, the habitat should not be 'favourable' for the parameter Structure and functions (see above, point 1). Such cases are most likely to arise where the habitat area is lower than the reference value and the overall conservation status would have been 'unfavourable' regardless of Structure and functions. |
| Unfavourable-inadequate (U1) | According to the evaluation matrix (Annex E) the status of Structure and functions is 'unfavourable-inadequate' if:<br><br>• any other combination (other combination of criteria than for 'favourable' or 'unfavourable-bad').<br><br>Complementary remarks:<br><br>1. The evaluation matrix does not include explicit criteria for 'unfavourable-inadequate' status of Structure and functions. However, taking into account the criteria for 'favourable' and 'unfavourable-bad' and complementary criteria for 'favourable' status, the status of Structure and functions should be considered as 'unfavourable-inadequate' if:<br><br>• the area of habitat with 'unfavourable' ('not good') condition (field 6.1) is less than 25 %; and |

| | • the area of habitat with 'good' condition (field 6.1) is less than 90 %; and<br>• the area of habitat with 'unknown' condition (field 6.1) is less than 75 %. |
|---|---|
| Unfavourable-bad (U2) | According to the evaluation matrix (Annex E) the status of Structure and functions is 'unfavourable-bad' if:<br><br>• more than 25 % of the area is unfavourable ('not good' in field 6.1) as regards its specific structure and functions (including typical species). |
| Unknown (XX) | According to the evaluation matrix (Annex E) the status of Structure and functions is 'unknown' if:<br><br>• there is no or insufficient reliable information available.<br><br>Complementary remarks:<br><br>The status of Structure and functions should be considered 'unknown' if more than 75 % of habitat area has 'unknown' condition (field 6.1). |

## 10.4   Future prospects

Give the result of the assessment of the status of Future prospects using the four categories available: 'favourable' (FV), 'unfavourable-inadequate' (U1), 'unfavourable-bad' (U2) and 'unknown' (XX).

| Conservation status | Assessment criteria |
|---|---|
| Favourable (FV) | According to the evaluation matrix (Annex E) the status of Future prospects is 'favourable' if:<br><br>• no significant impact from threats to habitat is expected and its long-term viability is assured.<br><br>Complementary remarks:<br><br>The Future prospects should be assessed as 'favourable' if all parameters have good prospects (field 9.1), or the prospects of one parameter are 'unknown' while the other parameters have good prospects. The matrix for combining the prospects of three parameters to give overall status of Future prospects is provided in Table 33:   Combining the evaluation of the three parameters to give Future prospects for a habitat type in Section '9 Future prospects' (in 'Definitions and methods for habitat reporting'). |
| Unfavourable-inadequate (U1) | According to the evaluation matrix (Annex E) the status of Future prospects is 'unfavourable-inadequate' if:<br><br>• any other combination (other combination of criteria than for 'favourable' or 'unfavourable-bad').<br><br>Complementary remarks:<br><br>The evaluation matrix does not include explicit criteria for 'unfavourable-inadequate' status of Future prospects. However, taking into account the method for assessing the Future prospects proposed in these guidelines, the status should be considered 'unfavourable-inadequate' if the prospects of one or more parameters (field 9.1) are 'poor', none has 'bad' prospects and there is at most one parameter with 'unknown' prospects. |

| Unfavourable-bad (U2) | According to the evaluation matrix (Annex E) the status of Future prospects is 'unfavourable-bad' if:<br><br>• severe impacts from pressures and threats to the habitat are expected, prospects for its future are 'bad' and long-term viability is not assured.<br><br>Complementary remarks:<br><br>The Future prospects should be assessed as 'unfavourable-bad' if one or more parameters have 'bad' prospects (field 9.1). |
|---|---|
| Unknown (XX) | According to the evaluation matrix (Annex E) the status of Future prospects is 'unknown' if:<br><br>• there is no or insufficient reliable information available.<br><br>Complementary remarks:<br><br>The Future prospects should be assessed as 'unknown' if two or more parameters have 'unknown' prospects and no parameters have 'bad' prospects (field 9.1). |

## 10.5   Overall assessment of conservation status

Give the result of the overall assessment of conservation status using the four categories available: 'favourable', 'unfavourable-inadequate', 'unfavourable-bad' and 'unknown', based on the evaluation matrix for assessing conservation status for a habitat.

| Status of parameters | All 'favourable', or three 'favourable' and one 'unknown' | One or more 'inadequate', but no 'bad' | One or more 'bad' | Two or more 'unknown' combined with 'favourable' or all 'unknown' |
|---|---|---|---|---|
| **Overall assessment of CS** | 'favourable' | 'unfavourable-inadequate' | 'unfavourable-bad' | 'unknown' |

## 10.6   Overall trend in conservation status

If the overall conservation status reported in field 10.5 is 'favourable', 'inadequate' or 'bad', indicate the trend (qualifier) as follows:

improving / deteriorating / stable / unknown.

The qualifier should be based on trends (for Range, Area covered by habitat, and Structure and functions) over the reporting period (2013–2018). As the trends over the reporting period are often not available, reported short-term trends can be used to assess the trend in the conservation status, unless there is evidence that the trend during the reporting period is different than a measured short-term trend (e.g. if after past decline of habitat over the reporting period 2007–2012 the trend has stabilised, the qualifier should be assessed as 'stable' even though the trend in habitat area is 'decreasing'; this should be explained in field 10.8 'Additional information'). The (short-term) trends should be combined using Table 13 below.

**Table 13: Assessing overall trend in conservation status of a habitat by combining trends for parameters**

| Short-term trend of parameters (Range, Area of habitat, Structure and functions | | | | Overall trend in CS |
|---|---|---|---|---|
| **Number increasing** | **Number stable** | **Number decreasing** | **Number unknown** | |
| 3 | 0 | 0 | 0 | Improving |
| 2 | 1 | 0 | 0 | |
| 1 | 2 | 0 | 0 | *(Only increasing and stable trends)* |
| 0 | 3 | 0 | 0 | Stable |
| 2 | 0 | 1 | 0 | |
| 2 | 0 | 0 | 1 | *(Only stable trends or stable and increasing dominates (there is at least one increasing and only one unknown or decreasing))* |
| 1 | 1 | 1* | 0 | |
| 1 | 1 | 0 | 1 | |
| | | | | *\* Trend magnitude should also be considered. The overall trend in CS is stable only in case of moderate declines (< 1 % per year).* |
| 0 | 0 | 3 | 0 | Deteriorating |
| 1 | 0 | 2 | 0 | |
| 0 | 1 | 2 | 0 | *(Decreasing trends dominate)* |
| 0 | 0 | 2 | 1 | |
| 0 | 2 | 1 | 0 | *\* Trend magnitude should also be considered. The overall trend in CS is declining only in case of important declines (> 1 % per year).* |
| 1 | 1 | 1* | 0 | |
| 0 | 0 | 0 | 3 | Unknown |
| 1 | 0 | 0 | 2 | |
| 0 | 1 | 0 | 2 | *(Unknown trends dominate)* |
| 0 | 0 | 1 | 2 | |
| 1 | 0 | 1 | 1 | |
| 0 | 1 | 1 | 1 | |

Note: 'unknown' in the table above includes both 'unknown' and 'uncertain'.

## 10.7   Change and reasons for change in conservation status and conservation status trend

This field is used to indicate if there is any change since the previous reporting period (2007–2012) in conservation status and/or in trend in conservation status and, if so, what the reason for this change is.

First answer the question '(a) no, there is no difference' (Yes if there is a difference and No if there is not) separately for overall assessment of conservation status and overall trend in conservation status.

If the answer to the initial question is 'Yes', indicate which of the following options apply (separately for overall assessment of conservation status and overall trend in conservation status; it is possible to reply 'Yes' to more than one of the options b-d, but at least one option 'Yes' must be selected for options b-e):

  b) yes, due to genuine change;
  c) yes, due to improved knowledge/more accurate data;
  d) yes, due to the use of different method;
  e) yes, but there is no information on the nature of change.

Finally, it should be indicated (separately for overall assessment of conservation status and overall trend in conservation status) whether any difference is mainly due to:

- genuine change;
- improved knowledge or more accurate data;
- the use of a different method.

If a Member State wishes to give further information, this can be done in field 10.8 'Additional information'.

### 10.8   Additional information (optional)

Additional information to help understand the information in fields 10.1 to 10.7.

# 11   NATURA 2000 (pSCIs, SCIs, SACs) coverage for Annex I habitat types

This section provides information on surface area of habitat and trend of surface area in good condition within the Natura 2000 network. The requested information should cover the proposed Sites of Community Importance (pSCIs), the Sites of Community Importance (SCIs) and Special Areas of Conservation (SACs) of the Natura 2000 network within the biogeographical/marine region concerned.

The information relates to all pSCIs/SCIs/SACs where the habitat is present, not only those sites where the habitat is declared as a target habitat or a conservation objective.

See background information in Section '11   NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex I habitat types' (in 'Definitions and methods for habitat reporting').

### 11.1   Surface area of the habitat type inside the pSCIs, SCIs and SACs network

Indicate the surface area of the habitat type within the network in the biogeographical or marine region concerned, including all the sites where the habitat type is present. Follow the same guidance as for the surface area of the habitat in field 5.2.

## 11.2   Type of estimate

The type of estimate for the reported interval in field 11.1(a) and (b) or the best single value in field 11.1(c) should be outlined here. The options for reporting this are: best estimate, 95 % confidence interval, and minimum.

Follow the same guidance as for the 'Type of estimate' for the surface area covered by the habitat (field 5.3).

## 11.3   Surface area of the habitat type inside the network – Method used

Choose one of the following categories:

   a)   complete survey or a statistically robust estimate (e.g. complete habitat mapping or data from previous habitat mapping updated with robust monitoring data on trends);
   b)   based mainly on extrapolation from a limited amount of data (e.g. using modelling or extrapolation from surveys of parts of the habitat distribution; using data from previous complete habitat mapping updated with good trend data; using models);
   c)   based mainly on expert opinion with very limited data;
   d)   insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most important source of data.

Follow the same guidance as for field 5.4 'Surface area – Method used' for the area covered by the habitat.

## 11.4   Short-term trend of habitat area in good condition within the network – Direction

Trend is a (measure of a) directional change of a parameter over time. The trend of habitat area in good condition should inform on changes in proportions between the habitat areas in good and not-good condition within the Natura 2000 network. Although rare in the case of range of habitat area, fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend.

Indicate whether the trend of habitat area in good condition is:

stable / increasing / decreasing / uncertain / unknown.

Short-term trend within the Natura 2000 network should be assessed over the period indicated in field 6.3.

## 11.5   Short-term trend of habitat area in good condition within the network – Method used

Choose one of the following categories:

   a)   complete survey or a statistically robust estimate;
   b)   based mainly on extrapolation from a limited amount of data;
   c)   based mainly on expert opinion with very limited data;
   d)   insufficient or no data available.

Only one category can be chosen; where data have been compiled from a variety of sources, choose the category for the most im portant source of data.

## 11.6   Additional information (optional)

Additional information to help understand Natura 2000 coverage can be reported here.

# 12   Complementary information

This section is optional and is a place to include any additional information.

## 12.1   Justification of % thresholds for trends (optional)

The indicative suggested threshold for a large decline given in the evaluation matrix (Annex E) is 1 % per year. If another threshold has been used for the assessment please give details, including an explanation of why.

## 12.2   Other relevant information (optional)

Include any other information thought relevant to the habitat report and to assessing conservation status.

# ANNEX E – EVALUATION MATRIX FOR ASSESSING CONSERVATION STATUS OF A HABITAT

The matrix is an aid to assessing the conservation status of a habitat. It shall be used for each biogeographical or marine region in which the habitat is present. The results of using the matrix have to be provided in Section '10    Conclusions' (in 'Field-by-field guidance for habitat reports').

# PART 2. DEFINITIONS AND METHODS

This part of these guidelines provides complementary information to the guidance in Part 1 (The Report format field-by-field guidance). It elaborates on the concepts and gives definitions (for more conceptual assessments, such as Structure and functions, Favourable reference values), assessment methods (e.g. for Future prospects), and, where relevant, worked examples (best practice). It is largely based on the guidance from the 2007–2012 reporting period[50], but several sections have been revised.

## DEFINITIONS AND METHODS FOR SPECIES REPORTING

## Species to be reported

This chapter provides complementary information to the guidance provided in Section 'Species to be reported' (in 'Field-by-field guidance for species reports').

### Taxonomical changes and names to be used for reporting

Several species listed in the Annexes of the Habitats Directive have been recently revised from a taxonomical point of view, and are now considered to be two or more species. Conversely, other species listed in the Annexes are now included in other newly defined species often losing their specific or even subspecific status. A common taxonomic understanding of the taxa by all Member States concerned is essential for merging the Member States' reports in order to produce an EU-level assessment of their conservation status. The basic rule in aligning the species to be reported with the current taxonomy is to report at the species level in line with current understanding of the taxonomy, bearing in mind how a species was understood by the legislator at the time when the Annexes of the Directive were drafted or amended.

As a general principle, in situations where the species listed in the Directive was split into several other species wherever feasible (e.g. the species can be determined in the field), there should be one Article 17 report for each currently recognised species. For example, the Directive lists *Euproctus asper*, but following a taxonomical revision this is now considered to be two species, under a different genus name, i.e. *Calotriton asper* and *C. arnoldi*, and there should be a report for each of these taxa – as indicated in the species checklist.

In some exceptional situations a joint report covering more than one currently recognised species should be provided. This includes the following situations:

- scientific uncertainty on validity of newly described taxa; or
- diverging opinions on species taxonomy; or
- lack of clarity concerning the species taxonomy; or
- problems with determination of newly described species which cannot be resolved in due time.

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[50] https://circabc.europa.eu/d/a/workspace/SpacesStore/2c12cea2-f827-4bdb-bb56-3731c9fd8b40/Art17%20-%20Guidelines-final.pdf

Table 14 provides an overview of the species listed in the Directive for which a separate or joint report is expected for currently recognised species. As there is no up-to-date taxonomical reference covering all species groups in Europe, the list of species in this table is based on available scientific literature and available information from global and regional taxonomical references and proposals by Member States.

**Table 14:         Species listed in the Directive for which separate or joint reports are expected for currently recognised species (more detailed information and possible updates of this table can be found on the Reference Portal[51])**

| Taxonomical group | Name as listed in the Habitats Directive | Newly described species | Note |
|---|---|---|---|
| Plants | *Aquilegia bertolonii* | *Aquilegia bertolonii*<br>*Aquilegia reuteri* | Separate reports |
| Plants | *Centranthus trinervis* | *Centranthus amazonum*<br>*Centranthus trinervis* | Separate reports |
| Plants | *Melanoselinum decipiens* | *Angelica lignescens*<br>*Melanoselinum decipiens* | Separate reports |
| Plants | *Narcissus longispathus* | *Narcissus longispathus*<br>*Narcissus segurensis*<br>*Narcissus yepesii* | Separate reports |
| Plants | *Sideroxylon marmulano* | *Sideroxylon canariensis*<br>*Sideroxylon mirmulans* | Separate reports |
| Molluscs | *Congeria kusceri* | *Congeria jalzici*<br>*Congeria kusceri* | Separate reports |
| Molluscs | *Discus guerinianus* | *Atlantica calathoides*<br>*Atlantica gueriniana* | Separate reports |
| Molluscs | *Unio crassus* | *Unio crassus*<br>*Unio tumidiformis* | Separate reports |
| Molluscs | *Unio elongatulus* | *Unio glaucinus*<br>*Unio mancus*<br>*Unio pictorum (population previously known as U. elongatulus)*<br>*Unio ravoisieri* | Separate report for *Unio ravoisieri*. Joint report for other species of *U. elongatulus* species group |
| Crustaceans | *Austropotamobius pallipes* | *Austropotamobius italicus*<br>*Austropotamobius pallipes* | Joint report under the name *Austropotamobius pallipes* |
| Insects | *Carabus variolosus* | *Carabus (variolosus) nodulosus*<br>*Carabus variolosus* | Separate reports |
| Insects | *Euphydryas (Eurodryas, Hypodryas) aurinia* | *Euphydryas aurinia*<br>*Euphydryas glaciegenita*<br>*Euphydryas provincialis* | Joint report under the name *Euphydryas aurinia* |

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[51] http://cdr.eionet.europa.eu/help/habitats_art17

| Taxonomical group | Name as listed in the Habitats Directive | Newly described species | Note |
|---|---|---|---|
| Insects | *Osmoderma eremita* | *Osmoderma barnabita*<br>*Osmoderma cristinae*<br>*Osmoderma eremita*<br>*Osmoderma italica*<br>*Osmoderma lassallei* | Separate reports for *Osmoderma. cristinae* and *O. italic*a<br>Joint report for *O. eremita, O. barnabita, O. lassallei* under the name '*Osmoderma eremita* Complex'. |
| Insects | *Zerynthia polyxena* | *Zerynthia cassandra*<br>*Zerynthia polyxena* | Separate reports |
| Other invertebrates | *Hirudo medicinalis* | *Hirudo medicinalis*<br>*Hirudo verbana* | Separate reports |
| Lampreys | *Lampetra planeri* | *Lampetra alavariensis*<br>*Lampetra auremensis*<br>*Lampetra lusitanica*<br>*Lampetra planeri* | Separate reports |
| Fish | *Acipenseridae,* all species not mentioned in Annex IV | *Acipenser gueldenstaedtii*<br>*Acipenser nudiventris*<br>*Acipenser ruthenus*<br>*Acipenser stellatus*<br>*Huso huso* | Separate reports |
| Fish | *Alosa spp.* | *Alosa agone*<br>*Alosa alosa*<br>*Alosa fallax*<br>*Alosa immaculata*<br>*Alosa killarnensis*<br>*Alosa macedonica*<br>*Alosa tanaica*<br>*Alosa vistonica* | Separate reports |
| Fish | *Aphanius fasciatus* | *Aphanius almiriensis*<br>*Aphanius fasciatus* | Separate reports |
| Fish | *Aphanius iberus* | *Aphanius baeticus*<br>*Aphanius iberus* | Separate reports |
| Fish | *Barbus plebejus* | *Barbus bergi*<br>*Barbus cyclolepis*<br>*Barbus euboicus*<br>*Barbus pergamonensis*<br>*Barbus plebejus*<br>*Barbus prespensis*<br>*Barbus sperchiensis*<br>*Barbus strumicae*<br>*Barbus tyberinus* | Separate reports |
| Fish | *Barbus meridionalis* | *Barbus balcanicus*<br>*Barbus caninus*<br>*Barbus carpathicus*<br>*Barbus meridionalis*<br>*Barbus peloponnesius*<br>*Barbus petenyi*<br>*Barbus rebeli* | Separate reports for *Barbus meridionalis s.str., B.caninus* and *B. peloponnesius*<br>Joint report for *B. balcanicus, B. petenyi* and *B. carpathicus* under name '*Barbus meridionalis* all others' where more than one species occurs |

| Taxonomical group | Name as listed in the Habitats Directive | Newly described species | Note |
|---|---|---|---|
| Fish | *Barbus spp.* | *Barbus albanicus*<br>*Barbus barbus*<br>*Barbus haasi*<br>*Barbus macedonicus*<br>*Barbus waleckii*<br>*Luciobarbus bocagei*<br>*Luciobarbus graecus*<br>*Luciobarbus graellsii*<br>*Luciobarbus guiraonis*<br>*Luciobarbus microcephalus*<br>*Luciobarbus sclateri*<br>*Luciobarbus steindachneri* | Separate reports |
| Fish | *Chalcalburnus chalcoides* | *Alburnus mandrensis*<br>*Alburnus mento*<br>*Alburnus sarmaticus*<br>*Alburnus schischkovi*<br>*Alburnus vistonicus*<br>*Alburnus volviticus* | Separate reports |
| Fish | *Chondrostoma lusitanicum* | *Iberochondrostoma almacai*<br>*Iberochondrostoma lusitanicum* | Separate reports |
| Fish | *Chondrostoma polylepis (including C. willkommi)* | *Pseudochondrostoma duriense*<br>*Pseudochondrostoma polylepis*<br>*Pseudochondrostoma willkommii* | Separate reports |
| Fish | *Chondrostoma toxostoma* | *Parachondrostoma arrigonis*<br>*Parachondrostoma miegii*<br>*Parachondrostoma toxostoma*<br>*Parachondrostoma turiense* | Separate reports |

| Taxonomical group | Name as listed in the Habitats Directive | Newly described species | Note |
|---|---|---|---|
| Fish | *Cobitis taenia* | *Cobitis arachthosensis*<br>*Cobitis bilineata*<br>*Cobitis calderoni*<br>*Cobitis dalmatina*<br>*Cobitis hellenica*<br>*Cobitis illyrica*<br>*Cobitis jadovaensis*<br>*Cobitis meridionalis*<br>*Cobitis narentana*<br>*Cobitis ohridana*<br>*Cobitis paludica*<br>*Cobitis puncticulata*<br>*Cobitis punctilineata*<br>*Cobitis stephanidisi*<br>*Cobitis elongatoides*<br>*Cobitis pontica*<br>*Cobitis strumicae*<br>*Cobitis tanaitica*<br>*Cobitis taenia*<br>*Cobitis vardarensis*<br>*Cobitis vettonica*<br>*Cobitis zanandreai* | Joint report for *'Cobitis taenia* Complex' *(C. elongatoides, C. strumicae C. tanaitica, C. pontica).*<br><br>*Separate reports for remaining species* |
| Fish | *Coregonus spp. (except Coregonus oxyrhynchus - anadromous populations in certain sectors of the North Sea) –*<br><br>*Coregonus albula complex* | *Coregonus albula*<br>*Coregonus fontanae*<br>*Coregonus lucinensis*<br>*Coregonus trybomi*<br>*Coregonus vandesius* | Separate reports |
| *Fish* | *Coregonus spp. (except Coregonus oxyrhynchus - anadromous populations in certain sectors of the North Sea) –*<br><br>*Coregonus lavaretus complex* | *Coregonus arenicolus*<br>*Coregonus atterensis*<br>*Coregonus bavaricus*<br>*Coregonus clupeoides*<br>*Coregonus danneri*<br>*Coregonus hoferi*<br>*Coregonus lavaretus*<br>*Coregonus macrophthalmus*<br>*Coregonus maraena*<br>*Coregonus maxillaris*<br>*Coregonus megalops*<br>*Coregonus nilssoni*<br>*Coregonus pallasii*<br>*Coregonus pennantii*<br>*Coregonus pidschian*<br>*Coregonus renke*<br>*Coregonus stigmaticus*<br>*Coregonus wartmanni*<br>*Coregonus widegreni* | *Joint report for 'Coregonus lavaretus Complex'* |

| Taxonomical group | Name as listed in the Habitats Directive | Newly described species | Note |
|---|---|---|---|
| Fish | *Coregonus spp. (except Coregonus oxyrhynchus - anadromous populations in certain sectors of the North Sea)* *Coregonus pollan* | *Coregonus pollan* | Separate report |
| Fish | *Cottus gobio* | *Cottus gobio* *Cottus aturi* *Cottus duranii* *Cottus haemusi* *Cottus hispaniolensis* *Cottus koshewnikowi* *Cottus metae* *Cottus microstomus* *Cottus perifretum* *Cottus rhenanus* *Cottus rondeleti* *Cottus sabaudicus* *Cottus transsilvaniae* | Separate report for *Cottus aturi*, *C. duranii, C. hispaniolensis, C. rondeleti, C. sabaudicus, C. transsilvaniae.* Joint report for other species *C. haemusi, C. metae, C. microstomus, C. koshewnikowi, C. perifretum, C. rhenanus, C. gobio s.str.* under the name '*Cottus gobio* all others' |
| Fish | *Eudontomyzon* spp. | *Eudontomyzon danfordi* *Eudontomyzon hellenicus* *Eudontomyzon graecus* *Eudontomyzon mariae* *Eudontomyzon vladykovi* | Separate reports |
| Fish | *Gobio albipinnatus* | *Romanogobio vladykovi* *Romanogobio belingi* | Separate report |
| Fish | *Gobio uranoscopus* | *Romanogobio uranoscopus* *Romanogobio elimeius* | Separate report |
| Fish | *Leuciscus souffia* | *Telestes souffia* *Telestes muticellus* *Squalius keadicus* | Separate reports |
| Fish | *Phoxinellus spp.* | *Delminichthys adspersus* *Delminichthys ghetaldii* *Delminichthys jadovensis* *Delminichthys krbavensis* *Pelasgus epiroticus* *Pelasgus laconicus\** *Pelasgus marathonicus* *Pelasgus prespensis* *Pelasgus stymphalicus* *Pelasgus thesproticus* *Phoxinellus alepidotus* *Phoxinellus dalmaticus* *Phoxinellus pseudalepidotus* *Telestes beoticus* *Telestes croaticus* *Telestes fontinalis* *Telestes miloradi* *Telestes pleurobipunctatus* | Separate report |

| Taxonomical group | Name as listed in the Habitats Directive | Newly described species | Note |
|---|---|---|---|
| Fish | *Pomatoschistus canestrini* | *Economidichthys pygmaeus\** <br> *Economidichthys trichonis\** <br> *Knipowitschia goerneri\** <br> *Knipowitschia milleri\** <br> *Pomatoschistus canestrinii* | Separate reports |
| Fish | *Rhodeus sericeus amarus* | *Rhodeus amarus* <br> *Rhodeus meridionalis* | Separate reports |
| Fish | *Rutilus alburnoides* | *Squalius alburnoides* <br> *Tropidophoxinellus hellenicus* <br> *Tropidophoxinellus spartiaticus\** | Separate reports |
| Fish | *Rutilus lemmingii* | *Iberochondrostoma lemmingii* <br> *Achondrostoma salamantinum* <br> *Iberochondrostoma oretanum* | Separate reports |
| Fish | *Rutilus macrolepidotus* | *Achondrostoma oligolepis* <br> *Achondrostoma occidentale* | Separate reports |
| Fish | *Rutilus pigus* | *Rutilus pigus* <br> *Rutilus virgo* | Separate reports |
| Fish | *Rutilus rubilio* | *Rutilus panosi\** <br> *Rutilus prespensis* <br> *Rutilus rubilio* <br> *Rutilus ylikiensis\** | Separate reports |
| Fish | *Sabanejewia aurata* | *Sabanejewia balcanica* <br> *Sabanejewia baltica* <br> *Sabanejewia bulgarica* <br> *Sabanejewia vallachica* | Separate reports |
| Fish | *Salmo macrostigma* | *Salmo ghigii* <br> *Salmo cetti* <br> *Salmo fibreni?\** <br> *Salmo farioides* <br> *Salmo louroensis\** <br> *Salmo macedonicus\** <br> *Salmo pelagonicus\** <br> *Salmo peristericus\** | Joint report for *Salmo ghigii* and *S. cetti* under the name *Salmo cetti*. Separate reports for other species. |
| Fish | *Valencia letourneuxi (Valencia hispanica)* | *Valencia hispanica* <br> *Valencia letourneuxi* | Separate reports |
| Fish | *Zingel* spp. (except *Zingel asper* and *Zingel zingel*) | *Zingel balcanicus* <br> *Zingel streber* | Separate reports |
| Amphibians | *Alytes obstetricans* | *Alytes obstetricans* <br> *Alytes dickhilleni* | Separate reports for both newly recognised species |
| Amphibians | *Bombina variegata* | *Bombina variegata* <br> *Bombina pachypus* | Separate reports |

| Taxonomical group | Name as listed in the Habitats Directive | Newly described species | Note |
|---|---|---|---|
| Amphibians | *Bufo viridis* | *Bufotes viridis*<br>*Bufotes boulengeri*<br>*Bufotes balearicus*<br>*Bufotes siculus* | Joint report *Bufotes viridis* and *B. balearicus* under the name '*Bufotes viridis* Complex' where both species occurs.<br><br>Separate reports for *B. siculus* and *B. boulengeri* |
| Amphibians | *Discoglossus galganoi* (including *Discoglossus 'jeanneae'*) | *Discoglossus galganoi galganoi*<br>*Discoglossus galganoi jeanneae* | Joint reports |
| Amphibians | *Euproctus asper* | *Calotriton asper*<br>*Calotriton arnoldi* | Separate reports |
| Amphibians | *Hydromantes (Speleomantes) imperialis* | *Speleomantes imperialis*<br>*Speleomantes sarrabusensis* | Separate reports |
| Amphibians | *Hyla arborea* | *Hyla arborea*<br>*Hyla orientalis*<br>*Hyla molleri*<br>*Hyla intermedia*<br>*Hyla savignyi* | Separate reports for *Hyla molleri* and *H. intermedia*.<br>Joint report for *H. arborea* and *H. orientalis* |
| Amphibians | *Mertensiella luschani (Salamandra luschani)* | *Mertensiella luschani*<br>*Lyciasalamandra helverseni* | Separate reports. |
| Amphibians | *Rana ridibunda* | *Pelophylax ridibundus*<br>*Pelophylax bedriagae*<br>*Pelophylax cretensis*<br>*Pelophylax cerigensis*<br>*Pelophylax kurtmuelleri* | Separate reports |
| Amphibians | *Rana temporaria* | *Rana pyrenaica*<br>*Rana temporaria* | Separate reports |
| Amphibians | *Salamandra aurorae (Salamandra atra aurorae)* | *Salamandra atra aurorae*<br>*Salamandra atra pasubiensis* | Joint reports under the name *Salamandra atra aurorae* |
| Amphibians | *Triturus carnifex (Triturus cristatus carnifex)* | *Triturus carnifex*<br>*Triturus macedonicus* | Separate reports. |
| Amphibians | *Triturus marmoratus* | *Triturus marmoratus*<br>*Triturus pygmaeus* | Separate reports |
| Reptiles | *Ablepharus kitaibelii* | *Ablepharus kitaibelii*<br>*Ablepharus budaki* | Separate reports |
| Reptiles | *Chalcides viridianus* | *Chalcides viridianus*<br>*Chalcides coeruleopunctatus* | Separate reports |
| Reptiles | *Elaphe longissima* | *Zamenis longissimus*<br>*Zamenis lineatus* | Separate reports |
| Reptiles | *Elaphe quatuorlineata* | *Elaphe quatuorlineata*<br>*Elaphe sauromates* | Separate reports |
| Reptiles | *Emys orbicularis* | *Emys orbicularis*<br>*Emys trinacris* | Separate reports |

| Taxonomical group | Name as listed in the Habitats Directive | Newly described species | Note |
|---|---|---|---|
| Reptiles | *Lacerta bonnali (Lacerta monticola)* | *Iberolacerta bonnali*<br>*Iberolacerta aranica*<br>*Iberolacerta aurelioi\** | Separate reports |
| Reptiles | *Lacerta danfordi* | *Anatololacerta oertzeni*<br>*Anatololacerta anatolica* | Separate reports |
| Reptiles | *Lacerta monticola* | *Iberolacerta monticola*<br>*Iberolacerta cyreni*<br>*Iberolacerta galani*<br>*Iberolacerta martinezricai* | Separate reports |
| Reptiles | *Lacerta viridis* | *Lacerta viridis*<br>*Lacerta bilineata* | Separate reports |
| Reptiles | *Podarcis erhardii* | *Podarcis erhardii*<br>*Podarcis cretensis*<br>*Podarcis levendis* | Separate reports |
| Reptiles | *Podarcis milensis* | *Podarcis milensis*<br>*Podarcis gaigeae* | Separate reports |
| Reptiles | *Podarcis wagleriana* | *Podarcis wagleriana*<br>*Podarcis raffoneae* | Separate reports |
| Mammals | All other *Microchiroptera*[52] - *Eptesicus serotinus* | *Eptesicus serotinus*<br>*Eptesicus isabellinus* | Separate reports |
| Mammals | *Myotis blythii* | *Myotis oxygnathus*<br>*Myotis blythii*<br>*Myotis punicus* | Only reports for *Myotis blythii* and *Myotis punicus* are expected |
| Mammals | All other *Microchiroptera* - *Myotis nattereri* | *Myotis nattereri*<br>*Myotis escalerai* | Joint report under the name *Myotis nattereri* |
| Mammals | *Rupicapra rupicapra (except Rupicapra rupicapra balcanica, Rupicapra rupicapra ornata and Rupicapra rupicapra tatrica)* | *Rupicapra pyrenaica*<br>*Rupicapra rupicapra* | Separate reports |

Note: The asterix (*) is used for species where relation between the currently recognised species and the species listed in the Annexes of the Directive is unclear or ambiguous. The questionmark '?' indicates unresolved cases.

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[52] Species to be reported under 'All other Microchiroptera' *Eptesicus anatolicus, E. isabellinus, E. nilssonii, E. serotinus, Hypsugo savii, Myotis alcathoe, M. aurascens, M. brandtii, M. daubentonii, M. mystacinus, M. nattereri, Nyctalus azoreum, N. lasiopterus, N. leisleri, N. noctula, Pipistrellus hanaki, P. kuhlii, P. maderensis, P. nathusii, P. pipistrellus, P. pygmaeus, Plecotus auritus, P. austriacus, P. gaisleri, P. kolombatovici, P. macrobullaris, P. sardus, P. teneriffae, Tadarida teniotis, Vespertilio murinus*

Newly recognised and widely accepted species which are not included in Table 14, for example because they are not yet included in global and regional taxonomical references used as the sources for this table, should also be reported separately.

Some species noted in the Annexes are now included under other species, often losing their specific or even subspecific status. These few Directive species do not represent a valid taxonomical unit and the names listed in the Directive refer to a particular population of currently recognised species. In these cases Member States should still provide the Article 17 report corresponding to the species name in the Directive considering the interpretation of the species at the time when the Annexes of the Directive were drafted or amended. For example, according to current knowledge, the Directive species *Euphorbia lambii*, native to La Gomera in the Canary Islands, and *E. bourgeana* both represent a single species for which the name *E. bourgeana* is used. However, the reporting obligation only covers the La Gomera population previously referred to as *E. lambii.* An overview of the species listed in the Directive which are not recognised as valid species/subspecies or where specific/subspecific status has been contested in some scientific references is provided on the Reference Portal[53].

In some very rare cases, two species listed in the Directive have been merged into one currently recognised species. For example, *Margaritifera durrovensis* now considered part of *M. margaritifera*, or *Limonium multiflorum* and *L. dodartii* ssp. *lusitanicum.* In these cases a joint report including both Directive species should be provided under the currently valid species name (provided in the species checklist). If the conservation status and threats to these two populations (previously recognised as different species) differ, their status and threats can still be reported separately either in an additional optional report[54] or in field 11.8 'Additional information'.

Table 15 provides an overview of species listed in the Directive which have been merged into one currently recognised species.

**Table 15:        Species listed in the Directive which were merged into one currently recognised species**

| Taxonomical group | Name in the Directive | Currently recognised species | Note |
|---|---|---|---|
| Plants | *Limonium multiflorum* *Limonium dodartii* ssp. *lusitanicum* | *Limonium multiflorum* | Joint report for both HD species under the name *Limonium multiflorum.* |
| Molluscs | *Discoglossus jeanneae* *Discoglossus galganoi* | *Discoglossus galganoi* | Joint report for both HD species under the name *Discoglossus galganoi.* |
| Molluscs | *Margaritifera margaritifera* *Margaritifera durrovensis* (*Margaritifera margaritifera*) | *Margaritifera margaritifera* | Joint report for both HD species under the name *Margaritifera margaritifera.* |

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[53] http://cdr.eionet.europa.eu/help/habitats_art17
[54] In some situations Member States may complete additional report formats for habitats (subtypes of marine habitats) or species (e.g. distinct species of genus *Lycopodium*) not listed in the Member State's checklist and submit these optional reports together with the mandatory reporting dataset.

For some species the taxonomy remains unclear or was ambiguous at the time the Annexes of the Directive were drafted or amended. For these species the link between the currently recognised valid name(s) and the names listed in the Directive is not clear. For example, based on available sources it is not possible to clearly conclude whether or not the Directive name *Barbus plebejus* should cover Balkan species of the *B. cyclolepis* complex, as several contradictory descriptions of the earlier species were available when the Annexes were drafted.

Other species listed in the Directive are currently considered taxonomical errors. The name listed in the Directive is labelled 'taxonomical error' on the checklist in cases where it is not possible to identify a native population(s) or taxonomical units corresponding to the Directive names. This should not be confused with situations where species listed in the Directive were previously recognised as distinct species but are now included under other native taxa.

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**Box 4: Taxonomical errors**

An Iberian subspecies of wider *Rubus genevierii*, *R. genevierii* ssp. *herminicus,* was described in 1915 from a single location. Since that time the species was repeatedly cited in national taxonomical literature, but its existence or taxonomical validity was never fully proven. *Flora Europaea* described *R. genevieri* as a species with a wide European distribution, without mentioning *R. herminicus*. The *Checklist da Flora de Portugal (Continental, Açores e Madeira)* published in 2011 does not mention the taxon, not even in the lists of taxa with dubious occurrence or taxa with taxonomical problems. Studying the available taxonomical literature, it is not clear which populations were previously covered by the Directive name *Rubus genevierii* ssp. *herminii*. Currently, this name cannot be associated with any identifiable taxonomical unit.

*Marsilea azorica* was considered a conservation priority species in the Azores, Macaronesia, and Europe (Martín Esquivel et al., 2008). In a recent publication, Schaefer et al. (2014) provide scientific evidence revealing that *Marsilea azorica* is a misidentified alien species from Australia (*M. hirsuta)*. The invasive character of *M. hirsuta* was not known when the Azores population was described as a species.

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ETC/BD has prepared several notes dealing with taxonomical issues which are accessible via the Reference Portal.

## Occurrence categories used in the species checklist

The following categories and codes are used for the 2013–2018 reporting:

- **Present regularly (PRE)**

This category applies to species which occur regularly in the region.

- **Occasional (OCC)**

Occasional species are species:

- which do not have a stable and/or regular occurrence in the biogeographical/marine region; and
- for which the number of records is insignificant.

Reproduction within a biogeographical region or marine region is not recorded or is very sporadic. Even if it is not appropriate or possible to assess their conservation status at the Member State's

biogeographical level at this stage, these species should be reported in order to be duly reflected in the EU biogeographical assessment.

For example:

*Nymphalis vaualbum* is a species with an Eastern European range and strong migratory behaviour. Outside the centre of its distribution in Russia, it is suspected that the species forms temporary populations or is only present as a vagrant. In Finland this species is considered an occasional migrant with great fluctuations in its occurrence. It has also been known to hibernate. There are records of about 40 specimens before 1990 (first record 1897); after that fewer than ten specimens have been recorded (2001–2011).

Using the 'occasional' category should reflect the history of the species, and its use should be restricted to cases where species have a natural irregular occurrence and also occur in insignificant numbers. The 'occasional' category should not be used for:

- species which were regularly occurring in the past but whose numbers have significantly declined or a reproducing population became extinct due to human pressures, so that at present only occasional or vagrant individuals occur within a biogeographical region. In this case the category 'present' should be used;
- poorly known species with occasional records in the region, but which most likely have a stable or regular occurrence. These should be listed under the category 'present regularly';
- species which occur as vagrant but with important abundance (e.g. marine mammals or turtles in many regions). These species should be listed under the category 'present regularly'.

- **Newly arriving species (ARR)**

Newly arriving species are species that do not represent a permanent component of the fauna or flora of a biogeographical/marine region, but which have started to be recorded recently, within the last 12 years, due to the dynamics of their natural range.

Even if it is not appropriate or possible to assess their conservation status at the Member State's biogeographical level at this stage, these species should be reported in order to be duly reflected in the EU biogeographical assessment. For assessing conservation status at the EU biogeographical level it is important to identify the dynamic processes of range, mainly if they appear as a result of climate change, land-use or other changes, and reflect them in the assessment.

This category should not be used for species that already have a stable population within the biogeographical region.

For example:

The Golden jackal (*Canis aureus*) has in the past been recorded as a vagrant in Austria, Slovakia, Slovenia, and the Czech Republic, but an increased number of indices of its presence in recent years suggest that the natural range of the species is extending northwards. The presence status of *Canis aureus* in these countries should therefore be reported as 'newly arriving'.

*Sympecma braueri* is a species found in the temperate zone and is generally absent from the Boreal region. It was recorded in Finland for the first time only recently and the number of records have increased very rapidly (recorded at about 70 localities in southernmost Finland). Although it started

to be recorded only in recent years, it is assumed that it has established a population, so it should be reported under the category 'present'.

If a newly arriving species is not listed in the checklist for Article 17 reporting for the Member State, due to an oversight when the list was prepared, the Member State should still report it.

- **Marginal (MAR)**

The category 'marginal occurrence' should be used in situations where the species occurs principally in one region (or Member State) with a population extending to a neighbouring region (or Member State), where the abundance of the species is insignificant and the occurrence represents a limit of a natural range of a species in a given area. In contrast with occasional species, the occurrence of a marginal species within a region (or Member State) is regular. Marginal populations are closely connected to the main population occurring in the neighbouring region or Member State (for example, the immigration of individuals) so their favourable status can be achieved only in relation with the main population. It is not expected that the conservation status of the marginal species will be assessed. However, if the conservation status is evaluated the assessment should take into account their marginal position and link to a principal population, for example when estimating the favourable reference population.

For example:

*Leucorrhinia pectoralis* occurs in Poland as a lowland species almost entirely restricted to areas below 500 m due to the absence of typical habitats at higher altitudes. Three locations are known in the Alpine region on the margin of the natural range of this species in Poland where only single individuals had been recorded for several years.

The use of the 'marginal' category should reflect the history of the species and should be restricted to situations where the species occurs naturally as 'marginal'. The 'marginal' category should not be used for species that were regularly occurring in the past but whose numbers have significantly declined or a reproducing population has become extinct due to human pressures, so that nowadays only individuals originating from a neighbouring population persist. In this case the category 'present' should be used.

- **Species extinct after entry into force of the Habitats Directive (EXa)**

This category applies to species for which the last record in a biogeographical or marine region (even if it was a single individual) was noted after the date when the Directive came into force in the Member State; these species previously had a permanent/regular occurrence in the region.

In some situations the species has not been recorded for several years, but there is insufficient evidence to conclude that it is extinct. These species should be classified as 'present'.

- **Species extinct prior to entry into force of the Habitats Directive (EXp)**

This category includes species for which the last record of the species in a biogeographical or marine region (even if it was a single individual) was before the date when the Directive came into force in the Member State but after 1950.

This category also includes species which became extinct in the past (including before 1950) but for which there is a restoration project, or species of a particular conservation interest with recent signs of recolonisation, but for which successful recolonisation or reintroduction cannot yet be concluded.

- **Scientific reserve (SCR)**

The occurrence of the species is uncertain. This category applies when there are only occasional historical records and it is not possible to judge if it occurs in the region regularly in significant numbers (this should only be the case for species which are extremely difficult to survey). Scientific reserve should also be used where there is a recent record of a species in the biogeographical region but its validity remains unresolved.

This category should not be used:

- for species which were known to occur in a region and for which there were no records of their presence during the current reporting period. These species are to be classified as 'present';
- where the occurrence of a species is unresolved due to the absence of inventories. Such species should be treated as 'present' and the report should reflect the fact that there are no data available.

## Marine species

This chapter provides complementary information to the guidance provided in Sections 'Species to be reported' and '4   Biogeographical and marine regions' (in 'Field-by-field guidance for species reports').

**Marine regions**

The map of biogeographical regions was prepared from terrestrial data and is therefore not appropriate for reporting on non-coastal marine habitat types and species.

For marine species Member States should report conservation status using the following marine regions:

- Marine Atlantic: Northern and Western Atlantic including the North Sea and Kattegat;
- Marine Baltic: east of the Kattegat, including the Gulf of Finland and the Gulf of Bothnia;
- Marine Black Sea: Exclusive Economic Zones of Bulgaria and Romania;
- Marine Mediterranean: Mediterranean sea east of meridian line of 5° 55' W;
- Marine Macaronesian: Exclusive Economic Zones of the Azores, Madeira, and Canary archipelagos, plus the continental shelf of Portugal.

Delineation of borders of the marine regions is based on boundaries of the MSFD regions and subregions[55]. The Member State extent for reporting under Article 17 of the Habitats Directive should be the same as that used for reporting under the MSFD.

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[55] A map of marine regions can be found on the Reference Portal.

## Species to be reported in marine regions

Marine species (Table 16) should only be reported under Article 17 for the appropriate marine region(s) even though some of them also occur, at times, on land. For example, the species *Halichoerus grypus* (grey seal) should only be reported for marine regions, even though it occurs on beaches and rocks. The assessment should also take into account the use of the areas within the 'terrestrial' biogeographical region. For example, an assessment of *Halichoerus grypus* will include the beaches, rocks, etc. as well as the seal's use of marine habitats.

**Table 16:        Marine species to be reported under marine regions**

| **Mammals** |
| --- |
| All species of *Phocidae* except *Phoca hispida saimensis* (Boreal) |
| All species of *Cetacea* |
| **Reptiles** |
| All species of *Cheloniidae* and *Dermochelyidae* |
| **Molluscs** |
| *Gibbula nivosa* |
| *Patella ferruginea* |
| *Lithophaga lithophaga* |
| *Pinna nobilis* |
| **Echinoderms** |
| *Centrostephanus longispinus* |
| **Algae** |
| *Lithothamnium coralloides* |
| *Phymatolithon calcareum* |
| **Cnidarians** |
| *Corallium rubrum* |
| **Crustaceans** |
| *Scyllarides latus* |

This list includes Annex II species which were not discussed at the Marine Natura 2000 seminars. This is because the marine seminars were held to discuss those species and habitats subject to a 'scientific reserve' from earlier seminars rather than to discuss all the species and habitats that are considered as 'marine'.

## Species to be reported in terrestrial biogeographical regions

Species which are predominately terrestrial but which can occur in the sea, such as *Lutra lutra* (otter) should only be reported under the appropriate terrestrial biogeographical region.

**Anadromous fish and lampreys and fish forming separate sea-spawning populations**

Most of the fish and lampreys listed in the Annexes occurring in the sea are anadromous (or have anadromous populations), i.e. they migrate between rivers (where they spawn) and the sea (see the list below)[56]:

*Acipenser gueldenstaedtii*

*Acipenser nudiventris*

*Acipenser naccarii*

*Acipenser oxyrinchus*

*Acipenser stellatus*

*Acipenser sturio*

*Huso huso*

*Alosa tanaica*

*Alosa alosa*

*Alosa fallax*

*Alosa immaculata*

*Lampetra fluviatilis*

*Petromyzon marinus*

*Coregonus oxyrhynchus*

*Coregonus maraena* in *'Coregonus lavaretus* Complex'

Bearing in mind the lack of knowledge about the marine stages of the life cycle of most anadromous fish and lampreys and the fact that the same populations occur in marine areas and rivers (so the status in adjacent biogeographical and marine regions is closely linked), the status of anadromous fish and lampreys should only be assessed in terrestrial biogeographical regions. Information on 'habitat quality and availability' and 'pressures and threats' specific to the marine environment should be included in the terrestrial report.

The only exception to these rules is for four species of *Acipenseridae*, for which Member States have to provide separate reports for the marine and terrestrial regions:

- *Acipenser sturio*: The only extant spawning population occurs in the Garonne in France (Gesner et al., 2010-1), although there are some indications of its presence in the river Evros in Greece (Koutrakis et al., 2011). This critically endangered species spends a significant part of its life in marine areas;
- *Acipenser gueldenstaedtii* and *Acipenser stellatus*: Black Sea populations spawn in the Danube, with spawning of *Acipenser gueldenstaedtii* assumed also in the river Rioni (Gesner et al., 2010-2),. The Marine Black Sea populations also contain stocks spawning outside the EU. These critically endangered species are under pressure in both rivers and marine areas;

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[56] *Salmo salar,* an anadromous fish, is not listed below, as it is only protected in freshwaters. Further guidance on anadromous fish does not apply to this species. Unlike for other anadromous fish, 'habitat quality and availability' should not consider the quality in marine areas and the listing of marine pressures and threats is not expected.

- *Huso huso*: a critically endangered species, threatened among others by overfishing in marine areas.

*Coregonus albula, C. maraena* (included in *'Coregonus lavaretus* Complex') and *Thymallus thymallus* form distinct populations spawning in the northern part of the Baltic Sea (in Sweden and Finland) and therefore should also be reported for marine regions (together with terrestrial biogeographical regions).

## Transboundary populations

In some cases species may have a population which is shared between two or more Member States, such as the Pyrenean population of Brown bear (*Ursus arctos*) in France and Spain, and the Tatra chamois (*Rupicapra rupicapra tatrica*) in Poland and Slovakia. In such instances Member States are encouraged to undertake a common assessment and to agree on data and assessments, but each Member State reports the results for their territory, i.e. a respective proportion of the regional population and range and corresponding trends (although disintegrating the regional values into Member States proportions will probably result in relativelly crude estimates these are important to understand the impact of pressures and conservation measures, which are likely to be different in each Member State and the role of Natura 2000 network), information related to habitat for the species, and Natura 2000 network, respective pressures and threats and conservation measures. The regional (transboundary) values for range and population size can be provided in fields 5.12 and 6.17 'Adiditional information'.

If joint regional assessment of the conservation status was made the results of this assessment can be provided instead of the Member State level assessment. This should be noted under field 13.2 'Transboundary assessment'.Joint assessments between two or more Member States should be done primarily in cases where there is a certain level of cooperation and common understanding of the management needs and approaches for that species (e.g. large carnivore populations). There may also be cases where it is biologically relevant to consider populations in other neighbouring non-EU countries. This should be clearly described under field 13.2 'Transboundary assessment'.

For some marine species, population estimates have been made by sea area and not by Member State; for example, the SCANS surveys of small cetaceans in the European Atlantic and North Sea[57] In such cases it may be appropriate for all Member States involved to produce a regional assessment of status for range and population (but each Member States should report respective proportion of population size and range area, as stated above). In addition, a coordinated assessment of pressures and threats, conservation measures and future prospects, should be undertaken if appropriate. As combined assessments may be based on diverse data sources it is important that field 13.2 'Transboundary assessment' includes information on how the assessment was carried out.

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[57] Hammond et al., 2013

## Sources of information for species assessments

Member States are obliged under Article 11 to undertake surveys and inventories, and these should be the basis of the Article 17 assessments.

The EUMON project has compiled a list (incomplete) of monitoring schemes across Europe, which can be found on the project website[58].

Guidance has been published by the European Commission for large carnivores[59]. Although produced from a management perspective this may be a source of information for this species group (Boitani et al., 2015). For reporting under Article 17, in cases of conflicting advice, the guidance given in these guidelines takes priority.

## Trends

This chapter provides complementary information to the guidance provided on trends and trend periods 'Part 1 Field-by-field guidance for completing 'Annex B' Species reports)'.

The conservation status assessment stresses the importance of trend information: trends are decisive for the assessment of conservation status since usually only stable or increasing trends can result in an overall Favourable conservation status (FCS) conclusion. Therefore, in general, more attention should be paid to the methodology of monitoring schemes to improve the quality of trend information.

Trends are an essential part of assessing all conservation status parameters except Future prospects. A comparison between the overall population trend in good condition in the biogeographical or marine region and trends within Natura 2000 is important in assessing the impact of the Natura 2000 network on conservation status (see also Section '12    NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex II species' (in 'Definitions and methods for species reporting').

Trends are usually derived from modelling or existing monitoring schemes which are based on sampling, as complete surveys are exceptional and usually only undertaken for very rare species. Sampling methods should be statistically robust wherever possible. In the absence of dedicated monitoring schemes, trends are usually a result of expert opinion and in that case should be reported only as directions (increasing/decreasing/stable), without absolute values. Unknown trends should be reported as 'unknown'. If the available data are not sufficient to determine trend direction, this can be reported as 'uncertain' (lack of a clear signal).

Trend is a (measure of a) directional change of a parameter over time. Trends (especially of population) should ideally be the result of a statistical regression of a time series. Fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend. However, fluctuations can occur within a long-term trend and can affect the measurement of short-term trends, because it is difficult to assess whether there is a real trend in the short-term, or whether there is simply a fluctuation or population cycling effect.

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[58] http://eumon.ckff.si/monitoring/
[59] http://ec.europa.eu/environment/nature/conservation/species/carnivores/index_en.htm

Fluctuation is an intrinsic character of all natural systems and can be observed for all directions of the trend (increasing, decreasing, and stable). However, it is only detectable in regularly surveyed populations. Fluctuations are only likely to be detected when the parameter is measured at least three times within a given time-frame. Ideally, they will be based on more frequent sampling. In reality, this is unlikely to happen in short time-frames (such as 12-year intervals), and setting short-term trends in a long-term context will help to identify where fluctuations are occurring.

Fluctuations in Range or area of Habitat for the species are rarely detectable over a 12-year period and any fluctuation of these values is mostly long term. In summary: Range and Habitat for the species are unlikely to fluctuate in a 12-year period. However, measurement of these parameters can be inexact and longer-term information may be required to detect any real changes, given the range of data availability, sample sizes and possible survey methods.

## Short- and long-term trends

The reporting period for the Habitats Directive is six years, but estimates of trend are more likely to be statistically robust over longer time periods. It is therefore recommended to estimate short-term trends over two reporting cycles, i.e. 12 years (or a period as close to this as possible), as this should give a more reliable and comparable estimate of the trend; see Table 17). Long-term trends, which are likely to be more statistically robust, can also be reported (in a series of optional fields). The recommended period for assessing longer-term trends is four reporting cycles (24 years). This definition of a long-term period used for reporting of the long-term trends should not be confused with the legal requirement of the Directive of maintenance in a 'long-term' of a habitat.

The short-term trend information should be used in the evaluation matrix to undertake the conservation status assessment.

**Table 17:**       **Period for assessing trends**

| Trend | Period to assess trend |
|---|---|
| Short-term | Two reporting cycles (12 years; or a period as close as possible) |
| Long-term | Four reporting cycles (24 years; or a period as close as possible) |

The trend magnitude reported should be the change over the relevant period (e.g. 12 years for short-term trend). Where magnitude is derived from data covering a different time interval, estimate the change for the reporting period by simple proportion. For example, a change of 150 $km^2$ over 15 years would be equivalent to 10 $km^2$ per year or 120 $km^2$ over the 12-year interval for short-term trend magnitude. If the change appeared at a specific time (for example, as a result of a catastrophe), precise time period or year should be reported and an explanation should be provided in fields 5.12, 6.17, 7.9 or 12.6 'Additional information'.

## Favourable reference values

This chapter provides complementary information to the guidance provided on favourable reference values in Sections ' 5    Range' and '6    Population' (in 'Field-by-field guidance for species reports').

### What are favourable reference values?

The concept of favourable reference values (FRVs) is derived from definitions in the Directive, particularly the definition of Favourable conservation status that relates to the 'long-term distribution and abundance' of the populations of species (Article 1(i)), and for habitats to the 'long-term natural distribution, structure and functions as well as the long-term survival of its typical species' (Article 1(e)). in their natural range This requires that the species is maintaining itself on a long-term basis as a viable component of its natural habitats. Similarly, for habitats, the Directive requires that the specific structure and functions necessary for its long-term maintenance exist and will continue to exist and that its typical species are in favourable status, i.e. are maintaining themselves on a long-term basis. If Member States do not maintain or restore such a situation, the objective of the Directive is not met.

Favourable reference values – 'range' for species and habitats, 'population' for species, and 'area' for habitats – are critical in the evaluation of conservation status. The evaluation matrices (Annexes C and E) of the Report format require Member States to identify favourable reference values for range (FRR) and area for habitats (FRA) and for range (FRR) and population (FRP) for the species. The conservation status assessment then looks at the difference between current values and reference values. Basically, the range, area, and population must be sufficiently large in relation to favourable reference values (as defined in the evaluation matrix) to conclude, alongside other criteria (e.g. trends), whether the parameter is 'favourable' or 'unfavourable'.

The concept of favourable reference values was endorsed by the Habitats Committee back in 2004: document Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive [60] describes the favourable reference range, population and habitat area as follows:

*Range within which all significant ecological variations of the habitat/species are included for a given biogeographical region and which is sufficiently large to allow the long-term survival of the habitat/species; favourable reference value must be at least the range (in size and configuration) when the Directive came into force; if the range was insufficient to support a favourable status the reference for favourable range should take account of that and should be larger (in such a case information on historic distribution may be found useful when defining the favourable reference range); 'best expert judgement' may be used to define it in absence of other data.*

*Population in a given biogeographical region considered the minimum necessary to ensure the long-term viability of the species; favourable reference value must be at least the size of the population when the Directive came into force; information on historic distribution/population may be found useful when defining the favourable reference population; 'best expert judgement' may be used to define it in absence of other data.*

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[60] Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive (DocHab-04-03/03 ver.3). DG Environment, 2004.

*Total surface area of habitat in a given biogeographical region considered the minimum necessary to ensure the long-term viability of the habitat type; this should include necessary areas for restoration or development for those habitat types for which the present coverage is not sufficient to ensure long-term viability; favourable reference value must be at least the surface area when the Directive came into force; information on historic distribution may be found useful when defining the favourable reference area; 'best expert judgement' may be used to define it in absence of other data.*

## Setting the favourable reference values (FRVs) for species

### Overview of general principles for setting reference value

Before setting the favourable reference values, it is advisable to collect all the relevant information about a species in order to understand their ecological and historical context. Therefore, ideally data and information on the following factors should, when available, be gathered and used for estimating FRVs for species:

- current situation and assessment of deficiencies, i.e. any pressures/problems;
- trends (short-term, long-term, historical, i.e. well before the Directive came into force);
- natural ecological and geographical variation (including genetic variation, inter- and intra-species interactions, variation in conditions in which species occur);
- ecological potential (potential extent of range, taking into account physical and ecological conditions);
- natural range, historical distribution and abundances and causes of change, including trends;
- connectivity and fragmentation.
- requirements for populations to accommodate natural fluctuations, allow a healthy population structure, and ensure long-term genetic viability;
- migration routes, dispersal pathways, gene flow, population structure (e.g. continuous, patchy, metapopulation).

The following general principles should be taken into account in the process of setting FRVs:

- FRVs should be set on the basis of ecological and biological considerations;
- FRVs should be set using the best available knowledge and scientific expertise;
- FRVs should be set taking into account the precautionary principle and include a safety margin for uncertainty;
- FRVs should not, in principle[61], be lower than the values when the Habitats Directive came into force, as most species have been listed in the Annexes because of their unfavourable status; the distribution (range) and size (population) at the date of entry into force of the Directive does not necessarily equal the FRVs;
- FRV for population is always bigger than the minimum viable population (MVP) for demographic and genetic viability;
- FRVs are not necessarily equal to 'national targets': 'Establishing favourable reference values must be distinguished from establishing concrete targets: setting targets would mean the translation of such reference values into operational, practical and feasible short-, mid- and

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[61] For example, species with overpopulations as result of non-conservation artificially feeding.

- long-term targets/milestones. This obviously would not only involve technical questions but be related to resources and other factors' (European Commission, 2004[62]);
- FRVs do not automatically correspond to a given 'historical maximum', or a specific historical date; historical information (e.g. a past stable situation before changes occurred due to reversible pressures) should, however, inform judgements on FRVs;
- FRVs do not automatically correspond to the 'potential value' (carrying capacity) which, however, should be used to understand restoration possibilities and constraints.

Although FRVs have to be set separately for range and population size, **there is a clear relationship** between range and population size of a species because within the natural range all significant ecological variations must be considered. This calls for an iterative process in setting the FRVs to ensure that one value takes the other one into account, e.g. population large enough with an appropriate range to include and maintain the evolutionary potential of a species or a range sufficiently large enabling to species population to carry out all stages of its life cycle.

FRVs have to be reported at the level of the Member State biogeographical/marine region. However, these geographical units may not be appropriate for developing a rationale for FRVs based on biology and ecology of species. Therefore, it is advisable to set FRVs at the most suitable scale (often national, sometimes supranational) and to derive the national biogeographical numbers from this value, e.g. using a proportion based on distribution and/or size/area.

The term 'current value' will be used often in these guidelines. It should be interpreted as being the value reported by the Member State for the present reporting period, which is to be compared to the favourable reference value.

**Model-based and reference-based approach**

There are basically two approaches to setting FRVs: model-based and reference-based. Model-based methods are built on biological considerations, such as those used in Population Viability Analysis (PVA) or on other estimates of Minimum Viable Population (MVP) size. This approach requires good knowledge about species ecology and biology, and a spreading of viable populations across the species' natural range. Reference-based approaches are founded on an indicative historical baseline corresponding to a documented (or perceived by conservation scientists) good condition of a particular species or restoring a proportion of estimated historical losses. Both approaches take into account information about distribution, trends, known pressures and declines (or expansions). These approaches are not mutually exclusive and will be further explained in the sections below with practical instructions and examples.

With the objective of developing practical and pragmatic guidance promoting harmonisation between Member States, while allowing for the needed flexibility (e.g. the best method to be used depends on the data available), a stepwise approach, as summarised in Figure 2 below, is recommended.

The stepwise approach and the specific methods for setting the FRVs are largely dependent on the available data and knowledge for each species. Three generic levels of data availability and knowledge are suggested:

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[62] Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive (DocHab-04-03/03 ver.3). DG Environment, 2004.

- High: good data on actual distribution and ecological requirements/features; good historical data and trend information;

- Moderate: good data on actual distribution and ecological requirements/features; limited historical distribution data (only trend data available);

- Low: data on actual distribution and ecological requirements/features are sparse and/or unreliable; hardly any historical data available and no trend information.

**Figure 2:        Illustration of the stepwise approach to set FRVs**
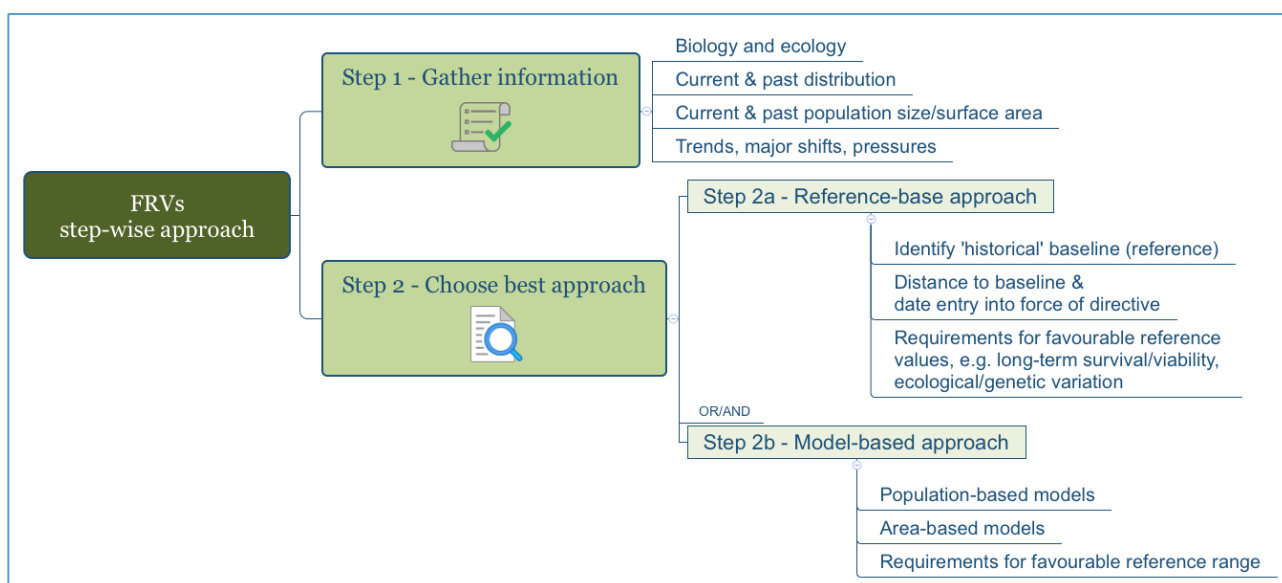


The recommended approach involves a certain number of steps that will be further detailed below[63]. In summary, and without detailing all conditions, they are:

- **Step 1: Gather information**

Collect all relevant information about a species/ necessary to understand their ecological and historical context: biology and ecology; natural range, current and past distribution (including before the Directive came into force) and population size/surface area; trends, their causes and when major changes occurred, pressures.

- **Step 2: Choose best approach**

 Depending on the availability and quality of the data and information gathered, choose the best way of setting the FRVs.

- **Step 2a: Use reference-based approach**

Compare the current distribution and population size or surface area with those of a past favourable period and at the date of entry into force of the Directive.

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[63] In order to better understand the practical development of the approaches above (and the steps that will be further detailed), several 'real life' validated examples can be found available on the Article 17 Reference Portal. Additionally, elaborated methods and other examples are available from Bijlsma et al., 2017

Check if the values above are sufficient to ensure long-term survival and viability, as well as coverage of ecological variations.

Set values or use operators to qualify how far the current value is from the favourable situation.

- **Step 2b: Use model-based approach**

Develop population-based models or use available estimates derived from such models to assess the favourable reference population, taking into account the requirements for a favourable reference range.

The favourable reference values for species – FR range and FR population – need to capture the requirements of the Directive concerning both the ecological/genetic diversity and the long-term survival of the species.

Firstly, the natural range of the species in the Member State(s) is not to be reduced (Article 1(i)). The ecological/genetic diversity is often associated with geographical (north–south/east–west) and environmental gradients (e.g. altitudinal, geological, climatic).

The next section elaborates in more detail the issues about long-term viability and survival of the population or populations of a species in its natural range in the EU.

**Understanding long-term viability/survival**

The interpretation of a species being, or maintaining itself, 'viable' in the long term is discussed in many publications on conservation biology or in a broader context of conservation planning and management. For some species, 'action plans' have been prepared, either at local, regional, national or European scale, and although these plans do not use the term 'favourable reference value', they do sometimes consider related concepts and may be a source of ideas and information. For example, the European Commission supports the development of EU action plans for selected species[64] and the Council of Europe has published European action plans for large carnivores[65].

In ecological studies (e.g. Beissinger & McCullogh, 2002), 'viability' of a population is approached via population viability analysis (PVA) and the associated concept of minimum viable population (MVP). MVP size refers to the number of individuals required for a sufficiently high probability of population persistence or for sufficient retention of genetic variation for maintaining evolutionary potential.

However, and as the Directive requires, the most recent publications on this topic emphasise that the viability of a species should not be understood merely as an avoidance of extinction risk, focusing on the demographic viability of populations (often represented as an MVP). For example, the 'role the species plays in the ecosystem (Epstein et al., 2015), ecological functionality allowing a species to respond to changes in a species' communities and resilience achievable through large dynamic metapopulations' (Redford et al., 2011) are equally important. Caughley (1994) distinguished between 'small population' and 'declining populations' paradigms in conservation biology. Whereas Matthews (2016) warns that a narrow focus on population viability can result in a tendency towards 'ecology of the minimal'.

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[64] http://ec.europa.eu/environment/nature/conservation/species/action_plans/
[65] http://www.coe.int/en/web/bern-convention/on-large-carnivores

The concept of a viable (meta)population[66] can usefully inform the FRP, but is distinct from the concept of favourable population and needs upscaling: a (meta)population may be viable at a very local scale (e.g. for largely sedentary species) to international scale (e.g. for migratory species), whereas 'favourable population' considers the conservation status of populations across the natural range of the species, which, for the purpose of assessment and reporting, can be divided into references at, for example, Member State level and at biogeographical level. The favourable reference value will generally cover many discrete (meta)populations within a Member State, or a Member State may just cover a part of a larger, international (meta)population, in which case a reference value at biogeographical level may be appropriate (see Table 18 below).

The distinction between a minimum viable (meta)population and the concept of Favourable conservation status becomes clear from the wording in the Habitats Directive: conservation status relates to the 'long-term distribution and abundance of the populations' of species (Article 1(i)), aiming for the populations to be maintained or restored at Favourable conservation status (Article 2.2) in their natural range, so that the species remains a viable component of its natural habitats. It is therefore important for favourable reference populations to reflect the 'long-term viable component of the natural habitat' at the level of the species across its natural range and distribution, rather than solely a minimum viable population.

## Stepwise process for setting the favourable reference values for species

### Step 1: Gather information about the species

The list below includes examples of data and information about the species biology and ecology that may be relevant:

- life history strategies and dispersal capacity;
- spatial and genetic structure of the population: subpopulations, metapopulations, management units (marine environment);
- habitat requirements for each stage of the life cycle; reproduction, foraging, resting, migration, pollination;
- geographical variation (differentiation) in habitat requirements, migration routes;
- potential range.

Knowledge about the structure of the species' populations is useful to understand the spatial scale at which they function and choose the approach for setting the FRVs (Table 18).

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[66] A metapopulation consists of a group of spatially separated subpopulations of the same species which interact at some level through immigration or exchange of individuals between the distinct subpopulations. While a single subpopulation may not be sufficient to guarantee the long-term viability of a species in a given area, the combined effect of several connected subpopulations may be able to do this.

**Table 18:** **Categories of populations in terms of structure and migratory character and indicative level for setting the FRVs**

| Category of population | Comments and examples |
|---|---|
| **Populations of sedentary (non-migratory) animals, more or less mobile** | Large or small sedentary species with more or less exchange at or below Member State level; FRVs to be normally set at the Member State level (or at the MS biogeographical level) or in cooperation with neighbouring countries, depending on the species distribution and if their populations are transboundary or not.<br>• *Barbastella barbastellus*<br>• *Austropotamobius pallipes*<br>• *Carabus olympiae, Osmoderma eremita.*<br><br>Large, more or less mobile sedentary species with only one or a few clearly isolated populations; FRVs to be normally set at the MS biogeographical level or at the MS level if population(s) is distributed in more than one region.<br>• female *Ursus arctus*<br>• *Monachus monachus*<br>• several *Coleoptera* and *Odonata*<br>• *Margaritifera margaritifera, Unio crassus.*<br><br>Sedentary, small and mobile animal species; FRVs to be normally set at the MS biogeographical level.<br>• many butterflies.<br><br>Individuals with inherently large home ranges (> 100 km$^2$ up to > 1 000 km$^2$); FRVs to be normally set for the whole population (or meta-population) or populations, which may imply cooperation between MS sharing the same population (meta-population).<br><br>• *Canis lupus*<br>• several whales and most dolphins. |
| **Populations of sedentary (non-migratory) animal species with low mobility and of plant species** | Often with diffuse, scattered distribution or isolated/single distribution; FRVs to be normally set at the MS biogeographical level.<br><br>• terrestrial mammals: *Microtus cabrerae*<br>• amphibians/reptiles: most species<br>• insects: *Apteromantis aptera, Baetica ustulata*<br>• molluscs: all *Gastropoda*<br>• vascular plants, bryophytes, lichens: most species. |

| Category of population | Comments and examples |
|---|---|
| **Populations of migratory animals** | With individuals showing large cyclic, directed movements; FRVs to be normally set through cooperation between MS where the species normally occurs at given periods of the year.<br>• several whales<br>• *Caretta caretta*<br>• *Salmo salar*, *Petromyzon marinus*.<br><br>Partially migratory; FRVs to be normally set at the MS or MS biogeographical level taking into account possible occurrences in neighboring countries.<br>• *Miniopterus schreibersii*<br>• *Phoca hispida botnica (Pusa hispida botnica)*, several whales and dolphins<br>• freshwater fish and lampreys: most species. |

Another set of information to be collected includes data and information on distribution (and therefore range) and population sizes in the historical (far and recent) past, when the Directive came into force, and currently (i.e. when the assessment is being done). The far historical past would cover the last two or three centuries (where applicable), and the recent historical past up to about 50 years before the Directive came into force (i.e. 1940s–1950s).

This information is crucial to understand what has been happening to the species and to support the setting of FRVs in the following steps. Where available this evidence should be complemented with information on trends and pressures, to understand which events caused major changes/shifts in the status and trends of species distribution and population size, and when. For example, whales were first hunted intensively from the 1850s onwards, with the most intense period (in the eastern North Atlantic) being between 1900 and the 1960s; protection became widespread in the mid-1980s. The Bottlenose dolphin appears to have been more widespread before 1900, and may also have experienced declines between the 1960s and 1980s; Harbour porpoise also appear to have experienced declines during the twentieth century, particularly the latter half. In both cases, increased pollution may have played a role; in the latter case, additionally, by-catch has almost certainly played a role, whilst prey depletion from overexploitation of fish stocks may well have a role as well.

**Step 2a: Use reference-based approach to set FRVs**

The availability and quality of the data and information gathered in Step 1 will be very different from species to species, but also for distribution (range) and for population size.

However, it should be possible to use that information in a pragmatic way to have a rough estimation of how far from favourable reference values the current values on range (based on distribution) and population size are (using the operators 'approximately equal to', 'more than', and 'much more than', and possibly set values). When using operators, Member States are encouraged to indicate in the 'Additional information' fields (5.12 for FRR and 6.17 for FRP) an estimation of the percentage of how far the current value is from the FRV (e.g. 'current value around 5 or 6 % below FRR', 'current value about 45-50 % below FRP'); this information could be useful when estimating restoration needs for example.

The 'decision key' below should be used in general, noting that for several species (e.g. several large carnivores) Step 2b, using the population-based approach, could be more appropriate. In addition, elements from Step 2b may also be used to help estimate the FRP below. Take into account the above sections 'General principles for setting favourable reference values (FRVs)' and 'Understanding long-term viability/survival'.

**Point 1**

If both distribution and population size have not undergone visible shifts or reductions (trends have been relatively stable) in the past, including in the recent past, AND current population size is large enough to ensure the long-term viability of the species, then the:

- favourable reference range (FRR) should be equal to the current range;
- favourable reference population (FRP) should be equal to the current population size[67].

If the current range is smaller than the past range, ⇨ go to point 2.

If the current population size is smaller than the past population, ⇨ go to point 3.

**Point 2**

Identify which additional areas should be covered by the species in the future in order to re-establish a (past) range that is large enough and well distributed to accommodate a population or populations that are viable in the long term; this should take into account whether the restoration of the range is technically and ecologically feasible. The availability and quality of the data used to make such an identification and estimation could lead to different ways of expressing the FRR:

- a **value** equal to 'current range value' plus 'additional range area to be restored';
- an **operator** indicating 'more than current range' (i.e. less than 10 % more) or 'much more than current range' (i.e. more than 10 %);
- in any case, the estimated FRR should not be smaller than the range at the date of entry into force of the Directive.

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[67] Or in exceptional cases (for example of species with overpopulations as result of non-conservation artificially feeding or of species which population is increasing since the Directive came into force and which are harmfull to other protected species) the favourable reference population (FRP) should be lower than the current population.

**Point 3**

Identify how population size can be restored to a (past) favourable level: increase the size of an existing population (or populations) and/or reintroduce a population (or populations) within its natural range. If the current population(s) is viable in the long term, but information on past distribution indicates that one or several populations are locally extinct, the favourable reference population must take this fact into consideration. However, this should consider if the reintroduction is technically and ecologically feasible[68]. Information about past trends, if available, should inform the setting of the FRP. The availability and quality of the data used to make such an identification and estimation could lead to different ways of expressing the FRP:

- a **value** equal to 'current population size' plus 'additional individuals to be restored' (restoration can be through restocking/reintroduction, and/or through natural increase as a result of e.g. removing pressures);
- an **operator** indicating 'more than current population size' (i.e. less than 25 % more) or 'much more than current population size' (i.e. more than 25 %);
- in any case, the estimated FRP should not be smaller than the population size at the date of entry into force of the Directive, except in cases where that population size was due to non-natural conditions, or the species naturally exhibits wide fluctuations in population size and happened to be at a 'population high' (not biologically sustainable).

**Point 4**

A conclusion of FRR or FRP 'unknown' should only be used in the cases where there is hardly any data about species' current range and population size and no information about the its historical context.


**Step 2b: Use population-based approach to set FRVs**

There are several species for which a reference-based approach is not possible or appropriate to set the FRVs:

- species for which there is not sufficient historical information about distribution, population size, trends, pressures;
- species for which restoration of range and/or population to some historical levels would not be feasible at all;
- species for which the restoration efforts would not be proportional and reasonable in terms of the conservation objectives of the Directive (e.g. implying large-scale recreation of habitats for the species in currently urbanised areas).

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[68] The IUCN *Guidelines for Reintroductions and Other Conservation Translocations* provides useful information to decide about and plan a reintroduction. https://portals.iucn.org/library/efiles/documents/2013-009.pdf

**Box 5: Considerations about population viability analysis (PVA), minimum viable population (MVP) and generalised genetic rules**

Population viability analysis (PVA) and the concept of minimum viable population (MVP) can be useful tools to inform favourable reference values. However, FRP is always bigger than the minimum viable population (MVP) for demographic and genetic viability (see also above 'General principles for setting favourable reference values (FRVs)').

PVA is a quantitative modelling method that uses demographic and abundance data of species and incorporates identifiable threats to population survival to estimate the probability of extinction or loss of genetic variation (Beissinger & McCullough, 2002). PVA uses models of population dynamics which incorporate causes of fluctuations in population size in order to predict probabilities of extinction, and to help identify the processes which contribute to a population's vulnerability. PVA requires a lot of biological data. Some recent examples of applied PVA are available for Scandinavian wolf, bear, lynx, wolverine (Nilsson, 2013; Bruford, 2015), Woodland brown butterfly (Bergman & Kindvall, 2004), pool frog and Glanville fritillary (Sjögren-Gulve & Hanski, 2000). Brambilla et al. (2011) provided favourable reference population figures based on PVA for populations of Italian breeding birds of fewer than 2,500 pairs. The use of PVA in plant conservation is reviewed by Brigham & Schwarz (2003) and Zeigler (2013). However, PVA analyses have not been done for most of the species listed in the Annexes of the Directive.

In PVA, metapopulation viability can be assessed and modelled either through demographic and/or genetic models or by the structurally simpler occupancy models. The occupany models project the patterns of local extinction and (re)colonisation, respectively, of local populations into the future. Very simple models may build on quite unrealistic assumptions, but the more sophisticated spatially explicit patch occupancy models (SPOMs), which allow for multiple environmental and spatial factors to influence the metapopulation dynamics, can make projections, given plausible environmental scenarios, so that risks and long-term trends can be assessed and evaluated.

Generalised genetic rules, derived from population genetic analyses and PVA, recommend general thresholds for viable population sizes ('genetic viability'). A much used and debated generalisation is the '50/500 rule', which states that an effective population size $N_e$ = 50 is sufficient to prevent inbreeding depression in naturally outbreeding species in the short term, and $N_e \geq 500$ to retain evolutionary potential (Franklin, 1980; Jamieson & Allendorf, 2012). Frankham et al. (2014) proposed revised recommendations including a '100/1000,rule' instead, but also more recent papers still use the '50/500,rule' (e.g. Laikre et al., 2016). Species which have very large fluctuations in population size and a high reproduction rate generally require an effective population size much higher than 500. Based on the meta-analysis by Traill et al. (2007), the MVP for 99 % persistence for 40 generations for a typical outbreeding species may be in the order of several thousands (N) (Frankham et al., 2014: 6.3).

Generalised genetic rules have been used in the last reporting round in setting FRPs, e.g. by Belgium (Flanders) and the Netherlands.

As the name indicates, this approach is to be used to set the FRP. However, the FRR can be derived from the FRP requirements if it cannot be derived from the reference-based approach: FRR should

have sufficient connectivity and be large enough to accommodate the FRP, cover possible ecological variations, etc.

Consider using population viability analysis (PVA), available estimates of minimum viable population (MVP) size from literature, or generalised genetic rules (see Box 5).

The population-based approach described below was adapted from Bijlsma et al. (2017).

| Point 1 |
| --- |

Determine or infer the minimum viable population size (MVP) considering evolutionary potential ('genetic MVP') and the population's genetic connectivity with other relevant conspecific populations.

- If high data quality: perform a Population Viability Analysis (PVA).
- If moderate/low data quality: use MVP estimates from a) species-specific literature, b) generalised genetic rules corresponding to an effective population size Ne ≥ 500 (long-term 'genetic MVP') or other effective population size adequate for the species reproduction rate and population dynamics or c) population-based proxies for MVPs.

| Point 2 |
| --- |

Determine a factor to scale MVP size up to FRP level.

Given an MVP estimate, the required favourable population size or the number of required more or less isolated (favourable) populations will at least depend on ecological and genetic variations within the natural range of the species and often on known trends as well. Several (not always independent) approaches are available for upscaling an MVP estimate to FRP level.

For all approaches: take into account: 1) ecological/genetic variations within the (historical) natural range, i.e. geographical, climatological, geological and altitudinal gradients as well as significant differences in historical land use, and 2) technical/ecological feasibility.

Possible approaches:

- If high data quality: use models for potential range and habitat suitability or available estimates of population density, amount of suitable area and maximum dispersal distance to constrain the number of required populations or the spatial extent of one mixing population.
- If high data quality: use population trends to determine an MVP multiplier.
- If low data quality: consider ecological/genetic variations within the historical range and find the minimum number of populations (connected or isolated) needed to cover this variation.
- For migratory species and species with large home ranges: consider structured populations according to management units (e.g. marine mammals and turtles).

| Point 3 |
|---|

Determine FRP.

- If the scaling factor can be estimated with sufficient confidence:

  - FRP equal to MVP multiplied by scaling factor (number of required populations or multiplier); in any case, the calculated FRP cannot be lower than the population size at the date of entry into force of the Directive.

- If the scaling factor can only be estimated qualitatively, use operators:

  - if MVP is much smaller than the size of the population at the date of entry into force of the Directive, then the FRP should be equal to the latter value;
  - if MVP is approximately equal to or bigger than the size of the population at the date of entry into force of the Directive, and scaling factor is relatively low, then FRP should be bigger than the latter value;
  - if MVP is approximately equal to or bigger than the size of the population at the date of entry into force of the Directive, and scaling factor is relatively high, then FRP should be bigger than the latter value.

| Point 4 |
|---|

Consider consequences for setting the FRR.

If FRP is bigger or much bigger than the size of the population at the date of entry into force of the Directive, determine how much additional range is necessary (or not) to include the FRP.


## 2    Maps

This chapter provides complementary information to the guidance provided in Section '2    Maps' (in 'Field-by-field guidance for species reports').

### Distribution maps

Submission of maps of the distribution of all Annexes II, IV and V species present in a Member State is a basic requirement of the Article 17 reporting. Principal requirements for distribution maps are described in Section '2    Maps' (in 'Field-by-field guidance for species reports') and further technical specifications are provided on the Reference Portal.

Ideally the distribution map should provide complete and up-to-date information about the actual occurrence of the species based on the results of a comprehensive mapping programme/initiative/project/inventory or a statistically robust model.

In many cases field data will only cover part of a species' actual distribution or only relatively old data will be available. In this situation the Report format foresees that the distribution map is derived from a model or extrapolation. Member States are encouraged to report a more up-to-date or

complete distribution by remapping the available distribution using other data, such as the results of a monitoring programme or data on a suitable habitat.

In some cases, even with the use of extrapolation, the resulting distribution map will be highly incomplete when compared with presumed species distribution (see Figure 3). The Member States are encouraged to provide even the incomplete distribution map, but if the reported distribution map obtained as a result of comprehensive mapping, modelling or extrapolation or expert interpretation covers less than 75 % of the presumed actual species distribution (the resulting map is incomplete in relation to the presumed species distribution), the 'Method used' should be reported as '(d) Insufficient or no data available'.

**Figure 3:** **Hypothetical distribution map of a species in Germany with predicted (presumed) and reported distribution. Reported distribution represents less than 75 % of a presumed distribution, so the 'Method used' should be evaluated as '(d) Insufficient or no data available'.**
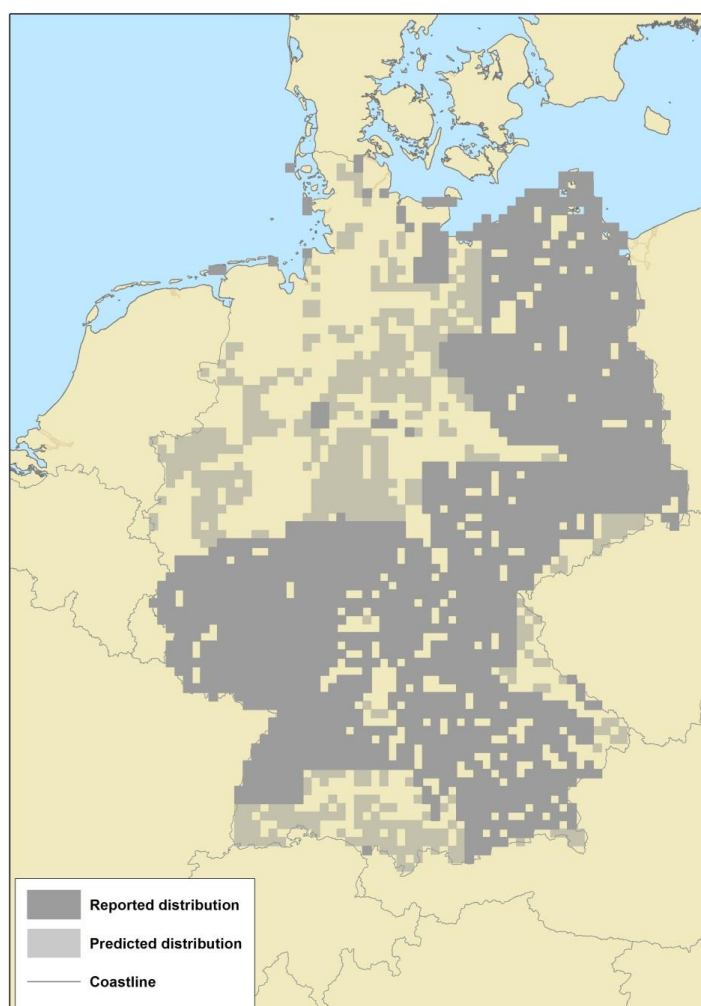


## Some issues related to distribution maps (in relation to range calculation)
### Occasional occurrences, outlying occurrences

The range for Article 17 reporting is shown as an external envelope around the species distribution. The size and shape of the range is therefore to a large extent determined by the occurrences of the

species on the outer limits of the distribution. The area of distribution is used as a weighting parameter in the EU biogeographical assessment when information on population is not available.

Species are occasionally recorded beyond their usual area of distribution, but these occasional records should not influence the shape and size of the range, nor should they be counted when weighting by the species distribution during the EU biogeographical assessment. Therefore, the distribution map is based only on regular occurrences of the species (except for maps of 'occasional' or 'newly arriving' species; see Section 'Occurrence categories used in the species checklist' (in 'Species ot be reported' chapter in 'Definitions and methods for species reporting' part). On the other hand, particularly on the boundaries of the natural geographical range, species may occur in limited numbers in atypical conditions. These outliers should be included in the distribution of the species if they represent regular and/or stable occurrences, as they are important for calculating the range.

**Metapopulations**

Many species have a metapopulation structure, which is characterised by local extinctions and (re) colonisations (e.g. Warren 1994). Although the distribution map should provide information on the actual species distribution, the localities with repeatedly recorded absence of the species (if known) but where suitable habitat is still present and recolonisation is expected should be included in the distribution map, if they form part of the area used by the metapopulation.

**Highly mobile or migratory species**

Some highly mobile or migratory species can occupy large territories during their life cycle. For example, the home range of the Eurasian lynx or wolf can exceed 100 $km^2$ under some conditions (in northern Europe the wolf territories are around 800–1 000 $km^2$, territories of lynx females are around 400 $km^2$ and of males over 1 000 $km^2$) or the home ranges of harbour porpoise can vary from 7700 to 70000 $km^2$. For these species, distribution is mostly mapped on their home-range basis or as a territory used by a population. In these situations the distribution map represents a space that is used regularly by the population(s) of species.

For anadromous fish and lampreys often recorded only in a few localities in the river systems, e.g. the spawning grounds or at fish passes, the complete migration route in the rivers from the mouths in the sea to the highest know stretches should be included in the distribution.

**Distribution map of occasional and newly arriving species and species extinct prior to entry into force of the Habitats Directive**

Unlike the distribution of regularly occurring species, the distribution of occasional and newly arriving species will consist of all grids where the occurrence of a species was recorded (including occasional occurrences).

A map of species extinct prior to entry into force of the Habitats Directive should contain grids with the reintroduction location(s) (if there is a reintroduction project) and/or known occurrences (for species with signs of recolonisation).
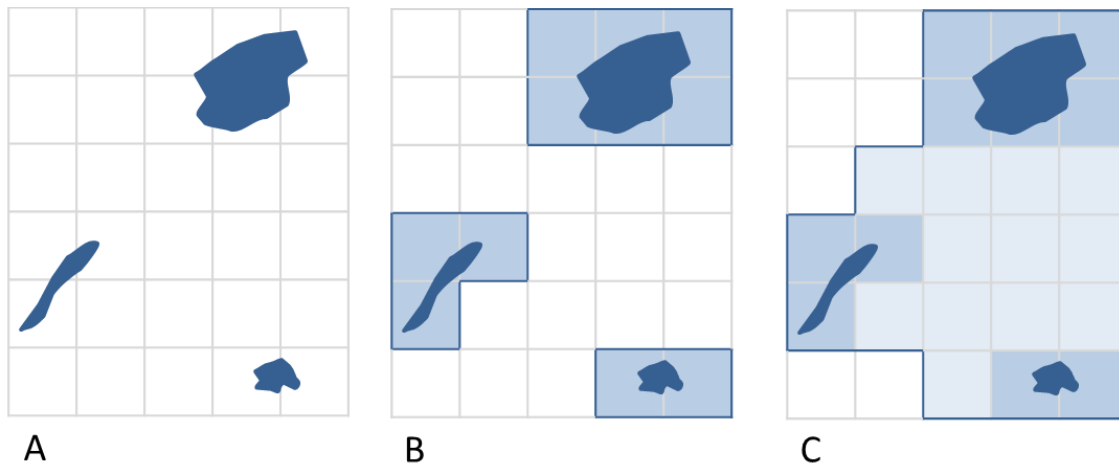
# 5    Range

This chapter provides complementary information to the guidance provided in Section '5    Range' (in 'Field-by-field guidance for species reports').

## Concept of range

Range is defined as 'the outer limits of the overall area in which a species is found at present and it can be considered as an envelope within which areas actually occupied occur'. It is a dynamic parameter allowing the assessment of the extent of and the changes in the species' distribution.

Range is a spatial generalisation of distribution, which is a representation of the species occurrences in the 10x10 km grid. The relationship between species occurrence, distribution and range is illustrated in Figure 4

**Figure 4:       Relationship between occurrence of species, distribution and range. 'A' occurrence of speices, usually a polygon, point or a linear feature ; 'B' distribution – occurrence in 10x10 km grids; 'C 'range – spatial generalisation of the distribution**



The range concept was endorsed by the Habitats Committee. The document of the Habitats Committee Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive[69] describes range as follows:

*The natural range describes roughly the spatial limits within which the habitat or species occurs. It is not identical to the precise localities or territory where a habitat, species or sub-species permanently occurs. Such actual localities or territories might for many habitats and species be patchy or disjointed (i.e. habitats and species might not occur evenly spread) within their natural range. If the reason for disjunction proves to be natural i.e. caused by ecological factors, the isolated localities should not be interpreted as continuous natural range, for example for an alpine species the range may be the Alps and the Pyrenees, but not the lower area between. The natural range includes however, areas that are not permanently used: for example for migratory species 'range' means all the areas of land or water that a migratory species inhabits, stays in*

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[69] Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive (DocHab-04-03/03 ver.3). DG Environment, 2004.

*temporarily, crosses or overflies at any time on its normal migration[70]. Vagrant or occasional occurrences (in the meaning of accidental, erratic, unpredictable) would not be part of the natural range.*

*Natural range as defined here is not static but dynamic: it can decrease and expand. Natural range can also be in an unfavourable condition for a habitat or a species i.e. it might be insufficient to allow for the long-term existence of that habitat or species.*

*When a species or habitat spreads naturally (on its own) to a new area/territory or when a re-introduction of a species consistent with the procedures foreseen under Article 22[71] of the Habitats Directive has taken place of a species into its former natural range, this territory has to be considered a part of the natural range. Similarly restoration/recreation or management of habitat areas, as well as certain agricultural and forestry practices can contribute to the expansion of a habitat or a species and therefore its range. However, individuals or feral populations of an animal species introduced on purpose or accidentally by man to places where they have not occurred naturally in historical times or where they would not have spread to naturally in foreseeable future, should be considered as being outside their natural range and consequently not covered by the Directive.*

## Calculation of range

Bearing in mind the dynamics of the range as defined above, the range should be calculated based on the map of the actual (or presumed if aslo modelling, extrapolation of expert opinion were used) distribution used for each reporting period. The calculation should involve a standardised method. A standardised process is needed to ensure repeatability of the range calculation in different reporting rounds and for comparison of results between Member States. It will also allow for estimating range trends.

The standardised process proposed in these guidelines consists of two steps:

1. Creating an envelope(s) around the distribution grids. This spatial calculation is done using the procedure of 'gap closure' where a predefined set of rules specify where two distribution points/grids will be joined together to form a single range polygon, and where an actual gap in the range will be left.
2. Excluding unsuitable areas. After the automated calculation, areas which are not appropriate, such as marine areas in the range of a terrestrial species, should be excluded.

**Step 1: Creating an envelope(s) around distribution grids**

**What is a gap distance?**

Most of the basic principles for the range estimation, including the size of gaps which will represent a discontinuity in the range, were established during the 2000–2006 reporting period and will still be valid. Range should exclude major discontinuities that are natural, i.e. caused by ecological factors. What is considered as a natural discontinuity is largely dependent on the ecological characteristic of the species and the character of the surrounding landscape. Ideally, the criteria for the range

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[70] See also Article 1 of the Bonn Convention.
[71] The term 'native' as used in Article 22 should be interpreted so that a species or habitat is considered native when it is within its natural range (as defined in this paper), or within the limits of any historical or potential (to where it spreads naturally) natural range.

discontinuities should be defined separately for each species in each particular landscape, but this is practically impossible. The guidelines for reporting provide a generalised and simplified approach to range discontinuities.

In the process of calculating a range the natural discontinuities are represented by a 'gap distance'. A gap distance should be understood as the distance between two distribution grids that will not be joined together to form a single range polygon but will be shown as discontinuities in a range (see Figure 5).

**Figure 5:**          **A schema illustrating use of the gap distance in calculating range. If the distance between two occupied distribution grids (red grids) is smaller than the gap distance (blue lines), the distribution grids are joined to form a range (blue grids). If the distance between two distribution grids is higher than the gap distance (black lines), two distribution grids are not joined and represent a discontinuity in the range.**



**Constraints for selecting the gap distance**

The gap distance should correspond to the definition of range (as an envelope generalising the distribution with major discontinuities excluded) and it should allow the calculation of range polygons, which are capable of detecting large-scale changes in the distribution. A range that is calculated with larger gap distances (i.e. 40–50 km) is more sensitive to changes at the margins of the distribution and large-scale changes within the outer limit of the distribution. On the other hand, range calculated with smaller gap distances (e.g. 20 km) is sensitive to small-scale changes (see Figure 6).

A discontinuity of at least 40–50 km (depending on species group) is considered a gap in the range of species.

**Figure 6:** **An example of range maps created using different gap distances. This map shows the difference between the range calculated with 20-km and 50-km gap distances. Where a single marginal population occupying two 10x10 km grids on the map is lost (Previous distribution) the range calculated with 50-km gap distance (Calculated range 50 km) will decrease by more than 15 % of its original area (Calculated previous range 50 km). Using the gap distance of 20 km, where this marginal population will remain isolated from the main range polygon (Calculated range 20 km), the decline in the range area will be around 3 % of its original area. With a 12-year reporting period the same situation would lead to different conclusions: 'unfavourable-bad' for the range with a 50-km gap and 'unfavourable-inadequate' for the range with a 20-km gap.**



The gap distance should, on the other hand, reflect the ecological characteristic of the species. This means that for mobile species the range will be calculated using larger gaps and, conversely, smaller gaps will be used for less mobile species. Precise knowledge about the dispersal capacity of many species is still lacking, and in addition the possible dispersal distance will be greatly influenced by the quality of the surrounding landscape matrix. The proposed gap distances are rather broad and reflect major ecological differences between broad species groups. The recommended gap distances for each species group are outlined in Table 19, but other gap distances can be used if based on detailed knowledge of the species within the Member State.

**Table 19          Recommended maximum gap distance for major species groups**

| Species group | Gap distance |
|---|---|
| Lower plants | 40 km |
| Higher plants | 40 km |
| Invertebrates | 40 km |
| Fish and lampreys | 50 km |
| Terrestrial mammals | 40–90 km[72], depending on dispersal ability and movement |
| Amphibians | 50 km |
| Terrestrial reptiles | 50 km |
| Marine mammals and reptiles | 90 km[73] |

For very rare and/or localised species occurring in particular environmental conditions, the range may be equal to the distribution.

For small Member States or for other small territories for which the distribution map is provided using the 1x1 km grid or 5x5 km grid (see Section '2    Maps' (in 'Field-by-field guidance for species reports')) the gap distances can be adapted accordingly (e.g. a gap distance of 4 grids = 4 km can used for plants instead of 40 km recommended in Table 19).

**Step 2: Excluding unsuitable areas**

Technically, range is calculated by filling in the unoccupied grids between the cells of distribution. The following types of unsuitable areas should be excluded from the calculated range:

- marine areas automatically included in the range of terrestrial species;
- terrestrial areas automatically included in the range of marine species;
- areas beyond national boundaries;
- areas identified by the range tool as part of the range falling in the adjacent biogeographical or marine regions for which the species is not noted on the checklist;
- areas without water bodies for freshwater species and vice versa.

Although the distinction between suitable and unsuitable areas is very coarse, the purpose of this step is to correct only the most important contradictions resulting from automated calculation. Technically, the process described in this step should be simple and applicable across all Member States.

# 6    Population

This chapter provides complementary information to the guidance provided in Section '6    Population' (in 'Field-by-field guidance for species reports').

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[72] The gap distance in range calculation for highly mobile species should be adapted to reflect the movements of the species. These, on contrary to any changes in the range should not affect calculated range trends.

[73] For some species the gridded distribution will approximate the range because the distribution was derived from the large scale surveys, modelling and/or expert extrapolation or will be mapped as area used by the population. In these cases the range calculation is not relevant. The gap distance in range calculation for highly mobile species should be adapted to reflect the movements of the species and can be larger than 90km.

## Population size units

Population is one of the four parameters needed for the assessment of the conservation status of species as part of the Article 17 reporting. The evaluation matrix requires that in order to be assessed as 'favourable', the population size of a species should not be lower than its favourable reference population, and population dynamics and structure should not deviate from normal.

Each Member State has its own tradition of species monitoring. One of the main purposes of these national monitoring schemes (where they exist) is to assess the population trend and the trend magnitude of the monitored species. Many different types of units are used by Member States in their monitoring in order to estimate the size of population and/or species trends; these include individuals, localities, area occupied (possibly based on a buffer zone around individual records) and number of occupied ponds or groups of adjacent ponds (with a suggested distance of less than 500 m between ponds) for amphibians such as newts. In order to monitor species trends, relative units such as abundance, density, or number of records per unit of effort are often used.

To assess the conservation status of a given species at EU biogeographical level, there is a need to compare the population size of the species in the different Member States within the same biogeographical or marine region. It is therefore essential that the population size reported by each Member State is made available in a unit that allows this comparison. Weighting by population is the preferred method for producing the EU regional assessments, but this is only possible if all Member States in a region use the same unit.

These needs are reflected in the reporting of population size. The revised Article 17 Report format asks for:

- population size in the reporting unit (for EU biogeographical assessments and other EU or biogeographical statistics) (field 6.2);

- additional population size, using population size unit other than the reporting unit, e.g. the unit used for assessment at national level (field 6.4).

Population size in the reporting unit for all species, except species restricted to a single country, must be reported using the population size unit given in the Article 17 species checklist available on the Reference Portal. This will be one of the following:

- individuals (according to Table 20);
- number of occupied 1 x 1 km grids (according to Table 20)[74];
- other agreed population unit (only for species listed in Table 22 in Section 'Population size in other agreed population units' below.

## Reporting population size in individuals

In general, 'individuals' (mature individuals) should be used for mammals (excluding most bats and small mammal species), vascular plants (excluding exceptions), sturgeons (where the information on quantity taken for Annex V species is needed) and marine turtles.

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[74] INSPIRE-compliant reference grids are available for each Member State on the Reference Portal.

For mobile species such as mammals or marine turtles, spatial surrogates do not represent a suitable population unit for aggregating data at the EU biogeographical level, as these species often occupy large territories and spatial surrogates are often poorly correlated with actual population size.

Plants are sedentary organisms that occur in discrete locations, so counting the individuals (or stems, see definition of mature individual below) is generally not excessively cost-demanding. Some plant species should, however, be reported using the 1 x 1 km grids, see 'Plant species to be reported in 1 x 1 km grids' below.

**Table 20:       Population units for each species group (more detailed information and possible updates of this table can be found on the Reference Portal[75])**

| Species group | Individuals | Grids | Comments |
|---|---|---|---|
| Molluscs | | | |
| All molluscs | | X | |
| Arthropods | | | |
| All arthropods | | X | All arthropods except species listed in Table 22 |
| Other invertebrates | | | |
| *Centrostephanus longispinus, Corallium rubrum, Hirudo medicinalis* | | X | |
| Fish and lampreys | | | |
| *Acipenseridae* | X | | |
| All other fish and lampreys | | X | |
| Amphibians | | | |
| All amphibians | | X | |
| Reptiles | | | |
| Marine turtles | X | | |
| All other reptiles | | X | |
| Mammals | | | |
| *Microchiroptera* forming large colonies in underground habitats over the majority of their natural range | X | | All *Rhinolophidae* and *Miniopteridae* |
| All other *Microchiroptera* | | X | All *Microchiroptera* except *Rhinolophidae* and *Miniopteridae* |
| *Soricidae*, *Gliridae*, *Mustelidae* | | X | All *Gliridae* except *Glis glis* and *Eliomys quercinus* and *Mustelidae* except Annex V *species Martes martes* and *Mustela putorius* |
| All other mammals | X | | |
| Vascular plants | | | |
| Aquatic vascular plants See Table 21 | | X | |
| Vascular plant species listed in Annex V of the Habitat Directive See Table 21 | | X | |
| Vascular plants which are difficult to access for survey | | X | |

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| Species group | Individuals | Grids | Comments |
|---|---|---|---|
| See Table 21 | | | |
| All other vascular plants | X | | |
| Non-vascular plants | | | |
| Non-vascular plants | | X | All non-vascular plants except species listed in Table 22 |

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**Box 6: Mature individuals**

Although no strict definition of 'mature individual' is available, in general, adult individuals are included, i.e. those known or thought to be capable of reproducing, but plant seedlings, for example, are not. For most animal species, individuals are quite easy to delineate and understand. However, for some plants it is more problematic. For several species (e.g. clonal populations with vegetative reproduction) it is not possible to distinguish individuals from each other above ground, while ferns (e.g. *Trichomanes speciosum (Vandenboschia speciosa)*) may have both gametophyte and sporophyte generations. As a pragmatic solution it is recommended to treat shoots or tufts as individuals. This guidance is in line with the IUCN guidelines[76] for estimating number of mature individuals, which states that reproducing units within a clone should be counted as individuals, except where such units are unable to survive.

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## Reporting population size in 1x1 km grids

Spatial surrogates for population size (1x1 km grids) are used for species where technically robust methods for estimating species population size do not exist or are excessively costly and/or destructive. This applies, for example, to species with high fluctuations, where counting individuals gives biased estimates of population size (e.g. some amphibian species). Precise counts of the total biogeographical population of abundant and widespread species (such as some amphibian, reptile or mammal species) are often not needed in order to access the population dynamics. They are also very difficult to obtain and so they are rarely collected as part of a species monitoring programme. Cryptic and dispersed or mobile species (such as fish or some saproxylic beetles) are extremely difficult to count as number of individuals.

Unlike individuals, the use of 1x1 km grids is not restricted to mature individuals. Many species (i.e. groups), for which the 1x1 km grid is the reporting unit, are monitored throughout their different life stages (e.g. larva and exuviae for dragonflies) that can be valid for 1x1 km grids assessment.

It should be noted that reporting population size as the number of occupied 1x1 km grids does not imply that monitoring should be done at that scale, nor that the distribution maps at that scale need to be made or provided. This standard unit (1x1 km) is proposed to facilitate comparison and aggregation of data that otherwise would not be possible to aggregate or could have very different interpretations. For instance, if a population size is expressed as 'number of localities', there is no common definition of 'locality'. Therefore, converting the number of localities into a number of 1x1 km grid cells for each locality allows a better comparison of 'sizes' between different Member States.

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[76] http://www.iucnredlist.org/documents/RedListGuidelines.pdf

## Plant species to be reported in 1x1 km grids

In the majority of cases the population size for vascular plants should be estimated as the number of individuals, except for:

- species growing in dense stands or forming colonies where individuals cannot be easily separated visually, e.g. aquatic plants (see Table 21) or bryophytes;

- species occurring in defined sites where it is difficult, dangerous or very expensive to collect adequate population data (see Table 21), such as ponds, fens, single trees and cliffs;

- plant species listed in Annex V of the Habitats Directive. As experience has shown, there is a lack of information available on population size (see Table 21).

**Table 21:    Plant species to be reported in 1x1 km grids (possible updates of this table can be found on the Reference Portal)**

| Aquatic vascular plants[77] | |
|---|---|
| *Aldrovanda vesiculosa* | *Luronium natans* |
| *Apium repens* | *Marsilea batardae* |
| *Arctophila fulva* | *Marsilea quadrifolia* |
| *Caldesia parnassifolia* | *Marsilea strigosa* |
| *Coleanthus subtilis* | *Myosotis rehsteineri* |
| *Elatine gussonei* | *Najas flexilis* |
| *Eleocharis carniolica* | *Najas tenuissima* |
| *Lindernia procumbens* | *Persicaria foliosa* |
| Vascular plants which are difficult to access for surveying (vascular plants identified and proposed by Member States, excluding those restricted to a single country) | |
| *Viola delphinantha* | *Tozzia carpathica* |
| *Ramonda serbica* | *Dianthus rupicola* |
| *Centaurea immanuelis-loewii* | *Physoplexis comosa* |
| *Iberis arbuscula (Iberis runemarkii)* | *Saxifraga florulenta* |
| Plant species of Community interest whose taking in the wild and exploitation may be subject to management measures (Annex V), excluding species restricted to a single country | |
| *Arnica montana* | *Iris lusitanica* |
| *Artemisia eriantha* | *Leuzea rhaponticoides* |
| *Artemisia genipi* | *Lilium rubrum (Lilium pomponium)* |
| *Galanthus nivalis* | *Rubus genevieri* ssp. *herminicus* |
| *Gentiana lutea* | *Ruscus aculeatus* |
| *Narcissus bulbocodium* | *Scrophularia herminii* |
| *Narcissus juncifolius (Narcissus assoanus)* | *Scrophularia sublyrata* |

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[77] Aquatic vascular plants are extracted from the '2007–2012 Article 17 dataset' using MAES typology and excluding species restricted to a single country.

## Guidance for converting nationally used (monitoring) units into 1x1 km grids

Where the information concerning the number of occupied 1x1 km grids is not directly available, it will be extrapolated from the available data. Guidance is proposed for the main cases commented on by the Member States.

- **Converting monitoring units to the number of occupied 1x1 km grids**

The rules detailed in Figure 7 for converting monitoring units to the number of occupied 1x1 km grids should be applied to relatively well-known species:

**Figure 7:         Converting monitoring units to a number of occupied 1 x 1 km grids**



a) The monitoring unit involves **point data**
  - Each 1x1 km grid in which a point occurs should be counted, in this case 6 grids

b) The monitoring unit involves **polygon data**
  - Each 1x1 km grid in which the polygon occurs should be counted, in this case 3 grids

c) The monitoring unit is a **linear feature**
  - Each 1x1 km grid in which a segment of the linear feature occurs should be counted, in this case 6 grids

a) Point data: This approach can be used for relatively well-known and more or less sedentary species occurring (at least for part of their life cycle) in discrete localities, which are represented in the monitoring schemes by a point location. The population size at the Member State biogeographical level can often be estimated as the number of localities. This applies to many insect or mollusc species in many parts of Europe, to some amphibians (where the monitoring unit is a breeding pond), and to some rare species of reptiles.

b) Polygon data: This approach can be used for cases where localities have been delineated as polygons. The locality or polygon can be delineated from the distribution of peripheral points (records of a species' occurrence) or can be delineated as a suitable habitat of a species (for example, in cases where limited observations exist but the species is probably present in the wider area; this can be the case for some saproxylic beetle or amphibian species).

c)  Linear features: This approach can be used for species linked to rivers (or other linear features) where a locality often represents a stretch of a river with recorded species occurrence.

- **Converting distribution to number of occupied 1x1 km grids**

There are a number of cases where information is only available as a presence in a large grid (e.g. 5x5 km or 10x10 km). This concerns species that are abundant and widespread (e.g. amphibians, reptiles) and/or poorly known (e.g. cave-dwelling species, saproxylic beetles, bats).

As a general rule, a direct conversion of large grids into smaller grids (e.g. one 10x10 km grid equals one hundred 1x1 km grids) should not be used. Where possible, Member States should provide the number of grids potentially occupied.

This information can be obtained, for example, through intersecting the distribution data with other spatial data with information related to suitable ecological conditions for the species, such as land cover, habitat/vegetation maps and/or elevation models. Depending on the ecology of the species, there are often a number of grids (within a 10x10 km grid) where the species is most likely to be absent (e.g. unsuitable habitat types, artificial land cover, and fragmentation), which should be excluded when converting the distribution data into a population size estimated as number of 1x1 km grids. Methods used for downscaling the species' distribution may be useful, if they exist. Where possible, the methods and the thresholds applied to assess the probability of the absence and/or presence of a species in a 1x1 km grid in the procedure described above should be statistically robust.

The number of occupied grids can be estimated by the elimination of grids where the occurrence of a species is unlikely. Figure 8 provide an example for a forest species. First a 1x1 km grid is intersected with a land-cover map. The species is presumed to be only present in forest habitats (corresponding to green = forest polygons). Then the 1x1km grids, which are not intersected with forest areas, are eliminated. In addition, a 100-m buffer was applied to the forest polygons to eliminate the edges where the species is assumed to be absent.

**Figure 8:**      **Proposed method for converting distribution to the number of occupied 1x1 km grids (green polygons = forest; blue = aquatic habitats; orange = agricultural land; grey = roads; white circles = occupied 1x1 km grids)**



8 km grid square

1 km grid square
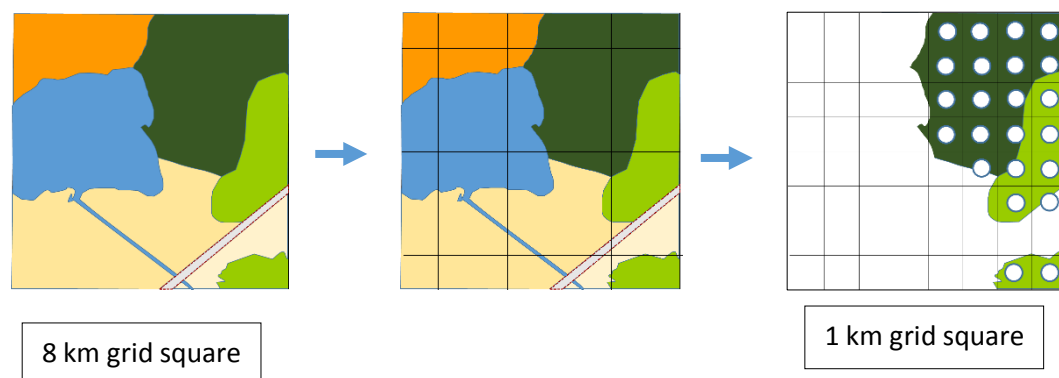
**Population size in other agreed population units**

For the 2007–2012 reporting period, the Member States could report using a unit from the agreed list of exceptions for a series of species. Table 22 lists the species for which the use of another agreed unit is retained for the 2013–2018 reporting period (i.e. this population size unit should be used to report the population size in field 6.2 'Population size (in reporting units)'). These are the species for which all (or almost all) Member States in the previous period used another agreed population unit for reporting the population size.

**Table 22:        List of alternative population units for Article 17 reporting**

| Species name | Species group | Alternative unit |
|---|---|---|
| *Agathidium pulchellum* | Arthropod | Number of inhabited trees |
| *Aradus angularis* | Arthropod | Number of inhabited trees |
| *Xyletinus tremulicola* | Arthropod | Number of inhabited trees |
| *Cephalozia macounii* | Non-vascular plant | Number of inhabited logs |
| *Cynodontium suecicum* | Non-vascular plant | Area covered by population in m² |
| *Dichelyma capillaceum* | Non-vascular plant | Number of inhabited stones |
| *Hamatocaulis lapponicus* | Non-vascular plant | Area covered by population in m² |
| *Herzogiella turfacea* | Non-vascular plant | Area covered by population in m² |
| *Hygrohypnum montanum* | Non-vascular plant | Number of inhabited stones |
| *Orthothecium lapponicum* | Non-vascular plant | Area covered by population in m² |
| *Riella helicophylla* | Non-vascular plant | Area covered by population in m² |

**Population size in reporting units and Additional population size in assessment of conservation status**

The reporting units (i.e. the number of individuals or number of 1x1 km grids) should allow the quantification of the species' population within the Member State's biogeographical region and a comparison of the population size of the species in different Member States within the same biogeographical or marine region. The use of a common reporting unit does not imply that monitoring or assessment of the species' status (including short-term population trend and distance to the favourable reference population) at the Member State level needs to be done using this unit.

The population size in reporting units can be obtained via a conversion of the population size estimated in the units used nationally (monitoring and assessment units). In some cases, the reporting units can imply a loss of information and/or introduce errors, for example, when the population size is monitored as a number of individuals but is reported as number of 1x1 km grids. The population size in local units can therefore be reported under the field 'Additional population size'.

Ideally, the monitoring and assessment of the species' status at the Member State level is done using the most appropriate unit to capture the population trend and is also biologically suitable for expressing the favourable reference population.

**Population structure and genetics**

Although Annex B does not require information on population structure (age, classes, etc.), some knowledge of the population structure is needed for the assessment of population in Annex C.

In general, the absence of or unnaturally low recruitment would indicate an unfavourable population structure. Similarly, an unnaturally high mortality rate for all or certain age classes can lead to an unfavourable population structure. The lack of young individuals in many monitored local populations may also indicate an unfavourable population structure. In those situations the conservation status should be regarded as 'unfavourable' even though the population trend is stable or increasing and current population size is not lower that the reference population.

Similarly, it may be relevant to consider the genetic structure of a species. In many cases only sparse information is available, although some genetic studies have focused on particularly rare species, such as the Annex II and IV plants *Borderea chouardii* (Segarra-Moragues et al. 2005) and *Dracocephalum austriacum* (Dostálek et al. 2009). The importance of genetics in the evaluation of conservation status is discussed in more detail in Laikre et al. (2009).

Population and genetic structure are closely related to long-term viability of a species which is an essential part of the assessment of Favourable reference values. Section 'Favourable reference values' (in 'Definitions and methods for species reporting') gives more information on how the population and genetic structure should feed into the process of setting the reference values.

# 7    Habitat for the species

This chapter provides complementary information to the guidance provided in Section '7    Habitat for the species' (in 'Field-by-field guidance for species reports').

**Definition of the 'habitat for a species'**

To survive and flourish a species needs a sufficiently large area of habitat of suitable quality and spatial distribution. This is assessed in the parameter 'Habitat for the species' which is based on the definition of Favourable conservation status (FCS) for a species given in Article 1 of the Habitats Directive, which states: 'There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis' (Article 1(i)), while Article 1(f) defines the habitat of a species as: 'an environment defined by specific abiotic or biotic factors, in which the species lives at any stage of its biological cycle'.

Although it is not possible to give a detailed definition of habitat of a species that will be valid for all of the species listed in Annexes II, IV and V of the Habitats Directive, some general principles can be established and 'habitat for the species' should be interpreted to take into account the following:

- physical and biological requirements of the species; this includes prey, pollinators, etc.;
- all stages of its life cycle are covered and seasonal variation in the species' requirements is reflected.

'Habitat for the species' uses habitat in its original meaning of the resources (biological and physical) used by a species during its life. This is sometimes referred to as the ecological niche of a species. It is important to note that the meaning of 'habitat' in 'Habitat for the species' is different to 'habitat

type' defined under Annex I and 'habitat' for habitat classifications such as EUNIS, which are more accurately biotopes (or in many cases biotope complexes).

Habitat of the species may be mostly abiotic. For example, the mammal *Crocidura sicula* makes use of crevices in rock and dry stone walls, and many fish need gravel of an appropriate size for spawning. In some cases a species can be dependent on another, either as prey or as a host. For example, the Freshwater pearl mussel (*Margaritifera margaritifera*) spends its larval stage attached to the gills of salmonid fish while the moss *Dicranum viride* grows on trees.

Many species use different biotopes at different times of the year or at different stages of their life cycle. 'Habitat for the species' should include all of these. For example, a butterfly may use different habitats during its larval, pupal and adult stages. For hibernating animals, such as bats, habitat for both winter (hibernation sites) and summer (foraging and roosting sites) must be considered. For example, the Long-fingered bat *(Myotis capaccinii*) in France requires suitable roosting sites (often caves and tunnels which in winter are usually between 4 and 6°C) together with foraging areas with suitable prey (small insects flying over wetlands, often with scrub and/or riparian woodland; Anon., 2002).

For some highly mobile species (for example marine mammals or turtles) the actual habitat for the species will often equal range.

## Area, quality and spatial organisation – elements for assessing the habitat for a species

There are three key elements for assessing habitat for a species: area, quality and spatial organisation (Hodgson et al., 2011). The questions in field 7.1 ('Are area and quality of **occupied** habitat sufficient (for long-term survival)?' and 'If NO, is there a sufficiently large area of **unoccupied** habitat of suitable quality (for long-term survival)?' aim to identify if habitat, in its broadest sense, is the factor limiting a species from being in a Favourable conservation status by asking if the combination of habitat area and quality is sufficient. For example, a species may have a small, potentially non-viable, population which cannot expand because of a lack of suitable habitat or of a particular element of its habitat, such as suitable nesting sites. As different combinations of habitat quality and habitat area could be equally suitable for a given species, the question in field 7.1 addresses the overall combination but it is likely that national monitoring schemes will be addressing these issues separately, so the results will need to be combined in order to answer the question in field 7.1.

There is increasing evidence that habitat quality plays an important role in determining the distribution and dynamics of species, both for plants and animals (Mortelliti, Amori & Boitani, 2010), and it can be defined in several ways, as reviewed by Johnson (2007). Habitat quality should be understood as the 'ability of the environment to provide conditions appropriate for individual and population persistence' (Hall et al., 1997). The habitat quality should be assessed in relation to the species' requirements. Quality must be understood as an adequacy or suitability for the species (sometimes for a particular life stage of a species), and not as habitat condition as such without taking into account the particular requirements of the species (at its particular life stage). Habitat quality is a continuous variable (from high to low) and refers to resources available for survival, reproduction and population persistence.

Although 'Habitat for the species' should cover all physical and biological requirements of the species throughout all stages of its life cycle and in any season, special emphasis should be given to key habitats such as reproduction or hibernation sites in the assessment of sufficiency of habitat area and quality.

## Indices/measures of the habitat quality

Habitat quality is frequently related to reproductive success, although information on population dynamics related to habitat selection is likely to be unavailable for many of the species covered by the Habitats Directive. Although abundance or density has been used as a relatively simple way of measuring habitat quality, this may be misleading where abundance or density in a given site is controlled by factors elsewhere, perhaps in a different season for migratory species (Van Horne, 1983). Many studies have used vegetation as a proxy for habitat quality and, although this has been criticised (e.g. Mathewson & Morrison, 2015), this may be the only method available for poorly known species. Sometimes knowledge of the species allows population dynamics to be linked to vegetation. Wehn & Olsson (2015) measured a number of population parameters for the plant *Primula scandinavica* (Annexes II and IV) allowing comparison of different vegetation types for the species, and found that semi-natural vegetation, such as heath or grassland, was of higher quality for this species than forest, although the species did occur in all.

## Spatial organisation and fragmentation

Spatial arrangement of habitat patches has been shown to be less important than area or quality (Hodgson et al., 2011) although fragmentation of habitat is frequently cited as a threat. If habitat patches are close, colonisation and genetic exchange between subpopulations is more likely to occur, although corridors allowing the movement of individuals through the landscape may also play a role. Also the quality of surrounding environment ("matrix") may have significant effect and populations, for example by increasing habitat patch isolation or through edge effects. However, disentangling the relative role of quality and spatial organisation may often be difficult (Mortelliti, Amori & Boitani, 2010), so for Article 17 reporting the two have effectively been grouped together.

## Generalists and specialists

When assessing 'Sufficiency of area and quality of occupied habitat' (field 7.1(a) and (b)) it is necessary to have an understanding of the species' biology in order to identify the species' key requirements and type of areas (habitats) potentially suitable for it. Species are frequently considered as habitat specialists or generalists, although in reality there is a wide spectrum (see e.g. Devictor et al., 2010) and a species may be both a generalist and a specialist at different parts of its life cycle. A broad grouping into habitat generalists and specialists may help in determining the key elements for assessing the sufficiency of the habitat area or quality.

Some species are known to be restricted to particular habitats. For example, the Annex II beetle *Agathidium pulchellum* is dependent on the slime mould *Trichia decipiens* living on dead wood in Boreal forests (Laaksonen et al., 2009), while the larvae of the Annex II beetle *Stephanopachys linearis* lives in burnt pine trees in the Boreal region and in damaged larch trees in the French Alps (Brustel et al., 2013). Therefore, Boreal forests with sufficient quality and quantity of dead wood can be considered a suitable habitat for *Agathidium pulchellum*, and pine forests with natural (or controlled) fire dynamics as a suitable habitat for *Stephanopachys linearis* in the Boreal region. A

species is expected to prosper if the extent of these habitats is sufficient and the functions of the habitat, which correspond to key requirement of a species (dead wood, fire), are well preserved.

For some species the requirements are well known. For example, many saproxylic insects are dependent on old trees. However, these may be features that can be found in many habitats, such as woods, hedgerows and parks. In this situation the assessment of the sufficiency of the habitat quality should mainly target the quantity and quality of the specific features (exposed old trees) in the landscape, and the precise area of habitat is not the decisive factor for the species status.

For species which use a wide range of habitats, often termed 'generalists', it is difficult to identify the area used with any precision, and factors such as availability of prey (which represents the qualitative aspects of the habitat for a species) are often more important than the extent of the habitat. For the generalist species it is less likely that the 'habitat area' is a limiting factor controlling the population size or reproduction than for a 'specialist' species dependent on one or a limited number of habitats (habitat types). So the assessment of the 'Sufficiency of area and quality of occupied habitat' (field 7.1(a) and (b)) should mainly focus the 'habitat quality'.

In many cases it will be enough to assess the 'Sufficiency of area and quality of occupied habitat' (field 7.1(a) and (b)) in relation to the reported pressures. The direct measurement of the physical quality of the species' environment will not be necessary (Box 7 shows the example of the decision tree used in the UK).

**Box 7: A flow chart to help assessments of habitat of species, developed by JNCC and used in previous reporting rounds by the UK, which may be useful, particularly when data are limited. It outlines different approaches used in the assessment of the habitat for the species, for habitat generalists and specialists**.
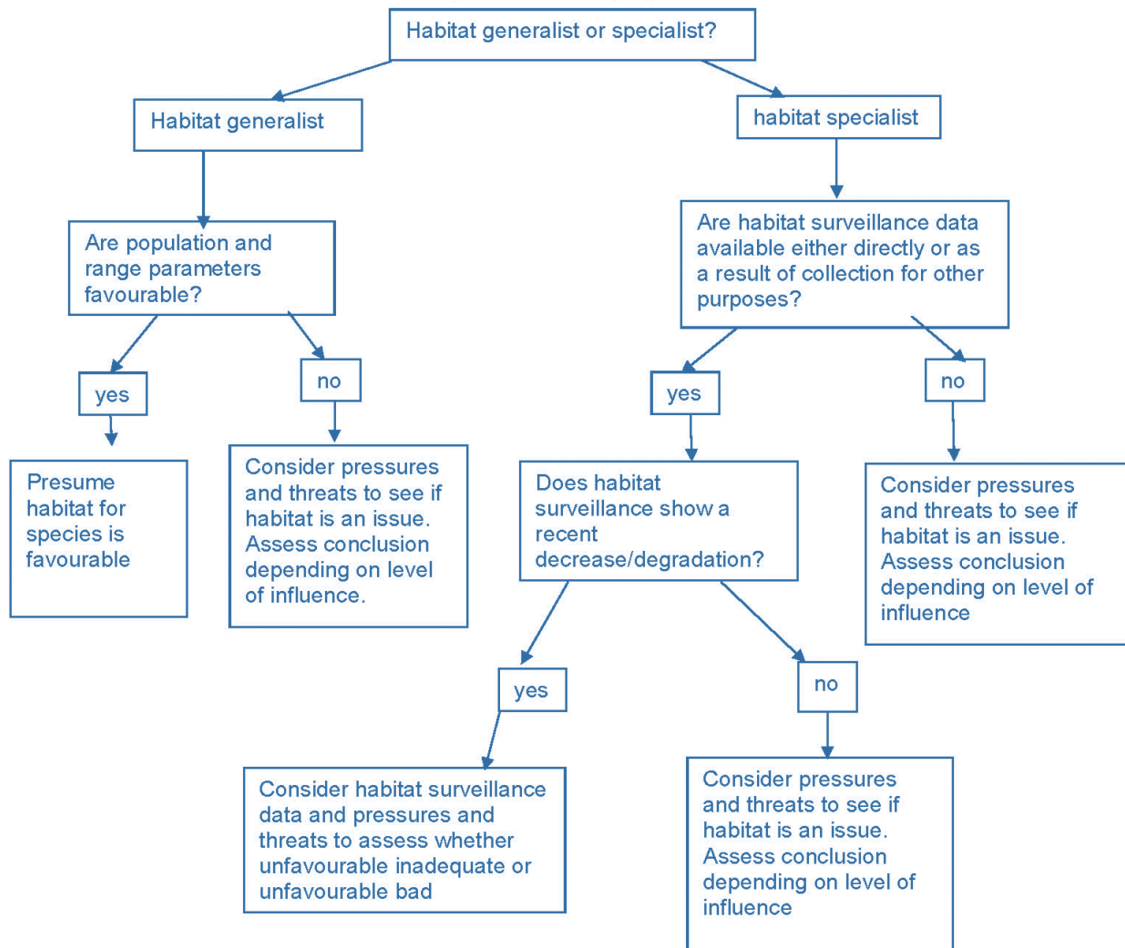


For many species, the exact requirements are not well understood, so it is difficult to know if the areas currently unoccupied are really suitable. This is demonstrated in a recent study of the reintroduction of Bison (*Bison bonasus*) to the Carpathians (Ziółkowska et al., 2016)

## Availability of unoccupied habitat

In many cases the habitat requirements for a species are known, and areas which are not currently occupied can be identified. For example, the wolf (*Canis lupus*) and the otter (*Lutra lutra*) are both recolonising parts of their former ranges from which they have been absent for many years and it is clear that further suitable, but as yet unoccupied, habitat occurs. **.** It may be possible to model the habitat used by a species, for example Kuemmerle et al (2011) show how the habitat for *Bison bonasus* can be modelled and is much larger than currently used.

Field 7.1(b) asks if unoccupied habitat of suitable quality is available. For some species where the requirements are well known this may be relatively easy to answer. An example of how the habitat

for a species can be identified is given in Box 8. However, for many species our lack of knowledge may mean that the only response is 'unknown'.

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**Box 8: Defining suitable but unoccupied habitat for a species – the snail *Vertigo geyeri* in Ireland**

*Vertigo geyeri* is strict in its requirement of saturated water conditions in calcareous, groundwater-fed flushes that are often limited in size to a few metres square. Their habitats often occur in mosaics of suitable patches within wider fen macrohabitats, that in Ireland can themselves fall within habitats as diverse as raised bog laggs, transition mires, lake shores, hill or mountain slopes, and wetlands associated with coastal dunes and machair. Within these macrohabitats, however, the snail is consistent in where it lives, within the saturated and decaying roots of small calcareous sedges (particularly *Carex viridula* ssp*. brachyrrhyncha*), associated fen mosses (particularly *Drepanocladus revolvens* and *Campyllium stellatum*). The greatest indicator of optimum *V. geyeri* habitat is the presence of a tufa-forming spring.

Source: Moorkens & Killeen (2011).

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The potential unoccupied habitat may not include all occurrences of a potential habitat within the biogeographical region, but only areas that can be recolonised by the species. If, for example, there are stretches of rivers inaccessible to the species' populations due to waterfalls or barriers, these should not be included under potential unoccupied habitat as it is unlikely that they can be recolonised by the species, even though they are of suitable quality.

# 8    Main pressures and threats

This chapter provides complementary information to the guidance provided in Section '8    Main pressures and threats' (in 'Field-by-field guidance for species reports')*.*

Although the information on pressures and threats is required for the conservation status assessment, the importance of pressures and threats goes beyond their use in the assessment. They provide information on the main drivers related to results of the conservation status assessment. They can help to identify actions required for restoration and they are essential to communicate the results of the status assessment to various stakeholders.

For Article 17 reporting, pressures are considered to be factors which have acted within the current reporting period, while threats are factors expected to be acting in the future (in the future two reporting periods, i.e. within 12 years following the end of the current reporting period). It is possible for the same impact to be both a pressure and a threat if it is having an impact now and this impact is likely to continue.

For the 2013–2018 reporting period a new principally causes (drivers) oriented system for pressure and threats was developed. The pressures are classified into 15 categories corresponding to the main sectoral driver (see Table 23) with an emphasis on reducing to a minimum pressures which can be attributed to several sectors (for example, pollution or hydrological modification of water bodies).

**Table 23:**          **Pressure categories in the list of pressures and threats**

| Pressure code | Pressure category | Note |
|---|---|---|
| A | **Agriculture** | Includes pressures and threats caused by agricultural practice. |
| B | **Forestry** | Includes pressures and threats caused by forestry activities, including thinning, wood harvesting, pest control in trees. |
| C | **Extraction of resources (minerals, peat, non-renewable energy resources)** | Includes pressures related to extraction of materials, such as mining or quarrying, pollution or waste disposal. |
| D | **Energy production processes and related infrastructure development** | Includes pressures related to production of energy, e.g. the construction and operation of power plants, water use for energy production, waste from energy production, activities and infrastructure related to renewable energy. |
| E | **Development and operation of transportation and service corridors** | Includes pressures related to transportation of materials or energy, such as construction of infrastructure, pollution and disturbances or increased mortality due to traffic. |
| F | **Development, construction and use of residential, commercial, industrial and recreational infrastructure and areas.** | Includes pressures related to development, construction and use of residential, commercial, industrial and recreational infrastructure, e.g. infrastructural changes on existing built areas, expansion of built areas, land use and hydrological changes for urban or industrial development, disturbances or pollution due to residential, commercial, industrial, or recreational infrastructure. Includes also pressures related to sport, tourism and leisure activities and infrastructure. |
| G | **Extraction and cultivation of biological living resources (other than agriculture and forestry )** | Includes pressures linked to uses of biological resources other than agriculture and forestry. |
| H | **Military action, public safety measures, and other human intrusions** | Includes pressures related to public safety and other human intrusions. |
| I | **Invasive and problematic species** | Includes pressures related to problematic inter-specific relationships with non-native species which cannot be associated with other pressure categories. Includes also problematic relationships with native species, which came out of balance due to human activities. |
| J | **Mixed source pollution** | Includes pollution which cannot be associated with other pressure categories. |

| Pressure code | Pressure category | Note |
|---|---|---|
| K | **Human-induced changes in hydraulic conditions** | Includes hydrological and physical modifications of water bodies, which cannot be associated with other pressures categories. |
| L | **Natural processes (excluding catastrophes and processes induced by human activity or climate change)** | Includes natural processes, such as natural succession, competition, trophic interaction, erosion. |
| M | **Geological events, natural catastrophes** | Includes pressures such as natural fires, storms, tsunamis. |
| N | **Climate change** | Includes pressures related to climate change. |

Note that this table is only illustrative since it uses draft pressure categories that may not be retained as such in the final list of pressures and threats.

Further information on the list of pressures and practical guidance on how to use it for reporting on pressures and threats can be found on the Reference Portal.

# 9    Conservation measures

This chapter provides complementary information to the guidance provided in Section '9    Conservation measures' (in 'Field-by-field guidance for species reports').

Conservation measures are defined in Article 1 of the Habitats Directive as: 'a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status'.

The main purpose of reporting on conservation measures is to obtain information allowing for a 'broad-brush' overview of the conservation measures: whether measures have been taken and if so which measures, their location (inside/outside the Natura 2000 network), and their impact on the conservation status of species. Information on conservation measures feeds into the evaluation of the contribution of the Natura 2000 network to the conservation status of the Annex II species (see also Section '12    NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex II species' (in 'Definitions and methods for species reporting'). This information can further help to understand any trends in conservation status globally and is important for communicating the results of the conservation status assessment to different stakeholders.

The conservation measures should be reported using the codified list of measures. The list of conservation measures mirrors the list of pressures and threats, and the conservation measures are principally understood as an action to mitigate the impact of past and present pressures. The measures are classified into 13 categories corresponding to the main pressure categories (see Table 24). The list of measures contains additional category for measures related to management of target and other native species.

**Table 24:        Categories of conservation measures**

| Categories of conservation measures |
|---|
| Measures related to agriculture and agriculture-related habitats |
| Measures related to forestry and forest-related habitats |
| Measures related to resources exploitation and energy production |
| Measures related to development and operation of transport systems |
| Measures related to residential, commercial, industrial and recreational infrastructures, operations and activities |
| Measures related to the effects of use and exploitation of species |
| Measures related to military installations and activities and other specific human activities |
| Measures related to alien and problematic native species |
| Measures related to natural processes, geological events and natural catastrophes |
| Measures related to climate change |
| Measures outside the Member State |
| Measures related to mixed source pollution and human-induced changes in hydraulic conditions for several uses |
| Measures related to management of species from the nature directives and other native species |

Note that this table is only illustrative since it uses draft measure categories that may not be retained as such in the final list of conservation measures.

Further information on the list of conservation measures and practical guidance on how to use it for reporting can be found on the Reference Portal.

## 10    Future prospects

This chapter provides complementary information to the guidance provided in Section '10    Future prospects' (in 'Field-by-field guidance for species reports').

**What are future prospects?**

Assessments of conservation status must take into account the likely future prospects of the species; as for favourable conservation status, the Directive's Article 1(i) requires that:

- *population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;*
- *the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future;*
- *there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*

The parameter 'Future prospects' focuses on the requirement for the long-term maintenance of population of the species and the need for habitat and range to be and to remain stable or increase in the foreseeable future. Although the definition of the Favourable conservation status of species in the Directive presumes 'long-term maintenance' of population and sufficiency of range and habitat in the 'foreseeable future', the concept of 'foreseeable future' is not defined in the Directive. For the assessment of Future prospects this should be interpreted as meaning the two future reporting cycles, i.e. the next 12 years. The common perspective towards the future is important in harmonising the Member States' assessments, but some flexibility is permitted and the Future prospects can be assessed over longer future periods than the proposed 12 years. For example, for certain well-studied threats, such as climate change, reasonably robust models are available much further than the next 12 years, indicating bad perspective for a species. For some species, for example species with long generation lengths, it is unlikely that any positive future impact will be measurable within a 12-year period and possibly longer periods are needed to estimate future improvement. In any case, a common framework for the assessment is needed in order to harmonise the assessment of Future prospects. Also, for these particular cases the Future prospects should be evaluated taking into account the next 12-year period.

The Future prospects parameter should reflect the anticipated future improvements and deteriorations of the conservation status[78] which correspond to future trends in the assessment. The anticipated future improvements and deteriorations should be assessed in relation to the current conservation status. For example, the impact of future deterioration on the assessment of Future prospects will be different if the current status is 'favourable' or, on the other hand, 'unfavourable-bad'.

## Assessing future prospects

Future prospects should be evaluated by individually assessing the expected future trends and subsequently future prospects of each of the other three parameters, taking primarily into account the current conservation status of the parameter, threats (related to the parameter assessed) and the conservation measures being taken or planned for the future. Once the future prospects of each of the other three parameters have been evaluated, they should be combined to give the overall assessment of Future prospects. The assessment can be divided into three steps:

- Step 1: Future trends of a parameter.
- Step 2: Future prospects of a parameter.
- Step 3: Assessing overall Future prospects for a species.

The method described here relies to some extent on expert judgement, but within a clear framework allowing comparability between assessments from different Member States. It should also help to standardise assessments within countries where several teams are involved, each dedicated to a particular species group.

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[78] The Future prospects parameter should reflect the anticipated future improvements and deteriorations of the conservation status regardless of how far the future status is likely to be from the reference situation captured via favourable reference values. This differentiates the proposed approach from the approach used in the 2007–2012 reporting period.

**Step 1: Future trends of a parameter**

Future prospects of each of the other three parameters should principally reflect the future trends which are the result of balance between threats and conservation measures as described in Table 25.

Future trends of a species are dependent on the identified (known and likely) threats which will have a negative impact and any action plans, conservation measures and other provisions which will have a positive impact. For example, climate change, land-use scenarios and trends in certain policies are aspects that will influence future trends. The measures should be restricted to those anticipated to have a positive impact in the next 12 years (regardless of whether they were already being implemented during the current reporting period or not). Threats are reported in Section 8 'Main pressures and threats' of the Report format and the existing measures are reported in Section 9 'Conservation measures' (for Annex II species only).

In most cases, positive (management actions, policy changes, etc.) and negative influences (threats) will simultaneously affect the species. The assessment of future trends therefore has to take into account whether the sum of positive and negative influences (threats) will balance out for the parameter under consideration, or whether either the positive or negative effects are likely to be stronger.

In some cases threats or measures may affect the three parameters differently. For example, the measure 'restoration of forest habitat' might increase the area of a habitat for a species relatively quickly, but may have little impact on the range or population within a 12-year period. Only threats and conservation measures related to the specific parameter should be considered.

In many cases it will be difficult to foresee whether the influence of threats and conservation measures on the status of the parameter will balance out and whether the resulting trend will be negative, positive or stable. It can therefore be helpful to interpret the current trend in relationship to the impact of current pressures and measures and to assess the future trend on the basis of potential improvement, deterioration or continuation of the current situation.

Establishing whether the future trend is negative or very negative (or positive/very positive) will be difficult in most cases, although it may be easier if the current trend and trend magnitude are known or in cases of dominating pressures or measures. To differentiate between negative and very negative (and positive or very positive) trends the threshold of 1 % per year, meaning approximately 12 % in 12 years, is recommended. This threshold is used in the assessment matrix for current trends to distinguish between inadequate and bad status for range and population. In theory this threshold should represent a difference between a slight and moderate (< 1 % per year) deterioration/improvement and important (> 1 % per year) deterioration/improvement. The trend in habitat for the species has both quantitative and qualitative components. The assessment matrix does not request an exact measure of trend magnitude for Habitat for the species. For this parameter the difference between negative and very negative (and positive or very positive) trends should follow the same logic as for the two other parameters and should reflect the difference between slight/moderate and important future deterioration/improvement.

**Table 25:     Assessing the future prospects of a parameter (Steps 1 and 2)**

| Step 1 Future trends of parameters | | Step 2 Future prospects of a parameter | |
|---|---|---|---|
| **Balance between threats and measures** | **Predicted future trend reflects balance between threats and measures** | **Current conservation status of parameter** | **Resulting future Prospects of parameter (over next 12 years)** | |

| Balance between threats and measures | Predicted future trend reflects balance between threats and measures | Current conservation status of parameter | Resulting future Prospects of parameter (over next 12 years) | |
|---|---|---|---|---|
| Balance between threats acting on the parameter (mostly threats with insignificant impact [79] and/or Medium impact threats) and conservation measures; no real change in status of the parameter expected | overall stable | Favourable | good | |
| | | Unfavourable-inadequate | poor | |
| | | Unfavourable-bad | bad | |
| | | Unknown | unknown | |
| Threats expected to have negative influence on the status of the parameter (mostly High or Medium impact threats), irrespective of measures taken | negative / very negative | Favourable | poor (negative) | bad (very negative) |
| | | Unfavourable-inadequate | poor (negative) | bad (very negative) |
| | | Unfavourable-bad | bad | |
| | | Unknown | poor (negative) | bad (very negative) |
| None (or only threats with insignificant impact[80]) and/or effective measures taken: positive influence on the status of the parameter expected | positive / very positive | Favourable | good | |
| | | Unfavourable-inadequate | poor (positive) | good (very positive) |
| | | Unfavourable-bad | poor (positive) | good (very positive) |
| | | Unknown | poor (positive)[81] | good (very positive) |
| Threats and/or measures taken unknown or interaction not possible to predict | unknown | Favourable | unknown | |
| | | Unfavourable-inadequate | | |
| | | Unfavourable-bad | | |
| | | Unknown | | |

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[79] The impact of threats reported in field 8.1 should be evaluated as 'High' or 'Medium'. Only threats with Medium or High impact (see definition of impact categories in section '8     Main pressures and threats' (in 'Field-by-field guidance for species reports')) should be reported, but poteantially the species is affected by other pressures and threats not having a significant impact on its conservation status.

[80] See the previous footnote.

[81] Unknown is considered as not being favourable, therefore the assessment of Future prospects of a parameter is as for unfavourable inadequate or bad.

**Step 2: Future prospects of a parameter**

The future prospects of a parameter are assessed by taking into consideration, principally, the future trends and current conservation status. Deciding between the two options proposed for each combination of future trends and current conservation status will mainly depend on the potential trend magnitude (negative/very negative or positive/very positive). This is a pragmatic and mechanistic approach aimed at simplifying and harmonising the assessment of Future prospects.

**Step 3: Assessing overall Future prospects for a species**

Once the future prospects of each of the other three parameters have been evaluated, they should be combined to give the overall assessment of Future prospects using the rules in Table 26.

**Table 26:       Combining the evaluation of the three parameters to give Future prospects for a species**

| Assessment of Future prospects | Favourable | Unfavourable-inadequate | Unfavourable-bad | Unknown |
|---|---|---|---|---|
| Prospects of parameter: Range, Population and Habitat for the species | All parameters have 'good' prospects  OR  prospects of one parameter 'unknown', the other prospects' good' | Other combination | One or more parameters have 'bad' prospects | Two or more 'unknown' and no parameter with 'bad' prospects |

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**Box 9: Assessing Future prospects of *Euphydryas aurinia***

Range is stable; Population and Habitat for the species are both declining; and the following pressures and threats are recorded.

| Code | Activity | Impact of pressure | Impact of threat |
|------|----------|--------------------|------------------|
| A06 | Mowing or cutting of grasslands | medium | |
| A08 | Overgrazing by livestock | medium | |
| AXX | Application of natural fertilisers (e.g. manure, slurry) | medium | |
| A14 | Application of synthetic fertilisers | medium | medium |
| B01 | Conversion to mixed forest from other land uses, or afforestation (excluding drainage) | medium | medium |
| A17 | Removal of small landscape features (hedges, stone walls, rushes, open ditches, springs, solitary trees, etc.) and agricultural land parcel consolidation | high | high |
| K05 | Reduced fecundity / genetic depression (e.g. inbreeding or endogamy) | high | high |
| A03 | Abandonment of grassland management (absence of grazing, absence of mowing) | high | high |

The only measure from the measure list that is implemented is 'CA03 Adapt/manage mowing and grazing'. This measure is expected to counteract some of the 'medium'-ranked pressures acting on habitat quality, but other 'high'-ranked threats having an impact on both habitat quality and area as well as population are expected. So the population and habitat for the species trends will most likely remain decreasing.

| Parameter | Assessment of parameter | Expected future trend | Future prospect |
|-----------|------------------------|-----------------------|-----------------|
| Range | Favourable | Stable | Good |
| Population | Unfavourable-inadequate | Decreasing | Poor |
| Habitat for the species | Unfavourable-inadequate | Decreasing | Poor |

By using the combination rules in Table 26, two 'poor' conclusions and one 'good' conclusion lead to an overall assessment for Future prospects of 'unfavourable-inadequate'.

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Note that the example is only illustrative since it uses draft codes that may not be retained as such in the final list of pressures and threats.

# 12 NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

This chapter provides complementary information to the guidance provided in Section '12    NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex II species' (in 'Field-by-field guidance for species reports').

The evaluation of the contribution of the Natura 2000 network to the conservation status of species has three principal components:

1. evaluation of the relevance of the network for different species (based on the proportion of the population within the network);
2. possible differences in trends (population trends) within the network compared to the general trend (overall species population trend including populations inside and outside the network);
3. understanding what type of conservation/management measures have been implemented (see Section '9    Conservation measures' (in 'Definitions and methods for species reporting')).

The contribution of the Natura 2000 network to the conservation status of a species is likely to vary in relation to the dependence of the species on sites, the coverage by the network, and site management. Therefore, the population size included in the network for each given biogeographical or marine region should be provided.

Another element to be taken into consideration when evaluating the contribution of the network is the possible difference in trends both within the network and globally (mainly for species where a significant proportion of a species' population occurs outside the network). For species, this should be expressed by comparing the trend of the population size in the biogeographical or marine region with the trend of the population size inside the Natura 2000 network in that same biogeographical region.

The information on conservation measures completes and helps to understand the potential differences between the trends within the network and global trends.

# DEFINITIONS AND METHODS FOR HABITAT REPORTING

## Habitats to be reported

### Occurrence categories used in the habitat checklist

This chapter provides complementary information to the guidance provided in Section 'Habitats to be reported' (in 'Field-by-field guidance for habitat reports').

The following categories and codes are used for the 2013–2018 reporting:

- **Present regularly (PRE)**

This category applies to habitats which occur in the region.

- **Marginal (MAR)**

The category 'marginal occurrence' should be used in situations where the habitat occurs principally in one region (or Member State) but extends to a neighbouring region (or Member State), where the area of habitat is insignificant and the occurrence represents a limit of a natural range of a habitat in a given area. It is not expected that the conservation status of the marginal habitat will be assessed. However, if the conservation status is evaluated the assessment should take into account their marginal position, for example when estimating the favourable reference area or when assessing structure and functions.

The 'marginal' category should reflect the history of the habitat in a given area and its use should be restricted to cases where habitat occurs naturally as 'marginal'. The 'marginal' category should not be used for habitats that were more common in the past in a given area and where the marginal status is a result of past declines due to human pressures. In this case the category 'present' should be used.

- **Scientific reserve (SCR)**

For habitats, this category applies if it is not possible to judge whether or not a habitat occurs in the biogeographical region due to problems with interpretation of the habitat definition in the Interpretation Manual.

This category should not be used in situations where:

- interpretation of the habitat is unclear or ambiguous;
- where the occurrence of the habitat is unresolved due to the absence of inventories. Such a habitat should be treated as 'present' and the report should reflect the fact that there are no data available.

For example:

The distinction between the habitats '8130 Western Mediterranean and thermophiles scree' and '8160 Medio-European calcareous scree of hill and montane levels' is unclear in some regions. For example, all occurrences of *Stipion calamagrostis* in the Austrian Alpine region are included under 8160, and habitat 8130 is reported with a 'scientific reserve'.
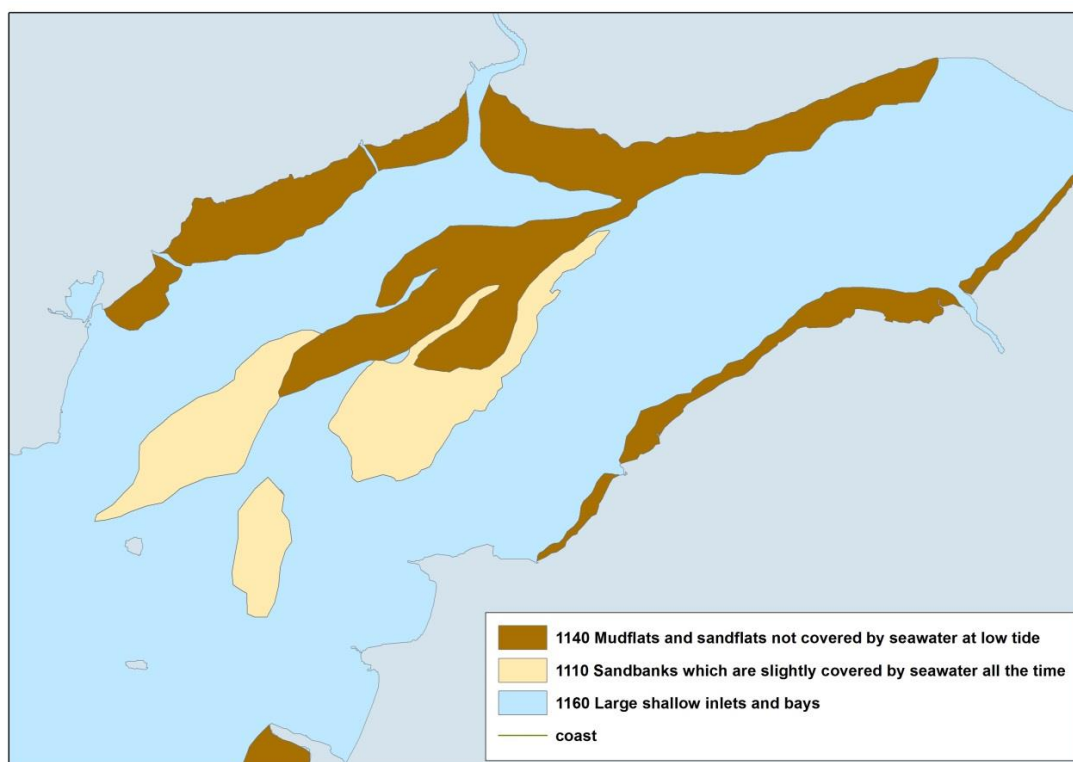
## Overlapping habitats

This section provides complementary information to the guidance provided in Section 'Habitats to be reported' and '5    Area covered by habitat' (in 'Field-by-field guidance for habitat reports').

Habitats listed in Annex I can be both biotopes or biotope complexes and sometimes one Annex I habitat is a component of another Annex I habitat. As a result patches of one or several Annex I habitats can occur within another Annex I habitat (see examples in Table 27).

**Table 27:**      **Examples of overlapping habitats**

| **'1160 Large shallow inlets and bays' could include areas of:** |
|---|
| • 1110 Sandbanks which are slightly covered by seawater all the time<br>• 1170 Reefs<br>• 1140 Mudflats and sandflats not covered by seawater at low tide |
| **'7110 Active raised bogs' often have small areas of:** |
| • 3160 Natural dystrophic lakes and ponds<br>• 7150 Depressions on peat substrates of the Rhynchosporion |

**Figure 9:**      **How to treat overlapping habitats Note: The area to be reported for '1130 Estuaries' (blue) will also include the areas of '1110 Sandbanks which are slightly covered by seawater all the time' (yellow) and '1140 Mudflats and sandflats not covered by seawater at low tide' (brown***).***



Where this happens each habitat should be reported in its entirety. Therefore some areas may have contributed to two or more assessments, as illustrated in Figure 9. This will allow an effective estimate of the total area of the different habitats for each Member State and region.

# Marine habitats

This chapter provides complementary information to the guidance provided in Section 'Habitats to be reported' and '3   Biogeographical and marine regions' (in 'Field-by-field guidance for habitat reports').

## Marine regions

The map of biogeographical regions was prepared from terrestrial data and is therefore not appropriate for reporting on non-coastal marine habitat types and species.

For marine species Member States should report conservation status using the following marine regions:

- Marine Atlantic: Northern and Western Atlantic including the North Sea and Kattegat;
- Marine Baltic: east of the Kattegat, including the Gulf of Finland and the Gulf of Bothnia;
- Marine Black Sea: Exclusive Economic Zones of Bulgaria and Romania;
- Marine Mediterranean: Mediterranean sea east of meridian line of 5° 55' W;
- Marine Macaronesian: Exclusive Economic Zones of the Azores, Madeira, and Canary archipelagos, plus the continental shelf of Portugal.

Delineation of borders of marine regions is based on boundaries of MSFD regions and subregions[82]. The Member State extent for reporting under Article 17 of the Habitats Directive should be the same as that used for reporting under the MSFD.

## Habitats to be reported in marine regions

For the purposes of Article 17 reporting, habitats types 'always open to the sea' are classified as marine (e.g. estuaries). Coastal lagoons, which do not have a permanent opening to the sea, are therefore classified as terrestrial. Therefore, the following habitats should only be reported under Article 17 for the appropriate marine region(s) even though some of them, such as '1130 Estuaries', can also extend beyond the coastline. Listing of the habitat types as 'marine' does not have any effect on the definition of these habitat types.

Habitat types to be reported under marine regions are:

1110 Sandbanks which are slightly covered by seawater all the time
1120 *Posidonia* beds (*Posidonion oceanicae*)
1130 Estuaries
1140 Mudflats and sandflats not covered by seawater at low tide
1160 Large shallow inlets and bays
1170 Reefs
1180 Submarine structures made by leaking gases
1650 Boreal Baltic narrow inlets
8330 Submerged or partially submerged sea caves

This list includes several Annex I habitats which were not discussed at the Marine Natura 2000 seminars. This is because the marine seminars were held to discuss those species and habitats

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[82] A map of marine regions can be found on the Reference Portal.

subject to a 'marine reserve' from earlier seminars rather than to discuss all the species and habitats that can be considered as 'marine'.

## Subtypes of marine habitats

The marine habitats '1110 Sandbanks which are slightly covered by sea water all the time' and '1170 Reefs' both include many subtypes, many of which are similar in inherent variability to a typical terrestrial habitat. These broadly defined habitats are treated as a series of related biotopes by the marine conventions.

The Marine Strategy Framework Directive uses a series of 'predominant seabed and water column habitat types' (see a list on the Reference Portal[83]) for assessments of the ecosystems element of 'environmental status'. Although the criteria for these assessments are different to those of Article 17, similar data (e.g. distribution, area, structure) are required.

Member States can complete the optional reports[84] for the subtypes of marine habitats (1110 and 1170) using the 'predominant habitat types' under the Marine Strategy Framework Directive or provide the information related to status of subtypes of marine habitats in the field 10.8 'Additional information'.

# Sources of information for assessing habitat types

As is the case for species, Member States are obliged under Article 11 of the Directive to monitor the status of habitats.

In many Member States there are also existing inventories of certain habitat types (e.g. forests or grasslands) which have been produced for a variety of purposes. These may not use the same classification of habitats as the Directive, but in many cases they can be reinterpreted, possibly with the aid of further information such as soil or geological maps. Many Member States have published 'translations' between various habitat classifications and the typology used in Annex I (which is mostly based on CORINE (European Communities, 1991) and the Palaearctic classifications (Devillers & Devillers-Terschuren, 1996). The ETC/BD developed the EUNIS Habitat Classification that provides a tool for making comparisons between different land-use, habitat and vegetation classification systems.

For example, the Czech biotope manual (Chytrý et al., 2010) gives the equivalent unit(s) in the national classification for each Annex I habitat type present in the Czech Republic as well as the equivalent phytosociological syntaxa, and the French Cahiers d'habitats series lists the syntaxa for all Annex I habitat types present in France. The German Interpretation Manual gives references to the German national biotope classification, Red Data Book of Biotopes, and to phytosociological syntaxa (Ssymank et al., 1998).

Where no map of habitat range exists it may be possible to model the range from other sources of data, such as maps of potential natural vegetation (e.g. Bohn et al., 2004), distribution of key species, soil and geological maps, climate data or topographical maps.

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[83] http://cdr.eionet.europa.eu/help/habitats_art17
[84] In some situations Member States may complete additional report formats for habitats (subtypes of marine habitats) or species (e.g. distinct species og genus *Lycopodium*) not listed in the Member State's checklist and submit these optional reports together with mandatory reporting dataset.

Several Member States have monitoring schemes based on stratified random sampling, such as the Countryside Survey[85] in the United Kingdom or the Nationell Inventering av Landskapet i Sverige (NILS)[86] project in Sweden. Although these methods cannot give detailed information on distribution of detailed Annex I habitat types, they can give good estimates of habitat type area and trends in area. Similarly, information collected for national forest inventories or repeated phytosociological surveys may be important sources of information if they can be linked to Annex I habitats. There have been several seabed mapping projects, such as Balance[87] and Mesh[88], and these werebrought together and extended in the EUSeaMap project (2)[89].

Remote sensing techniques are a rapidly developing field and many projects have used them to both map and assess quality of habitat types. However, such techniques are mostly still experimental and are not yet suitable for operational use for most Annex I habitats.

## Trends

This chapter provides complementary information to the guidance provided on trends and trend periods in 'Part 1: Field-by-field guidance for completing 'Annex D' Habitat reports').

The conservation status assessment stresses the importance of trend information: trends are decisive for the assessment of conservation status since usually only stable or increasing trends can result in an overall Favourable conservation status (FCS) conclusion. Therefore, in general, more attention should be paid to the methodology of monitoring schemes to improve the quality of trend information.

Trends are an essential part of assessing all conservation status parameters except Future prospects. A comparison between the overall trend of habitat area in good condition in the biogeographical or marine region and trends within Natura 2000 is important in assessing the impact of the Natura 2000 network on conservation status (see also Section '11    NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex I habitat types' (in 'Definitions and methods for habitat reporting').

Trends are usually derived from modelling or existing monitoring schemes which are based on sampling, as complete surveys are exceptional and usually only undertaken for very rare habitats. Sampling methods should be statistically robust wherever possible. In the absence of dedicated monitoring schemes, trends are usually a result of expert opinion and in that case should be reported only as directions (increasing/decreasing/stable), without absolute values. Unknown trends should be reported as 'unknown'. If the available data are not sufficient to determine trend direction, this can be reported as 'uncertain'.

Trend is a (measure of a) directional change of a parameter over time. Trends should ideally be the result of a statistical regression of a time series. Fluctuation (or oscillation) is not a directional change of a parameter, and therefore fluctuation is not a trend. However, fluctuations can occur within a long-term trend (of some habitats) and can affect the measurement of short-term trends because it

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[85] http://www.countrysidesurvey.org.uk
[86] http://nils.slu.se/
[87] http://www.balance-eu.org
[88] http://www.searchmesh.net/
[89] http://www.jncc.gov.uk/page-5020

is difficult to assess whether there is a real trend in the short term, or whether there is simply a fluctuation effect.

Fluctuation is an intrinsic character of all natural systems and can be observed for all directions of the trend (increasing, decreasing, and stable) However, it is only detectable in regularly surveyed habitats. Fluctuations are only likely to be detected when the parameter is measured at least three times within a given time-frame. Ideally, they will be based on more frequent sampling. In reality, this is unlikely to happen in short time-frames (such as 12-year intervals), and setting short-term trends in a long-term context will help to identify where fluctuations are occurring.

Fluctuations in Range or Area covered by habitat are rarely detectable over a 12-year period and any fluctuation of these values is mostly long term. However, measurement of these parameters can be inexact and longer-term information may be required to detect any real changes, given the range of data availability, sample sizes and possible survey methods.

## Short- and long-term trends

The reporting period for the Habitats Directive is six years, but estimates of trend are more likely to be statistically robust over longer time periods. It is therefore recommended to estimate short-term trend over two reporting cycles, i.e. 12 years (or a period as close to this as possible), as this should give a more reliable and comparable estimate of the trend; see Table 28). Long-term trends, which are likely to be more statistically robust, can also be reported (in a series of optional fields). The recommended period for assessing longer-term trends is four reporting cycles (24 years). This definition of a long-term period used for reporting of the long-term trends should not be confused with the legal requirement of the Directive of maintenance in a 'long-term' of a specific structure and functions of habitat.

The short-term trend information should be used in the evaluation matrix to undertake the conservation status assessment.

**Table 28          Period for assessing trends**

| Trend | Period to assess trend |
|---|---|
| Short-term | Two reporting cycles (12 years; or a period as close as possible) |
| Long-term | Four reporting cycles (24 years; or a period as close as possible) |

The trend magnitude reported should be the change over the relevant period (e.g. 12 years for short-term trend). Where magnitude is derived from data covering a different time interval, estimate the change for the reporting period by simple proportion. For example, a change of 150 km$^2$ over 15 years would be equivalent to 10 km$^2$ per year or 120 km$^2$ over the 12-year interval for short-term trend magnitude. If the change appeared at a specific time (for example, as a result of a catastrophe) precise time period or year should be reported and an explanation should be provided under the field 'Additional information'.

# Favourable reference value

This chapter provides complementary information to the guidance provided on favourable reference values in Sections '4    Range' and '5    Area covered by habitat' (in 'Field-by-field guidance for habitat reports').

## What are favourable reference values?

The concept of favourable reference values (FRVs) is derived from definitions in the Directive, particularly the definition of Favourable conservation status that relates to the 'long-term distribution and abundance' of the populations of species (Article 1(i)), and for habitats to the 'long-term natural distribution, structure and functions as well as the long-term survival of its typical species' (Article 1(e)). in their natural range This requires that the species is maintaining itself on a long-term basis as a viable component of its natural habitats. Similarly, for habitats, the Directive requires that the specific structure and functions necessary for its long-term maintenance exist and will continue to exist and that its typical species are in favourable status, i.e. are maintaining themselves on a long-term basis. If Member States do not maintain or restore such a situation, the objective of the Directive is not met.

Favourable reference values – 'range' for species and habitats, 'population' for species, and 'area' for habitats – are critical in the evaluation of conservation status. The evaluation matrices (Annexes C and E) of the Report format require Member States to identify favourable reference values for range (FRR) and area for habitats (FRA) and for range (FRR) and population (FRP) for the species. The conservation status assessment then looks at the difference between current values and reference values. Basically, the range, area, and population must be sufficiently large in relation to favourable reference values (as defined in the evaluation matrix) to conclude, alongside other criteria (e.g. trends), whether the parameter is 'favourable' or 'unfavourable'.

The concept of favourable reference values was endorsed by the Habitats Committee back in 2004: document Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive [90] describes the favourable reference range, population and habitat area as follows:

*Range within which all significant ecological variations of the habitat/species are included for a given biogeographical region and which is sufficiently large to allow the long-term survival of the habitat/species; favourable reference value must be at least the range (in size and configuration) when the Directive came into force; if the range was insufficient to support a favourable status the reference for favourable range should take account of that and should be larger (in such a case information on historic distribution may be found useful when defining the favourable reference range); 'best expert judgement' may be used to define it in absence of other data.'*

*Population in a given biogeographical region considered the minimum necessary to ensure the long-term viability of the species; favourable reference value must be at least the size of the population when the Directive came into force; information on historic distribution/population*

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[90] Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive (DocHab-04-03/03 ver.3). DG Environment, 2004.

*may be found useful when defining the favourable reference population; 'best expert judgement' may be used to define it in absence of other data.*

*Total surface area of habitat in a given biogeographical region considered the minimum necessary to ensure the long-term viability of the habitat type; this should include necessary areas for restoration or development for those habitat types for which the present coverage is not sufficient to ensure long-term viability; favourable reference value must be at least the surface area when the Directive came into force; information on historic distribution may be found useful when defining the favourable reference area; 'best expert judgement' may be used to define it in absence of other data.*

## Setting favourable reference values (FRVs) for habitat types

### Overview of general principles for setting reference value

Before setting the favourable reference values, it is advisable to collect all the relevant information about a habitat in order to understand their ecological and historical context. Therefore, ideally data and information on the following factors should, when available, be gathered and used when estimating FRVs for habitats:

- current situation and assessment of deficiencies, i.e. any pressures/problems;
- trends (short-term, long-term, historical, i.e. well before the Directive came into force);
- natural ecological and geographical variation (including variation in species composition, variation in conditions in which habitats occur, variation of ecosystems);
- ecological potential (potential extent of range, taking into account physical and ecological conditions, contemporary potential natural vegetation);
- natural range, historical distribution and abundances and causes of change, including trends;
- connectivity and fragmentation.
- dynamics of the habitat type;
- requirements of its typical species.

The following general principles should be taken into account in the process of setting FRVs:

- FRVs should be set on the basis of ecological/biological considerations;
- FRVs should be set using the best available knowledge and scientific expertise;
- FRVs should be set taking into account the precautionary principle and include a safety margin for uncertainty;
- FRVs should not, in principle[91], be lower than the values when the Habitats Directive came into force, as most habitats have been listed in the Annexes because of their unfavourable status; the distribution (range) and size (area) at the date of entry into force of the Directive does not necessarily equal the FRVs;
- FRVs are not necessarily equal to 'national targets': 'Establishing favourable reference values must be distinguished from establishing concrete targets: setting targets would mean the translation of such reference values into operational, practical and feasible short-, mid- and

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[91] For example, '7120 Degraded-raised bogs' that would ideally all be (converted) restored to '7110 Active raised bogs'.

long-term targets/milestones. This obviously would not only involve technical questions but be related to resources and other factors' (European Commission, 2004[92]);

- FRVs do not automatically correspond to a given 'historical maximum', or a specific historical date; historical information (e.g. a past stable situation before changes occurred due to reversible pressures) should, however, inform judgements on FRVs;

- FRVs do not automatically correspond to the 'potential value' (maximum possible extent) which, however, should be used to understand restoration possibilities and constraints.

Although FRVs have to be set separately for range and surface area, **there is a clear relationship** between range and surface area of a habitat, because within the natural range all significant ecological variations must be considered. This calls for an iterative process in setting the FRVs to ensure that one value takes the other one into account, e.g. habitat stands/parcels large enough with an appropriate range to include all its structural components and a characteristic functioning.

FRVs have to be reported at the level of the Member State biogeographical/marine region. However, these geographical units may not be appropriate for developing a rationale for FRVs based on ecology of habitats. Therefore, it is advisable to set FRVs at the most suitable scale (often national, sometimes supranational) and to derive the national biogeographical numbers from this value, e.g. using a proportion based on distribution and/or size/area.

When setting FRAs it should be remembered that several habitats potentially can occupy the same site, e.g. a given area of land, depending on history and current management, could be a grassland, a heathland or a forest[93]. Care should be taken to ensure that the combined FRAs do not exceed the area of the region.

The term 'current value' will be used often in these guidelines. It should be interpreted as being the value reported by the Member State for the present reporting period, which is to be compared to the favourable reference value.

**Model-based and reference-based approach**

There are basically two approaches to setting FRVs: model-based and reference-based. Model-based methods are built on biological considerations. This approach requires good knowledge about the habitat type ecology and and its structure and functions. Reference-based approaches are founded on an indicative historical baseline corresponding to a documented (or perceived by conservation scientists) good condition of a particular habitat or restoring a proportion of estimated historical losses. Both approaches take into account information about distribution, trends, known pressures and declines (or expansions). These approaches are not mutually exclusive and will be further explained in the sections below with practical instructions and examples.

With the objective of developing practical and pragmatic guidance promoting harmonisation between Member States, while allowing for the needed flexibility (e.g. the best method to be used

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[92] Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive (DocHab-04-03/03 ver.3). DG Environment, 2004.
[93] For example, these three habitat types typical of limestone areas in much of Europe:
6120 Semi-natural dry grasslands and scrubland facies on calcareous substrates
5130 *Juniperus communis* formations on heaths or calcareous grasslands
9150 Medio-European limestone beech forests of the *Cephalanthero-Fagion*

depends on the data available), a stepwise approach, as summarised in Figure 10 below, is recommended.

The stepwise approach and the specific methods for setting the FRVs are largely dependent on the available data and knowledge for each habitat. Three generic levels of data availability and knowledge are suggested:

- High: good data on actual distribution and ecological requirements/features; good historical data and trend information;
- Moderate: good data on actual distribution and ecological requirements/features; limited historical distribution data (only trend data available);
- Low: data on actual distribution and ecological requirements/features are sparse and/or unreliable; hardly any historical data available and no trend information.

**Figure 10:        Illustration of the stepwise approach to set FRVs**
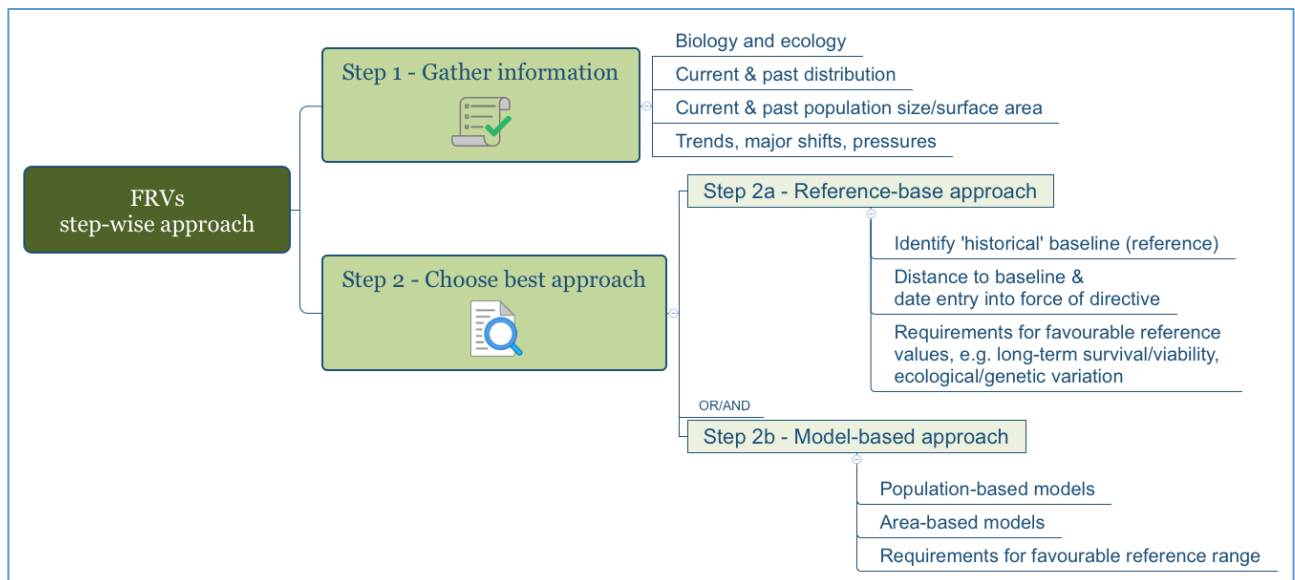


The recommended approach involves a certain number of steps that will be further detailed below[94]. In summary, and without detailing all conditions, they are:

- **Step 1: Gather information**

Collect all relevant information about a habitat type necessary to understand their ecological and historical context: biology and ecology; natural range, current and past distribution (including before the Directive came into force) and population size/surface area; trends, their causes and when major changes occurred, pressures.

- **Step 2: Choose best approach**

Depending on the availability and quality of the data and information gathered, choose the best way of setting the FRVs.

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[94] In order to better understand the practical development of the approaches above (and the steps that will be further detailed), several 'real life' validated examples can be found on the Article 17 Reference Portal.

- **Step 2a: Use reference-based approach**

Compare the current distribution and surface area with those of a past favourable period and at the date of entry into force of the Directive.

Check if the values above are sufficient to ensure long-term survival and viability, as well as coverage of ecological variations.

Set values or use operators to qualify how far the current value is from the favourable situation.

- **Step 2b: Use model-based approach**

Develop area-based models or use available estimates derived from such models to assess the favourable reference area, taking into account the requirements for a favourable reference range.


The favourable reference values – FR range and FR area – need to capture the requirements of the Directive concerning the ecological diversity (subtypes) within the habitat type natural range and the structure and functions necessary for its long-term maintenance and the favourable status of its typical species.

The ecological diversity, one of the Directive's requirements for a Favourable conservation status, is often expressed along geographical (north–south/east–west) and other environmental gradients (e.g. altitudinal, geological, climatic) and is frequently reflected in changes in floristic composition.

## Stepwise process for setting the favourable reference values for habitats
### Step 1: Gather information about the habitat type

The list below includes examples of data and information about the habitat type, linked to its definition, which may be relevant in setting the FRVs:

- physical and ecological conditions;
- variation in species composition and abundabce across geographical regions, environmental gradients (e.g. altitude, depth) and land use or other impacts of humanactivities;
- physical structure, dynamics and possible successional stages;
- characteristic structure and functions;
- typical species, their range and conservation status.

Another set of information to be collected includes data and information on distribution (and therefore range) and surface area of the habitat type in the historical and recent past, when the Directive came into force, and currently (i.e. when the assessment is being done). The historical past would go up to the last two or three centuries (where applicable), and the recent past up to about 50 years before the Directive came into force (i.e. 1940s –1950s).

This information is crucial to understand what has been happening to the habitat type and support the setting of FRVs in the following steps. This evidence should be complemented with information on trends and pressures, to understand which events caused major changes/shifts in the status and trends of habitat distribution and area covered by habitat, and when. For example, semi-natural habitats depending on extensive agricultural management, experienced cultivation, severe intensification and fragmentation in most parts of Europe after World War II have caused serious

declines in their quantity and quality. For some habitat types, useful information can be found in the *Interpretation Manual of European Union Habitats*[95].

**Step 2a: Use reference-based approach to set FRVs**

The availability and quality of the data and information gathered in Step 1 will vary from habitat to habitat, but also for distribution (range) and for habitat areas.

However, it should be possible to use that information in a pragmatic way to have a rough estimation of how far from 'favourable reference values' the current values on range (based on distribution) and area are (using the operators 'approximately equal to', 'more than', and 'much more than') and possibly set values. When using operators, Member States are encouraged to indicate in the 'Additional information' fields (4.12 for FRR and 5.15 for FRA) an estimation of the percentage of how far the current value is from the FRV (e.g. 'current value around 5 or 6 % below FRR', 'current value about 45-50 % below FRA'); this information could be useful when estimating restoration needs for example.

The 'decision key' below should be used in general, noting that for many habitat types (e.g. most forest types) Step 2a, using the area-based approach, could be more appropriate. In addition, elements from Step 2b may also be used to help estimate the FRA below. Take into account the above section 'General principles for setting favourable reference values (FRVs)'.

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**Point 1**

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If both distribution and surface area of the habitat have not undergone visible shifts or reductions (trends have been relatively stable) in the past, including in the recent past, AND current area of the habitat is large enough to ensure long-term viability of the habitat and its typical species, then the:

- favourable reference range (FRR) should be equal to the current range;
- favourable reference area (FRA) should be equal to the current surface area[96].

If the current range is smaller than the past range, ⇨ go to point 2.

If the current habitat area is smaller than the past area, ⇨ go to point 3.

If there is not sufficient historical information or if this is not useful (e.g. many forest habitats), go to Step 2b (area-based approach).

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[95] http://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf
[96] Or in exceptional cases for example '7120 Degraded-raised bogs' which would ideally all be (converted) restored to '7110 Active raised bogs' the favourable reference area (FRA) should be less than the current surface area

**Point 2**

Identify which additional areas, within its natural range, should be covered by the habitat type in the future in order to re-establish a past range that is big enough and well distributed to accommodate viable areas in the long term; this should consider whether the restoration of the range is technically and ecologically feasible. The availability and quality of the data used to make such an identification and estimation could lead to different ways of expressing the FRR:

- a **value** equal to 'current range value' plus 'additional range area to be restored';
- an **operator** indicating 'more than current range' (i.e. less than 10 % more) or 'much more than current range' (i.e. more than 10 %);
- in any case, the estimated FRR cannot be smaller than the range at the date of entry into force of the Directive.

**Point 3**

Identify what needs to be done to restore the habitat area (or to allow for recovery) to a past level; this should consider whether the restoration/recreation is technically and ecologically feasible. Information about past trends, if available, should inform the setting of the FRA. The availability and quality of the data used to make such an identification and estimate could lead to different ways of expressing the FRA:

- a **value** equal to 'current habitat area' plus 'additional area to be restored/recreated';
- an **operator** indicating 'more than current habitat area' (i.e. less than 10 % more) or 'much more than current habitat area' (i.e. more than 10 %);
- in any case, the estimated FRA cannot be smaller than the habitat area at the date of entry into force of the Directive.

**Point 4**

A conclusion of FRR or FRA 'unknown' should only be used in the cases where there is hardly any data about habitat's current range and surface area and no information about the its historical context.


**Step 2b: Use area-based approach to set FRVs**

There are some habitat types for which a purely reference-based approach is not possible or inappropriate to set the FRVs, particularly the favourable reference area, e.g. for forest types with very small areas in the recent past. In this case the concept of 'minimum dynamic area' (MDA) can be used to establish a minimum area for proper functioning of the habitat and to buffer against natural disturbance and anthropogenic impacts. Next, this area must be scaled up to a favourable area by considering historical distribution and ecological variations in the natural range.

In general, if there are typical species whose conservation status is clearly related to the area of an Annex I habitat, an evaluation of the status of those species may help setting a value for favourable reference area.

In addition to the considerations above, the fact that many Annex I habitat types are semi-natural and their existence largely dependent on human activities (e.g. extensive agriculture, including grazing and mowing, traditional forest management such as cork production or coppicing) may require a combination of reference-based and area-based approaches to derive the FRVs. Therefore, Step 2a and Step 2b should be considered in an iterative way, and elements from one step used in the other step.

There are several habitats that are closely linked to a single species and for which the approach described above for species could be appropriate (with modification to get area), for example for habitats '1120' *Posidonia oceanica,* '3230 *Myricaria germanica*', '5130 *Juniperus communis*', '5220 *Zyziphus*', and '9570 *Tetraclinis articulata*'.

## 2    Maps

This chapter provides complementary information to the guidance provided in Section '2    Maps' (in 'Field-by-field guidance for habitat reports').

### Distribution maps

Submission of maps of the distribution of all Annex I habitats present in a Member State is a basic requirement of the Article 17 reporting. Principal requirements for distribution maps are described in Section '2    Maps' (in 'Field-by-field guidance for habitat reports') and further technical specifications are provided on the Reference Portal.

Ideally the distribution map should provide complete and up-to-date information about the actual occurrence of the habitat based on the results of a comprehensive mapping programme/initiative/project/inventory or a statistically robust model.

In many cases up-to-date field data will only cover part of a real habitat distribution or only relatively old data will be available. In this situation the Report format foresees that the distribution map is derived from a model or extrapolation. Member States are encouraged to report a more up-to-date or complete distribution by remapping the available distribution using other data, such as the results of a monitoring programme or data on potential vegetation.

In some cases, even with the use of extrapolation, the resulting distribution map will be highly incomplete when compared with presumed habitat distribution (see Figure 11). The Member States are encouraged to provide the incomplete distribution map. If the reported distribution map obtained as a result of comprehensive mapping, modelling or extrapolation or expert interpretation covers less than 75 % of the presumed actual species distribution (the resulting map is incomplete in relation to the presumed species distribution), the 'Method used' should be reported as '(d) Insufficient or no data available'.

**Figure 11:      Hypothetical distribution map of a habitat in Germany with predicted (presumed) and reported distribution. Reported distribution represents less than 75 % of a presumed distribution, so the 'Method used' should be evaluated as '(d) Insufficient or no data available'.**
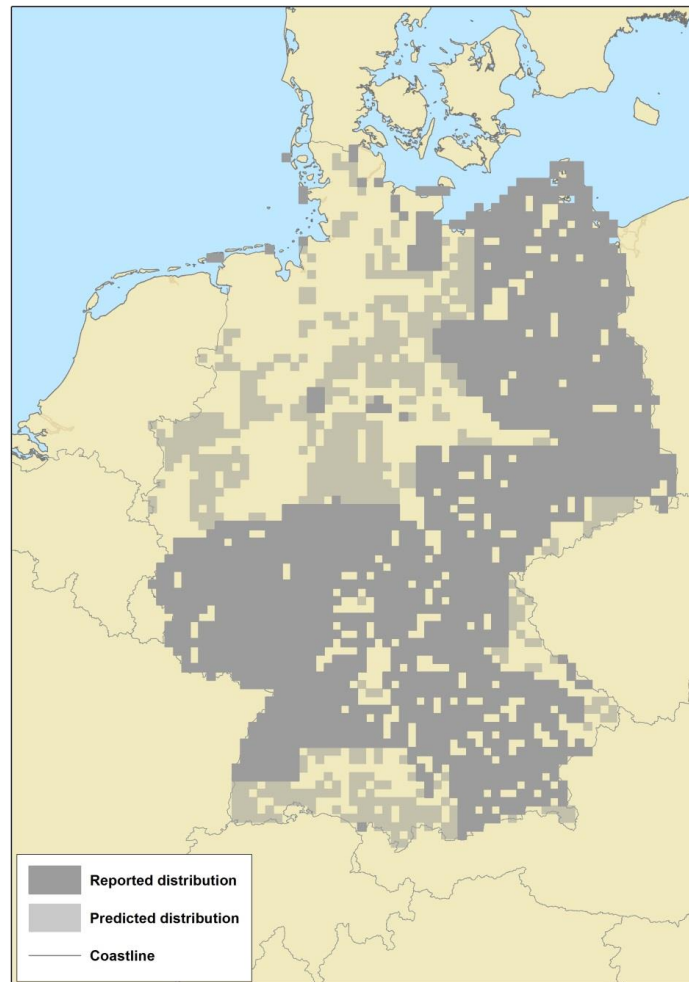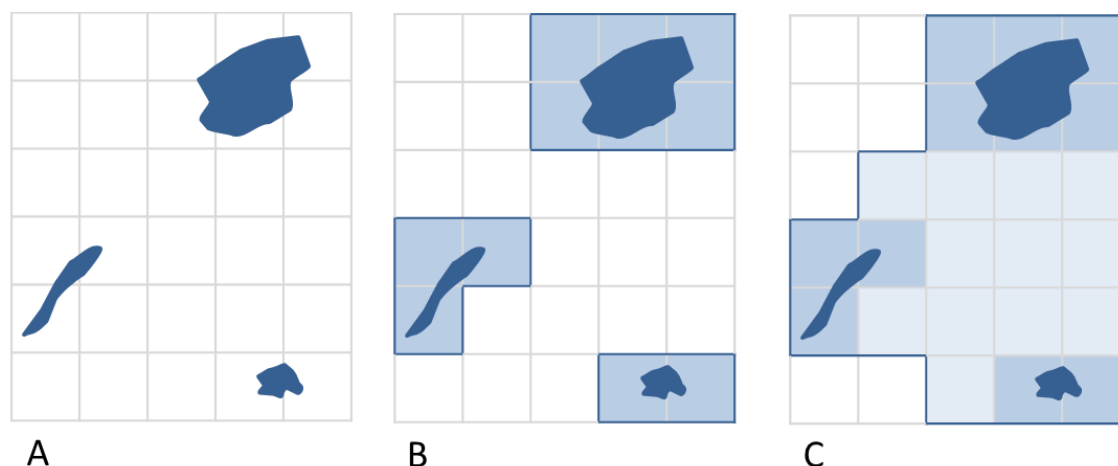


# 4      Range

This chapter provides complementary information to the guidance provided in '4      Range' (in 'Field-by-field guidance for habitat reports')..

## Concept of range

Range is defined as 'the outer limits of the overall area in which a habitat is found at present and it can be considered as an envelope within which areas actually occupied occur.' It is a dynamic parameter allowing the assessment of the extent of and the changes in the habitat distribution.

Range is a spatial generalisation of distribution, which is a representation of the habitat occurrences in the 10x10 km grid. The relationship between habitat occurrence, distribution and range is illustrated in Figure 12

**Figure 12:        Relationship between occurrence of habitat, distribution and range. 'A' occurrence of habitat, usually a polygon, point or a linear feature (the total area of polygons is reported as a Surface area covered by habitat, field 5.2); 'B' distribution – occurrence in 10x10 km grids; 'C 'range – spatial generalisation of the distribution**



A                              B                              C

The range concept was endorsed by the Habitats Committee. The document of the Habitats Committee Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive[97] describes range as follows:

*The natural range describes roughly the spatial limits within which the habitat or species occurs. It is not identical to the precise localities or territory where a habitat, species or sub-species permanently occurs. Such actual localities or territories might for many habitats and species be patchy or disjointed (i.e. habitats and species might not occur evenly spread) within their natural range. If the reason for disjunction proves to be natural i.e. caused by ecological factors, the isolated localities should not be interpreted as continuous natural range, for example for an alpine species the range may be the Alps and the Pyrenees, but not the lower area between. The natural range includes however, areas that are not permanently used: for example for migratory species 'range' means all the areas of land or water that a migratory species inhabits, stays in temporarily, crosses or overflies at any time on its normal migration[98]. Vagrant or occasional occurrences (in the meaning of accidental, erratic, unpredictable) would not be part of the natural range.*

*Natural range as defined here is not static but dynamic: it can decrease and expand. Natural range can also be in an unfavourable condition for a habitat or a species i.e. it might be insufficient to allow for the long-term existence of that habitat or species.*

*When a species or habitat spreads naturally (on its own) to a new area/territory or when a reintroduction of a species consistent with the procedures foreseen under Article 22 of the Habitats Directive has taken place of a species into its former natural range, this territory has to be considered a part of the natural range. Similarly restoration/recreation or management of habitat areas, as well as certain agricultural and forestry practices can contribute to the expansion of a habitat or a species and therefore its range. However, individuals or feral*

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[97] Assessment, monitoring and reporting of conservation status – preparing the 2001–2007 report under Article 17 of the Habitats Directive (DocHab-04-03/03 ver.3). DG Environment, 2004.
[98]        See also article 1 of the Bonn Convention.

*populations of an animal species introduced on purpose or accidentally by man to places where they have not occurred naturally in historical times or where they would not have spread to naturally in foreseeable future, should be considered as being outside their natural range and consequently not covered by the Directive.*

## Calculation of range

Bearing in mind the dynamics of the range as defined above, the range should be calculated based on the map of the actual (or presumed if aslo modelling, extrapolation of expert opinion were used) distribution used for each reporting period. The calculation should involve a standardised method. A standardised process is needed to ensure repeatability of the range calculation in different reporting rounds and for comparison of results between Member States. It will also allow for estimating range trends.

The standardised process proposed in these guidelines consists of two steps:

1. Creating an envelope(s) around the distribution grids. This spatial calculation is done using the procedure of 'gap closure' where a predefined set of rules specify where two distribution points/grids will be joined together to form a single range polygon, and where an actual gap in the range will be left.
2. Excluding unsuitable areas. After the automated calculation, areas which are not appropriate, such as marine areas in the range of a terrestrial habitat, should be excluded.
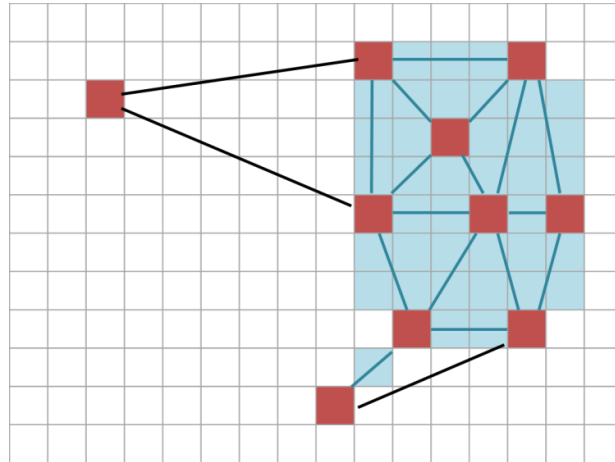
**Step 1: Creating an envelope(s) around distribution grids**

**What is a gap distance?**

Most of the basic principles for the range estimation, including the size of gaps which will represent a discontinuity in the range, were established during the 2000–2006 reporting period and will still be valid. Range should exclude major discontinuities that are natural, i.e. caused by ecological factors. What is considered as a natural discontinuity is largely dependent on the ecological characteristic of the habitat and the character of the surrounding landscape. Ideally, the criteria for the range discontinuities should be defined separately for each habitat in each particular landscape, but this is practically impossible. The guidelines for reporting provide a generalised and simplified approach to range discontinuities.

In the process of calculating a range the natural discontinuities are represented by a 'gap distance'. A gap distance should be understood as the distance between two distribution grids that will not be joined together to form a single range polygon but will be shown as discontinuities in a range (see Figure 13).

**Figure 13:        A schema illustrating use of the gap distance in calculating range. If the distance between two occupied distribution grids (red grids) is smaller than the gap distance (blue lines), the distribution grids are joined to form a range (blue grids). If the distance between two distribution grids is higher than the gap distance (black lines), two distribution grids are not joined and represent a discontinuity in the range.**
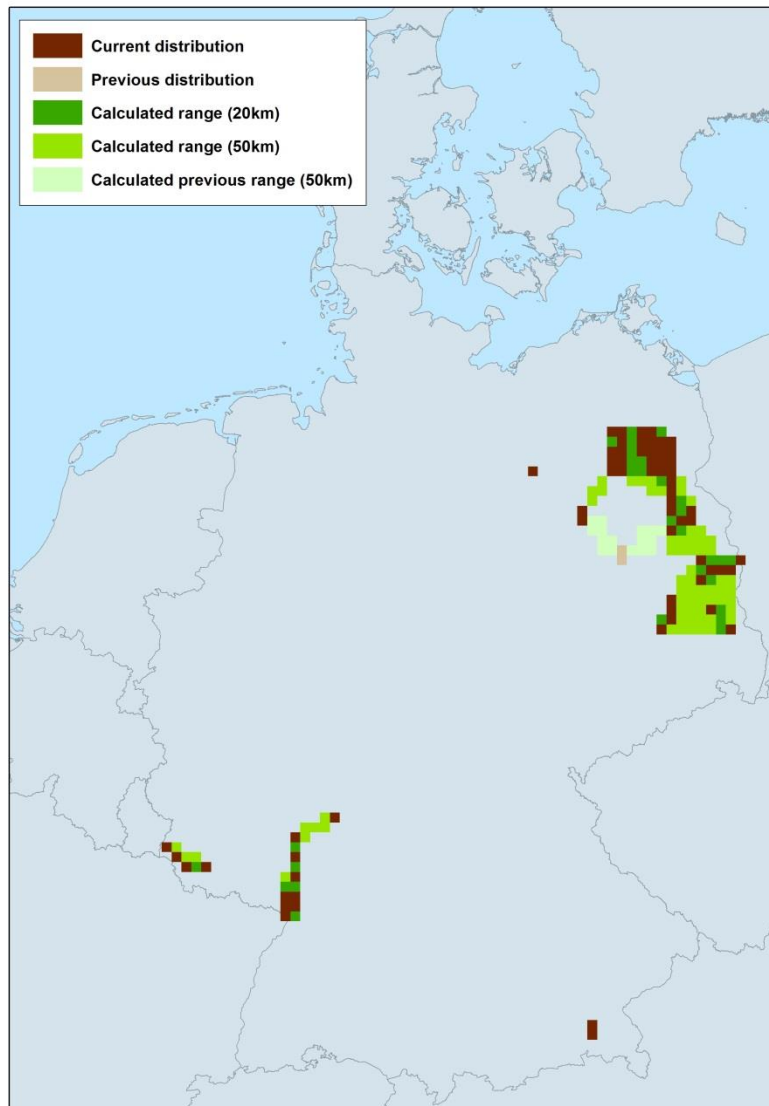


**Constraints for selecting the gap distance**

The gap distance should correspond to the definition of range (as an envelope generalising the distribution with major discontinuities excluded) and it should allow the calculation of range polygons, which are capable of detecting large-scale changes in the distribution. A range that is calculated with larger gap distances (i.e. 40–50 km) is more sensitive to changes at the margins of the distribution and large-scale changes within the outer limit of the distribution. On the other hand, range calculated with smaller gap distances (e.g. 20 km) is sensitive to small-scale changes (see Figure 14).

A discontinuity of at least 40–50 km (depending on whether the habitat is rare and localised or common and widespread) is considered a gap in the range of habitat. For relatively localised habitat types a gap distance of 40 km is recommended, which is equal to the recommended gap distance for plant species which represent the main structural components of the majority of the habitats. However, for widespread habitats which are structurally similar to the surrounding landscape matrix the gap distance could be increased to 50 km.

For small Member States or for other small territories for which the distribution map is provided using the 1x1 km grid or 5x5 km grid (see Section '2        Maps' (in 'Field-by-field guidance for habitat reports')) the gap distances can be adapted accordingly (e.g. a gap distance of 4 -5 grids = 4-5 km can used instead of 40-50 km recommended above).

**Figure 14:         An example of range maps created using different gap distances. This map shows the difference between the range calculated with 20-km and 50-km gap distances. Where a single marginal population occupying two 10x10 km grids on the map is lost (Previous distribution) the range calculated with 50-km gap distance (Calculated range 50 km) will decrease by more than 15 % of its original area (Calculated previous range 50 km). Using the gap distance of 20 km, where this marginal population will remain isolated from the main range polygon (Calculated range 20 km), the decline in the range area will be around 3 % of its original area. With a 12-year reporting period the same situation would lead to different conclusions: 'unfavourable-bad' for the range with a 50-km gap and 'unfavourable-inadequate' for the range with a 20-km gap.**



For very rare and/or localised habitats occurring in particular environmental conditions, the range should be equal to the distribution.

**Step 2: Excluding unsuitable areas**

Technically, range is calculated by filling in the unoccupied grids between the cells of distribution. The following types of unsuitable areas should be excluded from the calculated range:

- marine areas automatically included in the range of terrestrial habitats;
- terrestrial areas automatically included in the range of marine habitats;
- areas beyond national boundaries;
- areas identified by the range tool as part of the range falling in the adjacent biogeographical or marine regions for which the habitat is not noted on the checklist;
- areas more than 20 km from coastline for coastal habitats;
- areas without water bodies for freshwater habitats and vice versa.

Although the distinction between suitable and unsuitable areas is very coarse, the purpose of this step is to correct only the most important contradictions resulting from automated calculation. Technically, the process described in this step should be simple and applicable across all Member States.

# 6    Structure and functions (including typical species)

This chapter provides complementary information to the guidance provided in Section '6   Structure and functions' (in 'Field-by-field guidance for habitat reports').

Structure and functions is one of the four parameters used for assessing the conservation status of Annex I habitat types when reporting under Article 17 of the Habitats Directive. The parameter is based on part of the definition of Favourable conservation status of a habitat type given in Article 1(e): 'The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.'

Structures are considered to be the physical components of a habitat type. These will often be formed by assemblages of species (both living and dead), e.g. trees and shrubs in a woodland, corals in some forms of reef, but can also include abiotic features, such as gravel used for spawning. Functions are the ecological processes occurring at a number of temporal and spatial scales and they vary greatly between habitat types. For example, tree regeneration and nutrient cycling are important functions in woodland habitats. Although fragmentation is not mentioned in the Directive, it is clear that fragmentation can disrupt the functioning of habitats which are not naturally fragmented and is a factor that should be taken into account when assessing Structure and functions.

The composition of a given habitat type may vary geographically. For instance, the species composition of a widely distributed habitat type such as '9130 *Asperulo-Fagetum* beech forests' will differ; in France alone 13 subtypes have been recognised (Bensettiti et al., 2001), reflecting regional variation. However, for a given habitat type, the associated functions will be similar throughout its range. Structure is relatively simple to observe/measure but functions are usually more difficult. However, as functions are often related to a particular species or species groups, the presence of certain species can indicate that functions are favourable.

For a habitat type to be considered as being at Favourable conservation status, the Directive requires its structure and functions to be favourable and its 'typical species' to be at Favourable conservation

status. Given the wide range of habitat types listed in Annex I and their inherent variability, it is not possible to give detailed guidance for each individual habitat type, but clearly the various ecological processes essential for a habitat type have to be present and functioning well for the habitat type to be considered as being at Favourable conservation status.

The assessment of Structure and functions is carried out for each biogeographical or marine region of a Member State. In many cases it is not necessary for all components of the structures or functions to be present on all sites where a habitat type occurs. For example, although all age classes of a woodland type, from saplings and young (natural) regrowth to senescent trees and natural decay phases, need to be present at a regional scale, together with sufficient regeneration, it is not necessary for every stand site to have all the age classes. A single site can be considered to be in 'good' status even if not all age classes, etc. are present if the various stages are well represented in the habitat at a regional scale.

## Condition of habitat type

Previous reporting on the conservation status of Structure and functions did not give any information on what proportion of the habitat type is in good condition, and this has limited the use of Article 17 data to help identify priorities for restoration or for broader ecosystem assessment studies.

Therefore, it has been agreed to report the area in 'good condition', 'not-good condition', and 'not known' (field 6.1 'Condition of habitat') together with the short-term (12 years) trend direction in the area assessed as 'good'. The direction of the trend ('stable', 'increasing', 'decreasing', 'uncertain', 'unknown') will help measure progress towards Favourable conservation status and towards achieving Target 1 of the 2020 Biodiversity Strategy. The trend direction replaces the qualifier (which was optional) for the parameter Structure and functions as used in previous reporting cycles.

Several countries have published detailed guidance on assessing the condition of habitats at the site/stand level (see Table 29). Maciejewski et al. (2016)[99] review many of the concepts necessary for evaluating the condition of habitats at the site scale.

**Table 29:       Examples of detailed guidance on assessing habitat condition**

| Spain | AUCT. PL. (2009) *Bases ecológicas preliminares para la conservación de los tipos de hábitat de interés comunitario en España*. Ministerio de Medio Ambiente, y Medio Rural y Marino. Madrid. ISBN 978-84-491-0911-9. http://www.magrama.gob.es/es/biodiversidad/temas/espacios-protegidos/red-natura-2000/rn_tip_hab_esp_bases_eco_acceso_fichas.aspx |
|---|---|
| Italy | Angelini, P., Casella, L., Grignetti, A. & Genovesi, P. (2016) *Manuali per il monitoraggio di flora, fauna e habitat di interesse comunitario (Direttiva 92/43/CEE) in Italia: gli habitat*. ISPRA, Serie Manuali e Linee Guida. www.isprambiente.gov.it/it/servizi-per-lambiente/direttiva_habitat/ |
| United Kingdom | See Article 17 'UK Approach' document http://jncc.defra.gov.uk/pdf/A17_2013_UKApproach.pdf and Common Standards Monitoring guidance: http://jncc.defra.gov.uk/page-2217 |

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[99] Maciejewski, Lise; Lepareur, Fanny; Viry, Déborah; Bensettiti, Farid; Puissauve, Renaud; Touroult, Julien (2016) État de conservation des habitats : propositions de définitions et de concepts pour l'évaluation à l'échelle d'un site Natura 2000. *Revue d'Écologie* 71 (1): 3–20.

Although it may be possible to have information for every occurrence of a very rare habitat with a small total area, for most Annex I habitat types some form of sampling will be required. Ideally, such sampling should be based on statistical principles, for example stratified random sampling. There is a large literature on sampling methodologies; a recent publication which focuses on habitats is Brus et al. (2011).

The evaluation matrix states that if more than 25 % of the habitat type area in the region being assessed is considered 'unfavourable' (i.e. not in good condition), then the status of Structure and functions is 'unfavourable-bad'. However, it does not give numerical criteria for 'favourable' or 'unfavourable-inadequate'. It appears that in previous reports Member States have used very different thresholds of the proportion of habitat area that must be in good condition to justify assessing Structure and functions as 'favourable'. Ideally, the entire area of a habitat type should be in good condition for Structure and functions to be considered 'favourable'. However, this is hardly achievable in practice and it could be acceptable to have part of the habitat type in 'not-good' condition, but still consider Structure and functions to be assessed as 'favourable'.

It is recommended to use an indicative value of 90 % of the habitat type area (field 6.1) in 'good' condition as the threshold to conclude on 'favourable' Structure and functions. If Member State uses a different value, this should be noted and explained in field 10.8 'Additional information'. This indicative value could, for example, be adapted according to the rarity/abundance of the habitat type: closer to 100 % for rare habitat types with a restricted area (e.g. many grasslands with only a few tens of km$^2$ in the biogeographical region) and less than 90 % for very common and widespread habitat types (e.g. several forest types with several thousand km$^2$ in the biogeographical region). In the special case where a particular Annex I habitat type is managed to restore another Annex I habitat type (e.g. natural succession is not prevented), lower thresholds than 90 % can be used. If a different threshold than the recommended 90 % is used, this should be noted in field 10.8 'Additional information'.

It is important to note that regardless of the threshold used, the trend must be stable or increasing for the conclusion on Structure and functions to be considered 'favourable'.

## Typical Species

Although the Directive uses the term 'typical species', it does not give a definition, either for use in reporting or for use in impact assessments under Article 6. As it would mean a considerable increase in the necessary work to undertake an assessment of the conservation status of each typical species using the methodology used for species of Annexes II, IV and V, the assessment of typical species is included as part of the assessment of the Structure and functions parameter.

The term 'typical species' is part of the definition of Favourable conservation status for a habitat type give in Article 1(e): 'The conservation status of its typical species is favourable as defined in (i).'

The list of potential 'typical species' for most Annex I habitat types is very long and the selection of 'typical species' for Article 17 reporting should reflect favourable structure and functions of the habitat type, although it will not be possible to associate species with all aspects of structure and functions. Given the ecological and geographical variability of the Annex I habitat types, it is not realistic to have recommended lists of typical species, even for a biogeographical or marine region.

Indeed, even within one Member State different species may be present in different parts of the range of a habitat type or in different subtypes.

Given the variability of habitat types across their range, even within a single biogeographical or marine region, it is very unlikely that all typical species will be present in all examples of a given habitat type, particularly in large Member States. The sum of sites and occurrences of each habitat type should, however, support viable populations within the region being assessed of the typical species on a long-term basis for Structure and functions to be favourable. Many species may be typical for several habitats (including non-Annex I habitats) and not dependent on a single Annex I habitat type. Such species may be threatened (e.g. red-listed) at a national or regional scale even though they are thriving in the habitat and region being assessed.

It is only natural that there will be a turnover in the species pool, so that local loss and recolonisation of distinct species out of the selected group of typical species will occur. As long as these processes balance over the long term for each typical species, the Structure and functions of the habitat type should be regarded as 'favourable'. If several typical species are red-listed, i.e. threatened to some degree by extinction at Member State or biogeographical level, this would indicate that typical species are not in a good condition[100] and Structure and functions cannot be 'favourable'. Examples of how species can be linked to Structure and functions per habitat group can be found on the Reference Portal.

When choosing typical species for reporting under Article 17, the following considerations should be taken into account (it is not expected that the chosen species should qualify for all of these criteria):

- 'typical species' should be species which occur regularly at a high constancy (i.e. are 'characteristic') in a habitat type or at least in a major subtype or variant of a habitat type;

- 'typical species' should include species which are good indicators of favourable habitat quality, e.g. by indicating the presence of a wider group of species with specific habitat requirements. They should include species sensitive to changes in the condition of the habitat ('early warning indicator species');

- species which can be monitored easily by non-destructive and/or inexpensive means should be favoured.

Further examples of potential measures of habitat condition per habitat group and their links with potential typical species can be found on the Reference Portal.

The list of 'typical species' chosen for the purpose of assessing conservation status should ideally remain stable over the medium to long term, i.e. across reporting periods. Characteristic species listed in the *Interpretation Manual of European Union Habitats*, although chosen to help identify habitats, may be used as typical species if they meet one or more of the criteria noted above. In some habitats there are key species which often form a major element of the structure, such as dominant trees in a forest habitat. However, the dominant species may not necessarily be a good typical species. For example, beech (*Fagus sylvatica*) is usually dominant or co-dominant and forms an important part of the canopy in the habitat type '9110 *Luzulo-Fagetum* beech forests', but using *Fagus sylvatica* as a typical species does not give any additional information on Structure and
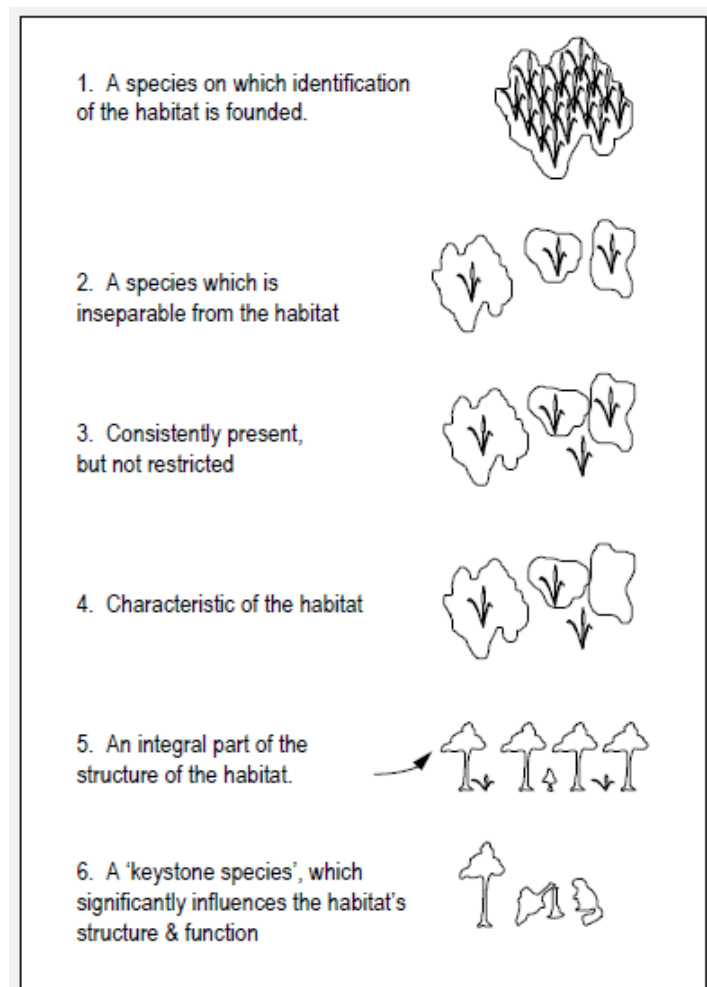
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[100] This does not aply to species which are red-listed due to naturally very small and restricted population (partly IUCN Red List criterion D).

functions. Box 10 gives a graphical representation of groups of potential typical species and how to select those appropriate for assessing Structure and functions.

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**Box 10: Options for selecting 'typical species'**

Potential typical species can be grouped, they may be 'keystone' species or may, for example, require specific conditions essential to the maintenance of the habitat (e.g. occurrence of fire), or may themselves have a significant role to play in maintaining the structure and function of the habitat.

1. A species on which identification of the habitat is founded.

2. A species which is inseparable from the habitat

3. Consistently present, but not restricted

4. Characteristic of the habitat

5. An integral part of the structure of the habitat.

6. A 'keystone species', which significantly influences the habitat's structure & function

Assuming that the habitat's area, and structure and function are already being monitored, it is unlikely that options 1 and 5 would provide any useful additional information. Similarly, the effects of keystone species would be revealed through monitoring habitat structure directly. Monitoring of 'typical species' selected under options 2–4 would more likely yield meaningful information, with option 2 representing the ideal: species whose ecological requirements are met only by the habitat in question. Accordingly, the following working definition of 'typical species' is proposed:

Adapted from Shaw & Wind (1997)[101]

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Typical species may be drawn from any species group and, although most species noted in the 2001–2006 and 2007–2012 reporting rounds were vascular plants, consideration should be given to also

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[101] http://bd.eionet.europa.eu/publications//publications/SNH_NERI_1997.pdf

selecting lichens, mosses, fungi, and animals, including birds. Many important functions, such as pollination and litter decomposition, rely mainly on invertebrates, and their exclusion may lead to incomplete assessments of function. The choice of species should not be restricted to the species listed in Annexes II, IV and V of the Habitats Directive.

Invasive species, either alien or native, but not normally occurring in the habitat type, are often very good indicators of poor habitat condition. Examples of this are the invasive plants *Paspalum distichum*, *Ludwigia peploides* and *L. grandiflora*, which are considered as negative indicators for habitat type '3170 Mediterranean temporary ponds' in France (Grillas et al. 2004), while *Rhododendron ponticum* is considered an invasive alien in many woodland habitat types in the British Isles. However, these species cannot be considered as 'typical species', but where appropriate they should be reported under Pressures and threats.

A full assessment of the conservation status (as for species listed in Annexes II, IV and V) of each typical species is not required. The Report format only requires a list of species which have been considered as well as a brief description of the method used to assess their conservation status globally as part of the overall assessment of Structure and functions, which may be based on expert judgement, Red Lists, or general surveys. The list of typical species should be reported in Section 6.6 of the Article 17 Report format Annex D only if it has changed since the 2007–2012 report.

# 7    Main pressures and threats

This chapter provides complementary information to the guidance provided in Section '7    Main pressures and threats' (in 'Field-by-field guidance for habitat reports').

Although the information on pressures and threats is required for the conservation status assessment, the importance of pressures and threats goes beyond their use in the assessment. They provide information on the main drivers related to results of the conservation status assessment. They can help to identify actions required for restoration and they are essential to communicate the results of the status assessment to various stakeholders.

For Article 17 reporting, pressures are considered to be factors which have acted within the current reporting period, while threats are factors expected to be acting in the future (in the future two reporting periods, i.e. within 12 years following the end of the current reporting period). It is possible for the same impact to be both a pressure and a threat if it is having an impact now and this impact is likely to continue.

For the 2013–2018 reporting period a new principally causes (drivers) oriented system for pressure and threats was developed. The pressures are classified into 15 categories corresponding to the main sectoral driver (see Table 30) with an emphasis on reducing to a minimum pressures which can be attributed to several sectors (for example, pollution or hydrological modification of water bodies).

**Table 30:**        **Pressure categories in the list of pressures and threats**

| Pressure code | Pressure category | Note |
|---|---|---|
| A | **Agriculture** | Includes pressures and threats caused by agricultural practice. |
| B | **Forestry** | Includes pressures and threats caused by forestry activities, including thinning, wood harvesting, pest control in trees. |
| C | **Extraction of resources (minerals, peat, non-renewable energy resources)** | Includes pressures related to extraction of materials, such as mining or quarrying, pollution or waste disposal. |
| D | **Energy production processes and related infrastructure development** | Includes pressures related to production of energy, e.g. the construction and operation of power plants, water use for energy production, waste from energy production, activities and infrastructure related to renewable energy. |
| E | **Development and operation of transportation and service corridors** | Includes pressures related to transportation of materials or energy, such as construction of infrastructure, pollution and disturbances or increased mortality due to traffic. |
| F | **Development, construction and use of residential, commercial, industrial and recreational infrastructure and areas.** | Includes pressures related to development, construction and use of residential, commercial, industrial and recreational infrastructure, e.g. infrastructural changes on existing built areas, expansion of built areas, land use and hydrological changes for urban or industrial development, disturbances or pollution due to residential, commercial, industrial, or recreational infrastructure. Includes also pressures related to sport, tourism and leisure activities and infrastructure. |
| G | **Extraction and cultivation of biological living resources (other than agriculture and forestry )** | Includes pressures linked to uses of biological resources other than agriculture and forestry. |
| H | **Military action, public safety measures, and other human intrusions** | Includes pressures related to public safety and other human intrusions. |
| I | **Invasive and problematic species** | Includes pressures related to problematic inter-specific relationships with non-native species which cannot be associated with other pressure categories. Includes also problematic relationships with native species, which came out of balance due to human activities. |
| J | **Mixed source pollution** | Includes pollution which cannot be associated with other pressure categories. |

| Pressure code | Pressure category | Note |
|---|---|---|
| K | **Human-induced changes in hydraulic conditions** | Includes hydrological and physical modifications of water bodies, which cannot be associated with other pressures categories. |
| L | **Natural processes (excluding catastrophes and processes induced by human activity or climate change)** | Includes natural processes, such as natural succession, competition, trophic interaction, erosion. |
| M | **Geological events, natural catastrophes** | Includes pressures such as natural fires, storms, tsunamis. |
| N | **Climate change** | Includes pressures related to climate change. |

Note that this table is only illustrative since it uses draft pressure categories that may not be retained as such in the final list of pressures and threats.

Further information on the list of pressures and practical guidance on how to use it for reporting on pressures and threats can be found on the Reference Portal.

# 8     Conservation measures

This chapter provides complementary information to the guidance provided in Section '8     Conservation measures (in 'Field-by-field guidance for habitat reports').

Conservation measures are defined in Article 1 of the Habitats Directive as: 'a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status'.

The main purpose of reporting on conservation measures is to obtain information allowing for a 'broad-brush' overview of the conservation measures: whether measures have been taken and if so which measures, their location (inside/outside the Natura 2000 network) and their impact on the conservation status of habitat. Information on conservation measures feeds into evaluation of the contribution of the Natura 2000 network to the conservation status of the Annex I habitats (see also Section '11     NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex I habitat types' (in 'Definitions and methods for habitat reporting'). This information can further help to understand any trends in conservation status globally and is important for communicating the results of the conservation status assessment to different stakeholders.

The conservation measures should be reported using the codified list of measures. The list of conservation measures mirrors the list of pressures and threats and the conservation measures are principally understood as an action to mitigate the impact of past and present pressures. The measures are classified into 13 categories corresponding to main pressure categories (see Table 31). The list of measures contains additional category for measures related to management of target species and other native species.

**Table 31:**          **Categories of conservation measures**

| Categories of conservation measures |
|---|
| Measures related to agriculture and agriculture-related habitats |
| Measures related to forestry and forest-related habitats |
| Measures related to resources exploitation and energy production |
| Measures related to development and operation of transport systems |
| Measures related to residential, commercial, industrial and recreational infrastructures, operations and activities |
| Measures related to the effects of use and exploitation of species |
| Measures related to military installations and activities and other specific human activities |
| Measures related to alien and problematic native species |
| Measures related to natural processes, geological events and natural catastrophes |
| Measures related to climate change |
| Measures outside the Member State |
| Measures related to mixed source pollution and human-induced changes in hydraulic conditions for several uses |
| Measures related to management of species from the nature directives and other native species |

Note that this table is only illustrative since it uses draft measure categories that may not be retained as such in the final list of conservation measures.

Further information on the list of conservation measures and practical guidance on how to use it for reporting can be found on the Reference Portal.

# 9     Future prospects

This chapter provides complementary information to the guidance provided in Section '9    Future Prospects' (in 'Field-by-field guidance for habitat reports').

## What are future prospects?
Assessments of conservation status must take into account the likely future prospects of the habitat; as for Favourable conservation status, the Directive's Article 1(e) requires that:

- *its natural range and areas it covers within that range are stable or increasing, and*
- *the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and*
- *the conservation status of its typical species is favourable.*

The parameter 'Future prospects' focuses on the requirement for the long-term maintenance of structure and functions and the need for area and range to be and to remain stable or increasing in the foreseeable future. Although the definition of the Favourable conservation status of habitat in

the Directive presumes 'long-term maintenance' and existence of specific structure and functions in the 'foreseeable future', the concept of 'foreseeable future' is not defined in the Directive. For the assessment of Future prospects this should be interpreted as meaning the two future reporting cycles, i.e. the next 12 years. The common perspective towards the future is important in harmonising the Member States' assessments, but some flexibility is permitted and the Future prospects can be assessed over longer future periods than the proposed 12 years. For example, for certain well-studied threats, such as climate change, reasonably robust models are available much further than the next 12 years, indicating bad perspective for a habitat.

The Future prospects parameter should reflect the anticipated future improvements and deteriorations of the conservation status[102] which correspond to future trends in the assessment. The anticipated future improvements and deteriorations should be assessed in relation to the current conservation status. For example, the impact of future deterioration on the assessment of Future prospects will be different if the current status is 'favourable' or, on the other hand, 'unfavourable-bad'.

## Assessing future prospects

Future prospects should be evaluated by individually assessing the expected future trends and subsequently future prospects of each of the other three parameters, taking primarily into account the current conservation status of the parameter, threats (related to the parameter assessed) and the conservation measures being taken or planned for the future. Once the future prospects of each of the other three parameters have been evaluated, they should be combined to give the overall assessment of Future prospects. The assessment can be divided into three steps:

- Step 1: Future trend of a parameter.
- Step 2: Future prospects of a parameter.
- Step 3: Assessing overall Future prospects for a habitat.

The method described here relies to some extent on expert judgement, but within a clear framework allowing comparability between assessments from different Member States. It should also help to standardise assessments within countries where several teams are involved, each dedicated to a particular habitat group.

**Step 1: Future trends of a parameter**

Future prospects of each of the other three parameters should principally reflect the future trends which are the result of balance between threats and conservation measures as described in Table 32.

Future trends of a species are dependent on the identified (known and likely) threats which will have a negative impact and any action plans, conservation measures and other provisions which will have a positive impact. For example, climate change, land-use scenarios and trends in certain policies are aspects that will influence future trends. The measures should be restricted to those anticipated to have a positive impact in the next 12 years (regardless of whether they were already being implemented during the current reporting period or not). Threats are reported in Section 7 'Main

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[102] The Future prospects parameter should reflect the anticipated future improvements and deteriorations of the conservation status regardless of how far the future status is likely to be from the reference situation captured via favourable reference values. This differentiates the proposed approach from the approach used in the 2007–2012 reporting period.

pressures and threats' of the Report format and the existing measures are reported in Section 8 'Conservation measures'.

In most cases, positive (management actions, policy changes, etc.) and negative influences (threats) will simultaneously affect the habitat. The assessment of future trends therefore has to take into account whether the sum of positive and negative influences (threats) will balance out for the parameter under consideration, or whether either the positive or negative effects are likely to be stronger.

In some cases threats or measures may affect the three parameters differently. For example, the measure 'restoration of forest habitats' might increase the area of a forest habitat relatively quickly, but may have little impact on the range within a 12-year period. Only threats and conservation measures related to the specific parameter should be considered.

In many cases it will be difficult to foresee whether the influence of threats and conservation measures on the status of the parameter will balance out and whether the resulting trend will be negative, positive or stable. It can therefore be helpful to interpret the current trend in relationship to the impact of current pressures and measures and to assess the future trend on the basis of potential improvement, deterioration or continuation of the current situation.

Establishing whether the future trend is negative or very negative (or positive/very positive) will be difficult in most cases, although it may be easier if the current trend and trend magnitude are known or in cases of dominating pressures or measures. To differentiate between negative and very negative (and positive or very positive) trends the threshold of 1 % per year, meaning approximately 12 % in 12 years, is recommended. This threshold is used in the assessment matrix for current trends to distinguish between inadequate and bad status for range and area covered by habitat. In theory this threshold should represent a difference between a slight and moderate (< 1 % per year) deterioration/improvement and important (> 1 % per year) deterioration/improvement. The Report format does not request an exact measure of trend magnitude for habitat area in good condition. For this parameter the difference between negative and very negative (and positive or very positive) trends should follow the same logic as for the two other parameters and should reflect the difference between slight/moderate and important future deterioration/improvement.

**Table 32:          Assessing the future prospects of a parameter (Steps 1 and 2)**

| Step 1 Future trends of parameters | | Step 2 Future prospects of a parameter |
|---|---|---|

| Balance between threats and measures | Predicted future trend reflects balance between | Current conservation status of parameter | Resulting future Prospects of parameter (over next 12 years) | |
|---|---|---|---|---|
| Balance between threats acting on the parameter (mostly threats with insignificant impact[103] and/or Medium impact threats) and conservation measures; no real change in status of the parameter expected | overall stable | Favourable | good | |
| | | Unfavourable-inadequate | poor | |
| | | Unfavourable-bad | bad | |
| | | Unknown | unknown | |
| Threats expected to have negative influence on the status of the parameter (mostly High or Medium impact threats), irrespective of measures taken | negative / very negative | Favourable | poor (negative) | bad (very negative) |
| | | Unfavourable-inadequate | poor (negative) | bad (very negative) |
| | | Unfavourable-bad | bad | |
| | | Unknown | poor (negative) | bad (very negative) |
| None (or only threats with insignificant impact[104]) and/or effective measures taken: positive influence on the status of the parameter expected | positive / very positive | Favourable | good | |
| | | Unfavourable-inadequate | poor (positive) | good (very positive) |
| | | Unfavourable-bad | poor (positive) | good (very positive) |
| | | Unknown | poor (positive)[105] | good (very positive) |
| Threats and/or measures taken unknown or interaction not possible to predict | unknown | Favourable | unknown | |
| | | Unfavourable-inadequate | | |
| | | Unfavourable-bad | | |
| | | Unknown | | |

## Step 2: Future prospects of parameters

The future prospects of a parameter are assessed by taking into consideration, principally, the future trends and current conservation status. Deciding between the two options proposed for each

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[103] The impact of threats reported in field 8.1 should be evaluated as 'High' or 'Medim'. Only threats with Medium or High impact (see definition of impact categories in section '7     Main pressures and threats' (in 'Field-by-field guidance for habitat reports') should be reported, but poteantially the species is affected by other pressures and threats not having a significant impact on its conservation status.
[104] See the previous footnote.
[105] Unknown is considered as not being favourable, therefore the assessment of Future prospects of a parameter is as for unfavourable inadequate or bad.

combination of future trends and current conservation status will mainly depend on the potential trend magnitude (negative/very negative or positive/very positive). This is pragmatic and a mechanistic approach aimed at simplifying and harmonising the assessment of Future prospects.

**Step 3: Assessing overall Future prospects for a habitat**

Once the future prospects of each of the other three parameters have been evaluated, they should be combined to give the overall assessment of Future prospects using the rules in Table 33.

**Table 33:      Combining the evaluation of the three parameters to give Future prospects for a habitat type**

| Assessment of Future prospects | Favourable | Unfavourable-inadequate | Unfavourable-bad | Unknown |
|---|---|---|---|---|
| Prospects of parameter: Range, Surface area and Structure and function | All parameters have 'good' prospects OR prospects of one parameter 'unknown', the other prospects 'good' | Other combination | One or more parameters have 'bad' prospects | Two or more 'unknown' and no parameter with 'bad' prospects |

**Box 11: Assessing Future prospects of habitat '6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)'**

Range and Area are both stable and the following pressures and threats are recorded.

| Code | Activity | Impact of pressure | Impact of threat |
|------|----------|--------------------|------------------|
| A03 | Abandonment of grassland management (absence of grazing, absence of mowing) | high | high |
| AXX | Application of natural fertilisers (e.g. manure, slurry) | medium | high |
| A14 | Application of synthetic fertilisers | medium | medium |
| I01 | Invasive non-native/alien plants and animals | medium | medium |
| I02 | Problematic native plants and animals | medium | medium |
| A02 | Conversion from one type of agricultural land use to another (e.g. from grassland into arable land) | medium | |
| A08 | Overgrazing by livestock | medium | medium |

The only measure from the measure list that is implemented is 'CA03 Adapt/manage mowing and grazing'. This measure is expected to be sufficient to keep Range stable but to lead to a moderate decline in both Area and Structure and functions.

| Parameter | Assessment of parameter | Expected future trend | Future prospect |
|-----------|-------------------------|-----------------------|-----------------|
| Range | Favourable | stable | good |
| Area | Unfavourable-inadequate | decreasing | poor |
| Structure and functions | Unfavourable-inadequate | decreasing | poor |

By using the combination rules in Table 33, two 'poor' conclusions and one 'good' conclusion lead to an overall assessment for Future prospects of 'unfavourable-inadequate'.

Note that the example is only illustrative since it uses draft codes that may not be retained as such in the final list of pressures and threats.

# 11   NATURA 2000 (pSCIs, SCIs and SACs) coverage for Annex I habitat types

This chapter provides complementary information to the guidance provided in Section '11   NATURA 2000 (pSCIs, SCIs, SACs) coverage for Annex I habitat types' (in 'Field-by-field guidance for habitat reports')*..*

The evaluation of the contribution of the Natura 2000 network to the conservation status of habitat has three principal components:

1. evaluation of the relevance of the network for different habitats (based on the proportion of the habitat area within the network);
2. possible differences in trends (trend of habitat area in good condition) within the network compared to the general trend (reported under Section 6 'Structure and functions');
3. understanding what type of conservation/management measures have been implemented (see Section '8   Conservation measures' (in 'Definitions and methods for habitat reporting')).

The contribution of the Natura 2000 network to the conservation status of habitat is likely to vary depending on the coverage of the habitat by the network and on site management. Therefore, the habitat area included in the network for each given biogeographical or marine region should be provided.

Another element to be taken into consideration when evaluating the contribution of the network is the possible difference in trends both within the network and globally (mainly for habitats where a significant proportion of a habitat area occurs outside the network). For habitats, this should be expressed by comparing the trend of habitat area in good condition in the biogeographical or marine region with the trend of habitat area in good condition inside the Natura 2000 network in that same biogeographical region.

The information on conservation measures completes and helps to understand the potential differences between the trends within the network and global trends.

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