Strasbourg, 23 September 2025 **T-PVS/PA(2025)1**

CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE

AND NATURAL HABITATS

Group of Experts on Protected Areas and Ecological Networks

Criteria for assessing (negative) changes in the Emerald Network

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1. Introduction

At the time of writing this report, mid 2025, the Emerald Network represents a network of over 2500 sites in 16 countries[1]. This is the result of an iterative work by the Bern Convention Contracting Parties of gathering and analysing information about distribution and abundance of Bern Convention Resolution No 4 habitats and Resolution No 6 species, selecting most appropriate sites (ASCIs – Areas of Special Conservation Interest) and compiling site-specific information in the Emerald Network database. After database submission to the Bern Convention Secretariat, the content is scientifically validated[2], sufficiency of the existing site network for each habitat and species assessed and conclusions about next steps to deal with identified insufficiencies produced[3].

Therefore, the Emerald Network database is the main tool for communication between Contracting Parties and the Convention Secretariat about qualities of proposed Emerald Network sites. The database is submitted repeatedly, and with each subsequent submission it is supposed to increase in quantity and quality, thus in overall increasing the Sufficiency Index that is the key measure of Emerald Network completeness and contributing to progress of Phase II of the Emerald Network development[4].

Indeed, with each new submission of the Emerald database, in most cases, countries extend their ASCI network by adding new sites and/or enlarging existing sites and also adding new species and habitat records both to new or already existing ASCIs, following the insufficiencies indicated in the conclusions from the bio-geographical seminars and new scientific knowledge. These are considered “positive changes”.

At the same time, there are also cases of negative changes, i.e. site deletions, site area reduction and deletions of species and habitat records or their downgrading in terms of population or surface area. Such negative changes can occur due to different reasons (previous scientific error, data input error, optimizing borders of ASCIs, improvements of borders precision, etc.). Yet, the Bern Convention Secretariat is in need to be informed about these facts and reasons behind because previous conclusions of ASCI network sufficiency are based on earlier databases and, with deletions of various elements in the new databases, the previous conclusions may not be longer valid.

It is also worthwhile to mention Recommendation No. 208 (2019) “on detecting, reporting, assessing and responding to changes in the ecological character of Emerald sites”[5]. This document confirms the need for monitoring and reporting the possible (especially if negative) change in status of species and habitats in Emerald sites, yet this is seen in a wider context, defined as “ecological character” that extends beyond the scope of the current paper and includes many aspects that the Emerald database does not explicitly describe (for example, management plan, conservation objectives and measures, monitoring and surveillance, trans-boundary effects, etc.). Indeed, there is also “a drastic increase of complaints regarding threats to Emerald Network sites” and existing case-file system is overloaded, and therefore some preventive actions should be foreseen to control the factors that eventually result in negative changes in the Emerald Network dataset.

To some extent, such negative changes can be considered an inevitable part of building the site network, as experience shows with other similar exercise, such as the Natura 2000 network in the

[1] This discounts the sites proposed by the Russian Federation and Belarus
[2] https://rm.coe.int/168074669d
[3] https://www.coe.int/en/web/bern-convention/conclusions-of-the-biogeographical-seminars
[4] https://tableau-public.discomap.eea.europa.eu/views/EmeraldBarometerdashboard/Barometertable?%3AshowAppBanner=false&%3Adisplay_count=n&%3AshowVizHome=n&%3Aorigin=viz_share_link&%3AisGuestRedirectFromVizportal=y&%3Aembed=y
[5] https://rm.coe.int/2019-rec-208e-ecological-character/1680993e26

European Union. It is understandable that constantly improving knowledge about species and habitats and technical possibilities may require to review previously proposed sites and species and habitats reported. However, the changes have to be balanced and with distinct upward trend, i.e. that positive changes should prevail negative ones.

The issue of assessing (negative) changes at site's level is not just an act of comparing two databases (past and present) but rather an exercise that includes many side aspects: (1) the rules of database submission and collection in certain time period enabling Bern Convention authority to review them; (2) technical quality check of the tabular database to ensure fields are correctly filled in, completeness of mandatory fields and coherence with the spatial layer; (3) explanations on changes that Bern Convention Contracting parties should provide together with each subsequent Emerald database submission; (4) assessment of changes observed in accordance with an agreed criteria and (5) the feedback on the observed changes to the Contracting Parties.

All of the above five points can be called "*a process of database evaluation*" and it should be regarded as a whole. In addition, an important aspect is the *technical-programmatic support* to those who are implementing the assessments of incoming databases from the Contracting Parties. There are several possibilities to do this work, from simple comparison of databases manually, that requires hard work, to semi-automated or fully automated detection of changes using pre-defined algorithms. In reality, a small number of experts are required to perform analyses of large amounts of data in a short period of time, therefore, appropriate technological support can be very important to make these tasks more efficient and to allow to spot important changes rapidly.

As result of the above facts, this report studies possible methodological approaches to evaluate the negative changes as well as additional steps in the whole process and explore supportive technological advancements to assist in this task. First, it shall analyse existing procedures and tools in disposal of the Bern Convention secretariat and their experts for the needs of Emerald Network (Chapter 2). Given that the European Union has an extensive experience in dealing with similar trends during building the Natura 2000 Network, many ideas and solutions were sought from this work, and this valuable experience is summarised in Chapter 3 of this report. Further, the Chapter 4 shall cover proposals on how to establish (an extended) systematic surveillance of changes in Emerald Network databases, followed by Chapter 5 with concluding remarks. Although this report primarily focuses on the criteria for change assessment, it cannot be viewed in isolation from other elements of the process.

2. Current assessment of negative changes in the Emerald Network

The current Emerald Barometer indicates that an average Emerald Network sufficiency is approximately 25%; what means that there is still a lot of work foreseen for designation of new sites for a majority of Contracting Parties[3], and thus numerous submissions of new Emerald databases can be anticipated. In addition, Emerald 2030 workplan envisages a submission of at least 2 updated Emerald Network databases by each of the Bern Convention Contracting Parties by 2030[6].

Current way of work foresees that both positive and to a great extent also negative changes are analysed and discussed at the bio-geographical seminars that address network sufficiency. Nevertheless, there is a clear need for the pre-assessment of negative changes at the time that datasets are submitted due to their potential impact on the integrity of the Emerald Network, and transparent rules for such pre-assessment should be established. This process should be systematic and should

[6] https://rm.coe.int/pa05e-2024-emerald-post-2020-workplan-revisited-v8-2774-2074-2665-v-1-/1680af2b38

deal with most critical negative changes. Such rules should describe first how to identify them and secondly, how to assess them, to eventually make a decision of acceptance or rejection of a change. The primary objective of such activity is to prevent changes in the official ASCI lists that cannot be justified and are contra-productive to the aims of the Emerald Network and Bern Convention. Further we describe the current situation by each of the key aspects.

2.1 Rules of database submission. There are no concrete rules or deadlines regarding the frequency and timing of Emerald database submission. Up till now, there is only a broad agreement resulting from the Group of Experts on Protected Areas and Ecological Networks that countries must submit databases by 28 February in order to organise a possible sufficiency assessment in the same calendar year. Otherwise, in theory, countries can submit their databases at any time of the year.

2.2 Technical quality check. Technical data quality check (often referred to Quality assurance/Quality control (QA/QC) check) is implemented automatically upon submission of a dataset by the Emerald WebApp system[7] which is the internal IT-system used by the secretariat of the Bern Convention to manage the database submissions at international level. This exercise includes both tabular and spatial parts of the dataset and it flags obvious data errors that can be detected automatically and data completeness issues, especially addressing mandatory fields that need to be completed. However, the results of QA/QC check have not been communicated back to the Contracting Parties in a standardised way but used internally by the Bern Convention secretariat and experts, but exceptionally they were discussed in bi-lateral meetings with countries.

2.3 Explanations about negative changes. In the process of assessing negative changes, it is not sufficient only to analyse Emerald Network database contents (and compare with previous version(s)), because such activity can detect only the factual change but not the reason(s) behind it. Thus, Bern Convention Contracting Parties should be asked to cooperate in providing additional explanations in the form of explanatory notes attached to each new database submission. For this purpose, a special guiding document "Guidelines for Explaining Negative Changes in Emerald Network Proposed, Candidate and Adopted Sites"[8] was prepared; and the report was endorsed by 8th meeting of the Group of Experts on Protected Areas and Ecological Networks, in September 2017.

This document covers topics that Contracting Parties should explain at two levels of negative changes: (1) site level changes in boundaries (deletions of area, modifications of perimeter, merging sites or splitting sites) and (2) changes in ecological information – i.e. at habitat or species level changes (deletions, changes in quantity, importance assessments). It discussed how to treat most commonly observed situations and suggested a unified tabular format where to report such changes. However, since 2017 these guidelines have been used to produce explanations only to some database submissions and not in a systematic manner.

2.4 Criteria for assessing changes. The above guidelines only described the information about negative changes requested from the Contracting Parties, but not how the changes themselves will be assessed using this information. Thus, no formal criteria have been agreed to date, except a general understanding that whenever a negative change occurs, either at site or feature level, previous sufficiency assessments must be revisited, especially if the conclusion was "sufficient"[9]. Also, in the above-mentioned guidelines, there is a provision that a particular attention should be paid to negative

[7] Emerald WebApp: https://natura2000.eea.europa.eu/Emerald/ReportMiniCheckDescriptive.aspx
[8] https://rm.coe.int/guidelines-for-explaining-negative-changes-in-emerald-network-proposed/168073f68c
[9] For sufficiency analyses criteria have been developed and applied: https://rm.coe.int/1680746a34. These criteria relate to ecology of each feature and representation in the existing Emerald Network (e.g. coverage of population/area, distribution range, ecological variation and specific conservation needs). They do not address aspects of changes between database versions.

changes in site area if it exceeds 5% of total area. However, this is not a hard-set principle, and even smaller proportional reductions are necessary to investigate, particularly in cases of very large sites.

2.5 Feedback to Contracting Parties. Currently Emerald Network doesn't have a practice of a rejection of a database, or a part of it, based on negative changes. All communication up to date has been only in the context of sufficiency assessments before, during and after the bio-geographical seminars.

It was already mentioned that a special web-application (Emerald WebApp) has been created by the European Environment Agency to aid Bern Convention experts to perform various analyses of national Emerald Network databases. To date it has served the following purposes:

- Providing basic statistics about the network that is used for progress reviews and publications;
- Map viewer;
- Quick quality assurance and quality control assessment of submitted databases and spatial files (including the revision of coherence between the tabular and the spatial data);
- Creation of ASCI lists that are adopted by the Bern Convention Standing Committee;
- Change reports of tabular databases; compares new database with the selected previous versions and lists automatically all changes both at site and species/habitat levels;
- Spatial changes in site boundaries based on submitted GIS data.

Unlike Emerald Network Barometer statistics and other documents and reports that are available at the Emerald Network Reference Portal, the access to Emerald WebApp is limited to the EIONET account holders. In practice, the users are mostly scientific experts and Bern Convention Secretariat.

To summarise, some elements of the process of assessing changes are in place for the Emerald Network, yet some amendments and improvements are also necessary. In the existing dataflow, the main focus is to prepare for bio-geographical seminars and no pre-assessment of negative changes upon submission was foreseen. One of missing elements are criteria for negative change assessment, ideally specifying which data fields are of interest in this context and how to evaluate the actual change observed. Also, it is necessary to agree about further communication between Bern Convention Secretariat and Contracting Parties if a severe negative change is recorded and cannot be accepted.

3. EU experience from Natura 2000 network: reporting negative changes and assessing them

Natura 2000 and Emerald networks have been established using the same methodology and principles, the only difference between them is a division of bird species and all other species in Natura 2000 which is historically rooted in separate legal acts: EU Birds Directive and Habitats Directive. But importantly, both networks share the same site reporting format, and the procedures of database submission and verification have been similar until recently since Natura 2000 data is already uploaded via Reportnet 3.

European Commission has issued two notes to clarify permitted types and limits of negative changes and possible justifications in the Natura 2000 database: "De-designation of sites or part of sites –

conditions & justifications" (2019[10]) and "Finalised note on removal of habitats and species from the subject of protection in Natura 2000 sites – conditions and justifications" (2021[11]). These documents were also supported by recommended forms that countries should use to explain de-designation of sites or correcting the borders of sites[12]. Below we outline the established rules about the main elements of the process.

3.1 Rules of database submission. In the EU, the yearly submission deadline for Natura 2000 databases is end-December each year and submitted databases are assessed throughout the subsequent year to produce the so-called Biogeographical Union Lists[13], produce new statistics and update the network sufficiency. (Next year dataflow repeats the same cycle). The main purpose of the procedure of checking negative changes is to prevent introduction of unjustified changes into the Biogeographical Union Lists (of Special Areas for Conservation, SAC), and subsequent approval of the lists by the Habitats Committee. Since it is an annual vote, the process of evaluation must be done in a period less than a year.

3.2 Technical quality check. The QA/QC is automatically implemented upon submission and the key outcomes communicated back to the Member States. In the past years this process has been developed including more new important aspects of data quality.

3.3 Explanations about negative changes. Together with the revised Natura 2000 database and spatial dataset, Member States are required to submit a file that clearly identifies the proposed changes and explains them, providing evidence based on solid scientific information and surveillance of the site's habitats and species under consideration. For example, the required information for the changes at the site level includes (special form available):

- Category of de-designation (see the criteria below): scientific error, natural developments or result of application of Art. 6(4);
- Map of the site's situation before and after proposed de-designation, supported with area measurements (total area, de-designated area, remaining area, added area);
- List of habitats and species and their corresponding areas/populations before and after proposed de-designation;
- Assessment if the area proposed for de-designation is important for the integrity of the site or for reaching any of the conservation objectives set, or for implementing the conservation measures for the site;
- Detailed justification according to the category selected (see below: criteria): scientific error, natural developments or application of Art. 6(4). Guidance provided on questions to be answered by Member States;
- Supporting documents (shapefiles, historical and current photos, technical reports).

Separate form is to be filled if there is a need for corrections to the geospatial description of a site border.

And following information is required to justify removal of habitats and species from the SDFs:

[10] https://circabc.europa.eu/ui/group/fcb355ee-7434-4448-a53d-5dc5d1dac678/library/8555aa28-9fb6-411f-8228-f8c99b296564/details
[11] https://circabc.europa.eu/ui/group/fcb355ee-7434-4448-a53d-5dc5d1dac678/library/fc6b5435-6d07-41b6-bf28-c43edcbf72fd/details
[12] https://circabc.europa.eu/ui/group/fcb355ee-7434-4448-a53d-5dc5d1dac678/library/557ee594-34d3-478e-bf1d-07c65f380c37/details
[13] The Union Lists are produced every year and are adopted by the Habitats Committee. They contain full list of all proposed Natura 2000 sites under the EU Habitats Directive, and include all updated information. Visualisation of sites is available in the Natura 2000 viewer: https://natura2000.eea.europa.eu/

- Was the habitat/species proposed for removal present in the site at the time of SCI proposal / SPA classification, permanently or occasionally?
- Has the habitat/species proposed for removal been present in the site since the time of SCI proposal/ SPA classification, permanently or occasionally?
- What kind and frequency of monitoring / surveillance is carried out in the site of concern in general and for the specific habitat/species proposed for removal in particular? What is the quality of available data?
- What protection and conservation measures, including restoration, have been established and implemented for the habitat/species proposed for deletion in the site since SCI proposal/SPA classification?
- For the case of natural developments (one of possible criteria: see below): describe the characteristics of the natural development, the changes it has brought about in the site and explain whether measures have or could have taken to avoid a loss of the habitat/species proposed for removal in the site.
- For the case of 'consequences of an Article 6(4) procedure' (one of possible criteria: see below): provide a summary of the appropriate assessment (and the full version if this has not been already transmitted to the Commission), the justification for each of the conditions set in Article 6(4) and the compensatory measures taken.
- An analysis for the potential impact on sufficiency of the remaining network of sites in terms of protection of the habitat/species concerned, considering their conservation status at national biogeographical level.

The information described above does not need to be provided in the cases where the proposed changes only relate to habitat types codes/names to correct a previous wrong classification of a habitat present in the site on the basis of the interpretation manual. However, in these cases, a brief explanation of the reasons of the proposed changes, as well as an analysis of the potential impact on sufficiency of the remaining network of sites for conservation of habitat or species concerned, should be sent to the Commission.

Proposed changes in species codes/names to align them to updated species code lists (in light of taxonomic changes) are not considered as proposals for removing the concerned species from the subject of protection of a site and therefore need no particular justification. EEA examines such taxonomic changes and regularly updates the species code lists to be used by Member States for the SDF and other reporting tasks, bearing in mind how a species was understood by the legislator at the time when the Annexes of the directives were established or amended.

3.4 Criteria for assessing changes. Both Commission notes clearly outline "the rules" about performing negative changes and countries are much advised to consider these aspects before planning such changes and performing corrections in the Natura 2000 database. In summary, de-designation of Natura 2000 sites or parts of sites is lawful only under certain circumstances:

a) a proven, genuine scientific error;

b) natural developments;

c) as a consequence of an application of Art.6(4) of the Habitats Directive[14].

[14] Habitats Directive Art 6(4) text: "If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

The same rules, by analogy, also apply for the deletion or down-listing of habitats listed in Annex I and species listed in Annex II of the Habitats Directive and bird species referred to in Article 4 of the Birds Directive. In reality, both types of changes are interlinked to a great extent, especially because the changes in site boundaries may also affect the areas of habitats and populations of species present at the site.

3.4.1 Scientific errors. Fundamentally, it should be possible to prove scientifically that the area to be extracted from the network was not of value for habitats and species of EU interest when the Natura 2000 sites was initially proposed. In the same way, there should be scientific evidence that the habitats and species of EU interest proposed for removal were never present in that Natura 2000 site since the initial proposal.

It should be also scientifically proven that the area has not become in the meantime important for any habitats/species of EU interest, the area is not necessary for the integrity of the site or it does not have a substantial interest including a potential to help achieving the objectives of Nature directives, for example, providing important areas for restoration and re-creation of habitats.

“Scientific error” also includes situations when codes/names for habitats/species needed to be changed to correct a previous wrong classification of a habitat or misidentification of a species.

3.4.2 Natural developments. Natural developments in this context are those that are not man-made and whose negative impact on habitats and species of EU interest cannot be prevented and lead to a situation where a site definitively no longer contribute to its conservation objectives (e.g. loss of coastal habitat/breeding areas due to sea-level rise). However, should such natural developments occur that justify a de-designation of a site or parts of a site, or removal of habitats or species, it should be studied in how far the impact of such losses could be balanced by proposing new sites or enlarging existing sites to compensate the lost values.

What cannot be regarded as natural developments are situations were habitats and species deteriorate through man-made activities or through the absence of inadequate management (e.g. of semi-natural grasslands).

3.4.3 Consequence of a correct application of Art. 6(4) of the Habitats Directive. In cases were the whole or part of sites are irreversibly lost for any positive contribution to the objectives of the nature directives based on a correct application of Article 6(4), de-designation can be justified. It is recalled that the correct application of Article 6(4) requires Member States to take adequate compensation measures (see relevant guidance documents), which can include the designation and management of a new site.

It is emphasized that removal of areas (whole sites or their parts) and habitats and species from the subject of protection of a site is of exceptional nature and must be justified case-by-case. Mere claims about fulfilment of the conditions presented above that are not evidence-based are not sufficient.

3.5 Feedback to Contracting Parties. In cases when Member States fail to justify the proposed negative changes, the Member States are notified that previous (reference) records are maintained in the upcoming Union List, i.e. and the changes in the site(s) are automatically rejected.

Given the time constraints, and the fact that a large amount of information needs to be processed (theoretically 27 new databases), the European Commission is supported by a software/system Natura 2000 Change Manager (called “Ferret”) that substantially assists the staff to detect and analyse

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission to other imperative reasons of overriding public interest.”

negative changes with each new database submission. Namely, it compares each site and its habitats and species records with the reference (previous accepted version, and, if necessary, all predecessor versions). Both spatial and tabular components of the database are compared and all observed changes flagged and classified according to their severity:

- *Critical*: deletion and reduction in site area, deletion of habitats or species or downgrading of species and habitat records to D (insignificant) category, change of site type or date of designation;
- *Warning*: decrease in species population, habitat coverage, change of bio-geographical region of the site;
- *Information*: other changes, for example, site name.

All critical changes flagged by the Natura 2000 Change Manager system are assessed by experts against the above criteria taking into account information submitted by the Member States.

4. Motivation for introduction of a pre-assessment of negative changes and proposed criteria for such assessment

Today's requirements are such that the Emerald Network cannot entirely rely on a single change assessment during the bio-geographical seminars. Although this assessment is most comprehensive as it goes straight to the point – the sufficiency of the network, there is also a need for more rapid pre-assessment that would specifically address negative changes soon after the database submission. This is also because the preparation of bio-geographical seminar requires time and resources, and it often cannot be accomplished in sufficiently short time after submission (e.g. it may also depend on other countries of the region). Yet, in a way, such a pre-assessment can be considered a contribution to prepare the full-scale bio-geographical seminar, since the change assessment can help in deciding about the needs for preparation (number of species and habitats to be evaluated), seminar length and agenda.

The pre-assessment of negative changes should also consider the changes in site's perimeter (i.e. possible loss of area) that are not necessarily reflected in an area value reported in tabular dataset (SDF) that is currently a subject of validation. In the future, more attention should be paid to the coherence between the area values reported in the SDF and those calculated from the spatial dataset.

Table 1 below summarises the main elements of the change assessment process and highlights some apparent deficiencies in Emerald process, compared to Natura 2000. It is obvious that some improvements are necessary in all elements of the process, the first step is probably to establish the criteria for assessing negative changes which is the task of this report.

It is important first to establish the list of elements in the Emerald Network database whose changes are considered significant and should be monitored with each new database submission. Building a parallel with EU's experience (see Chapter 3 above), it is proposed that a pre-assessment should concentrate on critical changes (that may affect network integrity and sufficiency), leaving other levels of changes, i.e. those classified as "warning" or as "information", for the subsequent bio-geographic evaluation at the seminar. It is also important to keep the number of parameters for pre-assessment to a minimum (only essential issues) in order to minimise time required for this exercise. Therefore "the critical negative changes" include:

- De-classification of the site as a whole;
- The fact of a reduction of site area (irrespectively of % of reduction; the check should include both spatial and tabular data, including their coherence);

- Deletion of a species or habitat record from a site (irrespectively if the site boundaries have been changed);
- Downgrading the species or habitat record to D population/representativity (irrespectively if the site boundaries have been changed).

Table 1. An overview of the elements of database submission and quick evaluation in Emerald and Natura 2000 networks. Grey indicates the main focus of this report.

Elements of quick assessment process	**Implementation**		**Remarks commenting Emerald situation**
	Emerald	*Natura 2000*	
Deadlines (rules) for database submission	☹	☺	Yearly deadlines should be established to ensure efficient dataflow
Technical database quality check	😐	☺	Implemented, but it needs to be validated if the current format follows the needs.
Explanations about negative changes	😐	☺	Required explanations will need to be updated and aligned with the criteria (see below)
Criteria for assessment of changes	☹	☺	Practically non-existent; a proposal comes from the EU experience above, but on some points need to regard legal differences.
Feedback to countries	☹	☺	Needs to be established on regular basis, in linkage with the rules of database submission.
Technical IT support to assess and report changes	😐	☺	Minimum requirements are possible to address with the existing support to Emerald, but good to plan more improvements in the future following EU experience.

The change of site type is irrelevant in the Emerald context as there is no legal distinction between birds and other features. The effects of decrease in population size or habitat surface area at the site level can be better evaluated at the biographical seminar (the later stage), because the consequences are better viewed in a broader context, together with possible change of parameters in other sites containing the affected habitat or species.

Further, regarding criteria, or better described as “circumstances under which the negative changes could possibly be permitted”, it is recommended to recognise the first two circumstances from the EU-list as presented in Chapter 3, both for site-level and feature-level changes:

- A proven, genuine scientific error; and
- Natural developments.

Regarding scientific errors, such changes are inevitable due to improving scientific information about the distribution and abundance of features, new interpretation and changes in taxonomy or habitat’s interpretation. No doubt that errors identified need to be corrected, but also this correction process should be transparent and sufficiently documented and justified. While the EU (Natura 2000)

guidance says that changes due to scientific errors should be of exceptional nature: the non-EU countries (Emerald), unfortunately, this could occur more often. This is because the difference in the starting point of Emerald Network establishment is approximately 15 years later and Natura 2000 theoretically is more in a completion phase (the average Sufficiency Indices for Emerald and Natura 2000 are 25% and >90% correspondingly).

“Scientific errors” can be classified in three main groups. First, it is due to change or improving of knowledge about the species and habitat, possible wrong identification in the field. Second, change in taxonomy or habitat interpretation, often linked with the first reason. Third, a human error that occurred during the data input, including, for instance, entering information in the wrong field in the Emerald database. When performing a necessary change, however, an attention to be paid to perform all corrections correctly and not to repeat an error which will be even more difficult to explain.

“Natural developments” is perhaps more difficult both to assess and explain. The main provision, that the factors negatively affecting the site, habitat or species, must be “natural”, contrary to those of anthropogenic origin, is rather easy to determine. However, like with Natura 2000 sites, also authorities responsible for management of Emerald Network sites have an obligation to prevent their deterioration, or change “in their ecological character” (Article 4 of Bern Convention; Recommendation No. 157 (2011)). However, the margin between what could not have or could have been prevented is sometimes very vague. There should also be a balance of resources that could have been spent to prevent or substantially minimise deterioration and the conservation gain that could have been achieved. In the EU guidance, most often provided example for “natural developments” is the sea level rise that can negatively affect coastal habitats and species.

In fact, there is another type of change that is also sometimes classified as “scientific” and it refers to the site-level changes in boundaries that may appear as “negative”. But effectively these are corrections to the geospatial description of a site border due to improvements in technology and geospatial references. Corrections of this type can give the impression that some areas have been removed from the site, while in reality the protected areas “on the ground” remain exactly the same. In the EU, such changes are classified separately (including separate explanation form) and also for Emerald it is considered appropriate to have this aspect included as a separate category:

- Technical corrections.

To aid Bern Convention Contracting Parties to provide justifications for changes, the existing “Guidelines for Explaining Negative Changes in Emerald Network Proposed, Candidate and Adopted Sites” (2017) already lists most common types of issues that need to be corrected and advises how to explain these corrections, but apparently a more detailed check-list of questions need to be created, similar to the ones in the EU guidance. It can be agreed that the removal of areas (whole sites or their parts) and habitats and species from the subject of protection of a site must be justified case-by-case, and in this process mere claims about fulfilment of the three circumstances presented above, that are not evidence-based, are not sufficient.

The third circumstance in the EU guidance (Chapter 3) which reads as “a consequence of an application of Art.6(4) of the Habitats Directive” has more legal than biological/scientific context. Recent legal study[15] observed that the Habitats Directive’s derogation clause regarding Natura 2000 sites allows the authorisation of harmful projects, possibly leading to site-declassification of species and habitat disappearance, only for “imperative reasons of overriding public interest” and on condition that “all compensatory measures necessary” to ensure the coherence of the Natura 2000 network are taken (see page 7, footnote No. 14). However, Article 9 of the Bern Convention has a

[15] https://rm.coe.int/future-work-on-legal-framework-emerald-network/1680a34e2e

longer list[16] of eligible reasons for the granting of exceptions and does not expressly require compensation.

Therefore, this study cannot propose concrete criteria in this regard, and there is a need to explore if the current Article 9 provision is adequate for the purpose of controlling negative changes. A particular gap is the absence of indication of a need for compensatory measures, although it has been earlier understood that any negative change can potentially affect Emerald Network sufficiency for features involved, and thus any loss should be compensated by new protected and managed species populations or habitat areas. The previous legal study concluded that, leaving aside the possibility of amending the Convention text, a closer resemblance could be achieved by the Standing Committee through the adoption of a Resolution with strong interpretative statements regarding the scope and meaning of Article 9 (1).

As a result of the application of the above criteria and after discussion between the Secretariat and the Contracting Parties, it can be decided not to accept the negative changes in a site where the explanation proved to be insufficient but these changes clearly affect conservation of Resolution No. 4 habitat types and Resolution No. 6 species, or the integrity of the site as a whole. In such cases, the previous version of the sites (that existed prior to the negative changes) will be officially maintained. Such rejection should be selective, and the other parts (sites, records) of the Emerald Network dataset will not be affected.

5. Concluding remarks

The aim of this paper was to develop criteria for the assessment of negative changes learning from experience on Natura 2000 Network, yet also critically analysing the possibility to apply this experience for the Emerald Network. Usually by the term “criteria” one could expect a set of clear quantitative or qualitative conditions that need to be met for a positive response. In this case, however, it is different and it is difficult to propose a strict algorithm for decision making. Also, the recommendations below extend far beyond possible criteria, because, as we have demonstrated, the assessment of negative changes is a complex process.

There is no doubt that the Emerald Network dataflow process requires improvements and particularly there is a need for a rapid pre-assessment of critical negative changes soon after database submission and prior to the use of these databases for production of ASCI lists and bio-geographical sufficiency assessments. Such critical elements of negative change include:

A. De-classification of the site as a whole;
B. Reduction of site area (irrespectively of % of reduction) and coherence between spatial and tabular datasets;
C. Deletion of a species or habitat record from a site (irrespectively if the site boundaries have been changed);

[16] Article 9 (1) of the Bern Convention: “Each Contracting Party may make exceptions from the provisions of Articles 4, 5, 6, 7 and from the prohibition of the use of the means mentioned in Article 8 provided that there is no other satisfactory solution and that the exception will not be detrimental to the survival of the population concerned:
– for the protection of flora and fauna;
– to prevent serious damage to crops, livestock, forests, fisheries, water and other forms of property;
– in the interests of public health and safety, air safety or other overriding public interests;
– for the purposes of research and education, of repopulation, of reintroduction and for the necessary breeding”.

D. Downgrading the species or habitat record to D population/representativity or important reduction of population size or habitat area (irrespectively if the site boundaries have been changed).

First two types of changes are therefore at the site level, and the last two – at the level of individual features, species or habitats.

In the European Union's Natura 2000 network, the "criteria" for assessing above negative changes are defined as types of circumstances under which the negative changes could possibly be permitted. On opposite, if these circumstances are not met, the change cannot be accepted. For the Emerald Network following two circumstances could be fully applied:

1. A proven, genuine scientific error; and
2. Natural developments.

In addition, for the changes in spatial data (site boundaries), an additional valid circumstance should be recognised that should not be reported under "scientific error" above because it originates from different type of problem, namely corrections due to improvements in technology and geospatial references. This third circumstance could be defined as:

3. Technical corrections.

Means of verification whether concerned case meets any of these circumstances is rather complex and depends on what evidence a country can offer in explanatory files. Under the first criterion, the key question is a confirmation that the negative change is only an act of correcting previous scientific error meaning that the deleted territory has never been valuable for species and habitats, or, in case of features, they have never existed in a territory of concern, neither at the time of designation or later at any time period. Under the second criterion, the "natural development". evidence is needed that authorities have done all appropriate measures to conserve species or habitats, but despite these efforts they disappeared because of reasons that are beyond the limits of control, i.e. non-anthropogenic developments. A check-list of questions indeed should be prepared to aid countries to provide necessary information. The above also refer to technical corrections where explanations are needed, e.g. whether it is improved digitisation of site borders, improved consistency with other national geospatial databases, or change of geospatial reference.

Fourth possible reason for declassification or diminishing of Emerald Network sites, based on a reference to a legal act, cannot be directly used as in the Natura 2000, because it refers to a certain legal act – EU Habitats Directive (Article 6(4)) – that has no legal power outside European Union. Additional legal consultation, and possibly a debate involving the Secretariat and Contracting Parties, is necessary to conclude how far the Article 9 of the Bern Convention pursues the provisions as in EU Habitats Directive Article 6(4) and what solutions should be undertaken in order to introduce such third criterion or circumstance that exceptionally would allow to declassify Emerald sites based on overriding national interests but to also foresee compensatory measures where appropriate.

Yet a successful application of criteria proposed above, or defined as exceptional circumstances, would be possible under following preconditions that also require attention in the future work:

- To ensure the efficiency of the Emerald Network dataflow, there is a need to agree upon certain yearly deadlines of database submission to allow for planning timely database quality check, pre-assessment and feedback to the Contracting Parties;
- The existing "Guidelines for Explaining Negative Changes in Emerald Network Proposed, Candidate and Adopted Sites" (2017) might need to be reviewed in order to align with the needs of new criteria that will be agreed. The explanations should become an integral part of each database submission;

- The system allowing the possibility to reject negative changes by the Bern Convention Secretariat should be introduced, in the case if Contracting Parties fail to produce satisfactory explanations.

Although minimum requirements of technical IT support for Emerald Network changes monitoring needs are already in place using the Emerald WebApp system, there is a possibility of improving it using the experience from the EU's Natura 2000 Change Manager system which has more advanced result visualisation, prioritisation and archiving functionalities compared to Emerald WebApp, and thus providing better assistance for experts performing various analyses. Yet for this purpose there is a need to seek for additional funding and IT support.