

EUROPEAN TOPIC CENTRE ON BIOLOGICAL DIVERSITY

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CENTRE THEMATIQUE EUROPEEN SUR LA DIVERSITE BIOLOGIQUE

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The indicative Map of European Biogeographical Regions:

Methodology and development

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Introduction

The Indicative Map of European Biogeographical Regions was developed with the purpose of defining in practice the biogeographical regions mentioned in Art.1 c) (iii) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and wild fauna and flora¹.

Article 1, that originally identified five biogeographical regions (Alpine, Atlantic, Continental, Mediterranean and Macaronesian), has been adapted with the accession of new EU Member States, and does currently include two more biogeographical regions (Boreal and Pannonian).

Article 4.2 of Directive 92/43/EEC refers to the Biogeographical Regions as the geographical framework for the establishment of a draft list of sites of Community importance drawn from the Member States' lists with a view of setting up the Natura2000 ecological network (Special Areas of Conservation – SACs).

In parallel, Bern Convention Resolution No. 16 (1989) foresees that Contracting Parties take steps to designate Areas of Special Conservation Interest (ASCIs). This recommendation was implemented by the Resolution No 3 (1996) of the Standing Committee, which set up the Emerald Network². In 1998 the Resolution No 5 concerning the rules for the Emerald Network, clearly stipulated that for contracting parties which are Member States of the European Union the Emerald sites are those of the Natura 2000 network, and that the Standard Data Form of the Emerald sites is fully compatible with the SDF of Natura 2000. As a consequence there was a need to extend the Map of Biogeographical Regions to the Pan-European geographical area.

This document, largely based on a previous unpublished paper drafted by Marc Roekaerts³ in 2001, explains the methodology and gives an overview of the development of the Biogeographical Regions map.

Main steps in the creation of the map

In the absence of a clear definition of the Biogeographical regions mentioned in the text of Directive 92/43/EEC – the Habitats Directive –, the Scientific Working Group (SWG) of the Directive agreed upon the following principles for the creation of the Biogeographical Regions Map:

- Only regions related to the terms mentioned in art. 1 c) (iii) are to be mapped; as a consequence no 'sub-classes' are considered such as 'sub-continental, sub-alpine, hemi-boreal, etc.
- The mapping procedure is based on an interpretation of the digital version of the 'Map of Natural Vegetation of the member countries of the European Community and of the Council of Europe' (Noirfalise A., 1987).
- The final map is only to be used at a small scale (\pm 1/10 million or smaller), therefore the natural vegetation map (scale 1: 3 million) had to be aggregated and generalised.

¹ http://europa.eu.int/comm/environment/nature/nature_conservation/eu_nature_legislation/habitats_directive/index_en.htm

² http://www.coe.int/t/e/Cultural_Co-operation/Environment/Nature_and_biological_diversity/Nature_protection/Recommendations.asp#TopOfPage

³ Eureko, bvba – consultant of Council of Europe and of the ETC

The delineation of the biogeographical regions map, started with a reclassification of the map units of the Map of Natural Vegetation, that were allocated to the biogeographical regions as exemplified in Table 1. The vegetation not possible to be attributed to one particular biogeographical region was reclassified as "Azonal", and incorporated into the neighbouring biogeographical region. In addition, several adjustments and simplifications required by the European Commission and the Member States determined the final delimitation of the biogeographical regions. This process is illustrated by Figure 1.

The 'Map of Natural Vegetation of the member countries of the European Community and of the Council of Europe', does not include the Atlantic Islands of Spain and Portugal (Azores, Madeira and Canary Islands), that were wholly classified as belonging to the biogeographical Macaronesian region.

Table 1: extract of the look-up table for the initial interpretation of the legend units of the natural vegetation map towards biogeographical regions.

Map of Natural Vegetation of the member countries of the European Community and of the Council of Europe		Biogeographical Region
Legend unit	Title	
1	Coastal and Halophytic vegetation	Azonal
2	Coastal dunes	Azonal
5	Fluvial plains	Azonal
◆ ◆ ◆		
C1	Boreo-Atlantic oak-pine woods	Atlantic
C10	Aquitanian oak woods and heath lands	Atlantic
C11	Pre – Pyrenean oak woods with <i>Quercus pyrenaica</i>	Atlantic
C12a	Ibero-Atlantic oak woods	Atlantic
◆ ◆ ◆		
C2	Sub-Continental oak-pine woods	Continental
C6	Xerophilous oak woods of the Rhine valley	Continental
C9	Submontane oak woods of the Massif Central	Continental
◆ ◆ ◆		
G5	Beech-fir forest of the outer Alps	Alpine
P1	Montane forests of <i>Pinus sylvestris</i>	Alpine
◆ ◆ ◆		
M1	Sclerophyllous cork oak woods	Mediterranean
M9	Oak woods of Crete with <i>Quercus ilex</i>	Mediterranean
◆ ◆ ◆		

Figure 1 illustrates the different steps, discussed during several meetings of the SWG of the Habitats Directive, leading to the adoption the Biogeographical Regions Map EU12 (4) by the Habitats Committee.

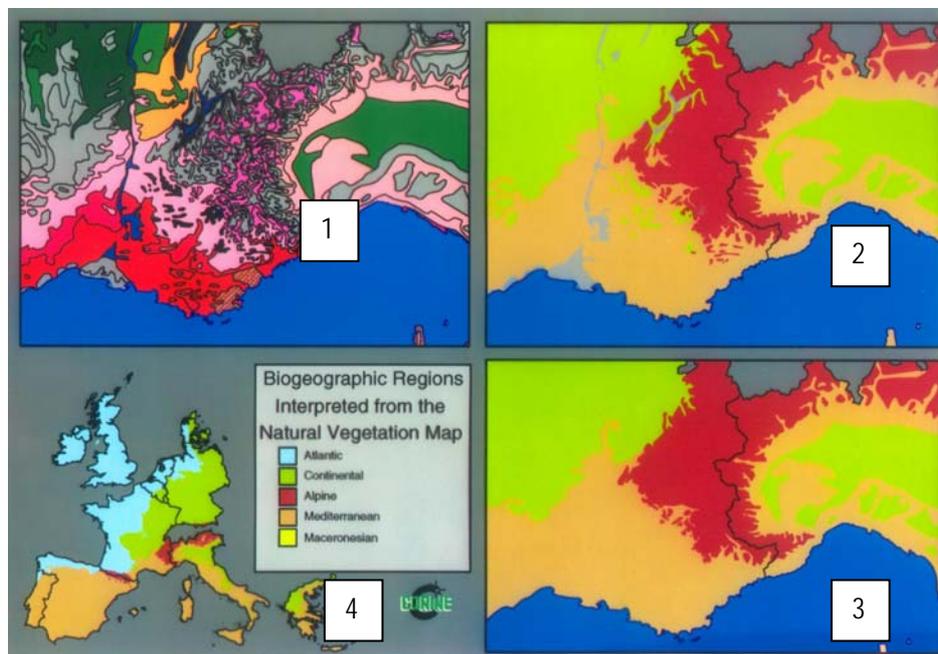


Figure1 – Illustration of the main steps leading from ‘Map of Natural Vegetation of the member countries of the European Community and of the Council of Europe’ to the Biogeographic Regions map.

1 - Original Natural Vegetation Map units (original scale = 1:3M)

2- Allocation of vegetation units to one of the biogeographical regions (see Table 1); azonal units are shown in grey.

3- Azonal units in grey are attributed to the neighbouring biogeographical region and the smaller ‘islands’/fragments, scattered within a major biogeographical region, are allocated to the adjacent region.

4 - Final generalisation and modification of the borders according to specific comments of some member states, resulting in the map of biogeographical regions for the 12 Member States at the moment of adoption of the habitats directive (1992)

The Boreal Region

On 1 January 1995, Austria, Finland and Sweden joined the European Union. As a consequence the Council decided to add the 'Boreal' Biogeographical Region in art. 1 c (iii) of Council Directive 92/43/EEC (OJ L1, 1/1/95, p. 135)

Subsequently, the Habitats Committee extended the existing map to cover the 3 new Member States, using the same mapping principles as explained above.

Figure 2 shows the map of biogeographical regions adopted in 1995.

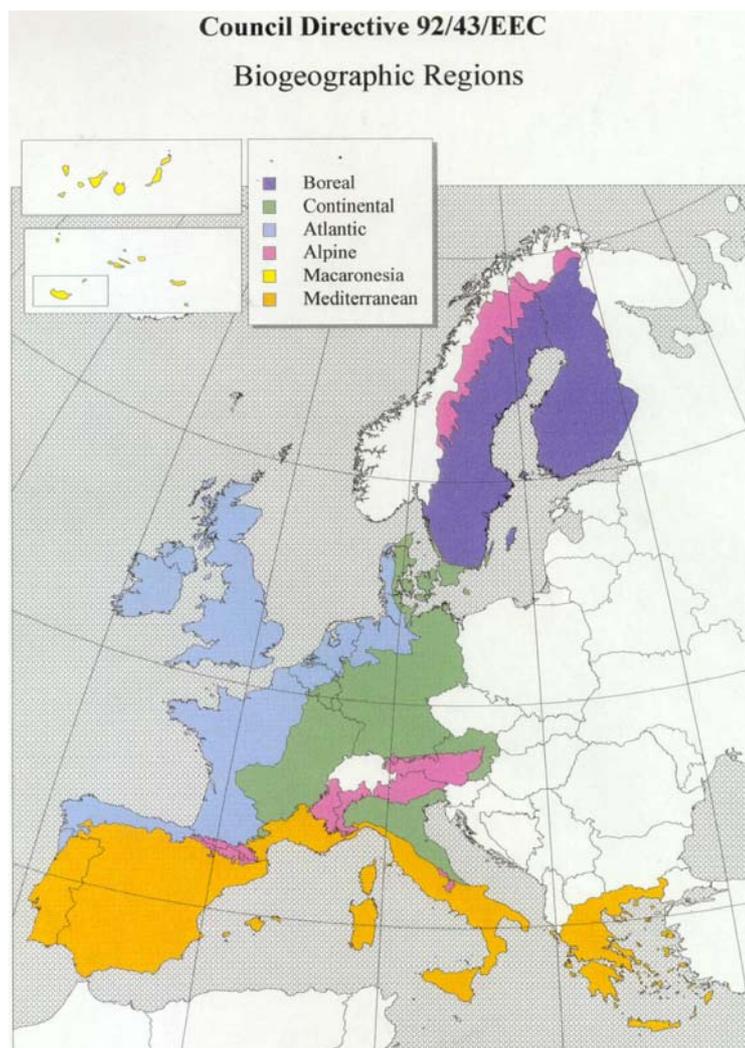


Figure 2 - The Biogeographical Regions Map adopted by the Habitats Committee meeting of 13-14/7/1995

Extending the map to 'Pan-Europe' in the framework of the Emerald network under the Bern Convention – work prior to 2000

As mentioned in the introduction, the Emerald network is being developed as a geographical complement of the Natura 2000 network in non-EU countries. On the other hand the Natura 2000 network is considered as the contribution of the European Union to the Emerald network as a contracting party of the Bern Convention.

By 1997 the Emerald expert group had discussed the possible extension of the Biogeographical regions map to the Pan-European area. Unfortunately, no Pan-European natural vegetation map existed in digital format at that moment. Only the paper edition of the generalised version of 'the Map of Natural Vegetation of Europe' at a scale of 1/10.000.000 was available (Bohn, 1993). This map was interpreted using the same methodology as described for 'Map of Natural Vegetation of the member countries of the European Community and of the Council of Europe' (Noirfalise A., 1987), but the boundaries of mapping units were transferred by hand. Thus, some of the boundaries were rather indicative.

To cover the whole area, five biogeographical regions were added: Anatolian, Arctic, Black Sea, Pannonian and Steppic.

The Pan-European Natural Vegetation Map only covers a small part of Turkey. As a consequence, the boundaries for the Biogeographical regions were drawn using the paper version of the Map of Natural Vegetation of the member countries of the European Community and of the Council of Europe (Noirfalise A., 1987).

The EU part of the map was not changed and it was fully integrated into the Pan-European map. (Figure 3)

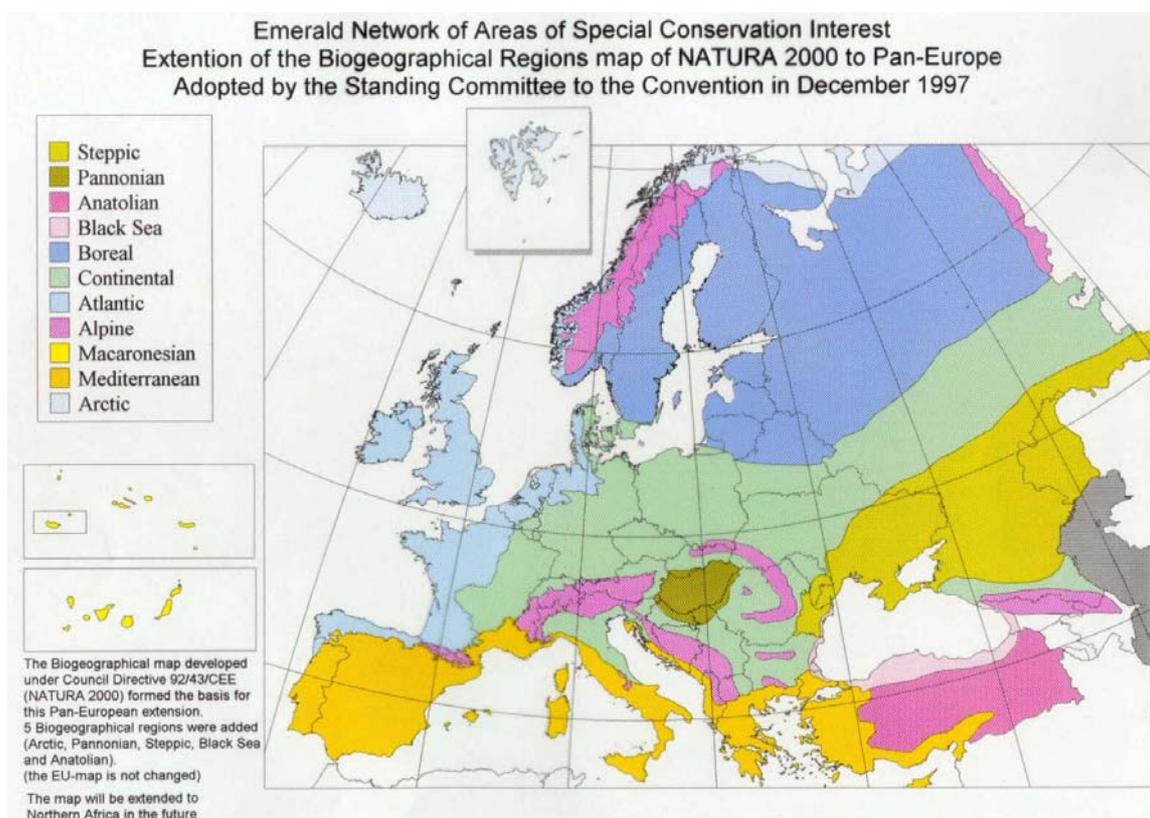


Figure 3. The Pan European Map of Biogeographical Regions 1997 (boundaries hand drawn for the area outwith the EU)

During 1998, a digital version of a more detailed Natural Vegetation Map of Europe became available at a scale of 1:2 500 000. A paper edition of this map was published later (Bohn, Gollub & Hettwer, 2000). This version allowed the methodology followed for the biogeographical regions map approved by the habitats Committee (Fig 2), to be used to produce a Pan- European map. This procedure proved that important shifts and cartographic errors existed in the version of 1997 (Fig 3) as shown in Figure 4.

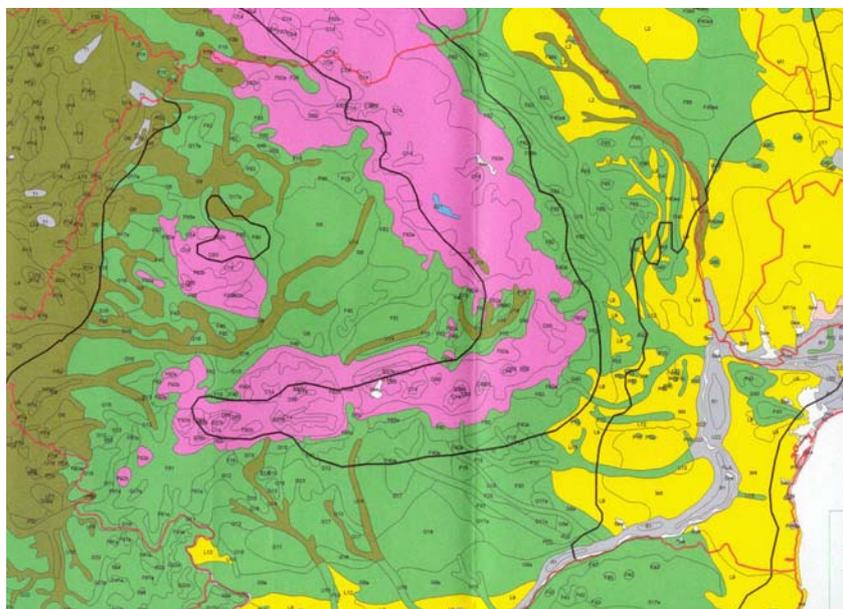


Figure 4: Illustration of the cartographic errors in the hand draw 1997 Emerald map. The colour background represents the interpretation of the Natural Vegetation Map. The black lines are the boundaries between Biogeographical regions according to the 1997 map.

The revisions of the 1997 map were discussed by the country experts and agreements were made during the Emerald pilot project workshops in each country. A new version was presented at the September 2000 Emerald expert meeting (Figure 5) T-PVS(2000)53 (http://www.coe.int/t/e/Cultural_Co-operation/Environment/Nature_and_biological_diversity/Nature_protection/sc20_53e.pdf). This version did not include corrections for Turkey which is only partially covered by Natural Vegetation Map of Europe (Bohn, Gollub & Hettwer, 2000)

Emerald Network of Areas of Special Conservation Interest
Extension of the Biogeographical Regions map of NATURA 2000 to Pan-Europe
Revisions according to comments in Emerald Pilot projects: draft October 2000

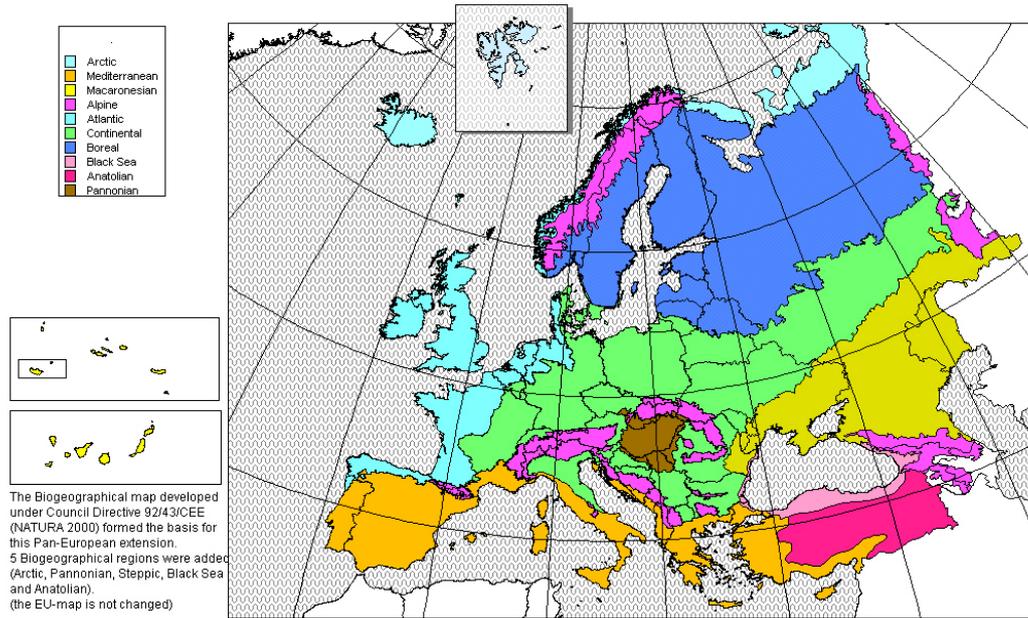


Figure 5. The Pan European Map of Biogeographical Regions 2000

Expanded EU 15 map for accession countries and small amendments for Germany and Austria

The 1997 Emerald map was used to create an extract for the EU Accession Countries. First, a map was produced for the 11 accession countries at that time. When Malta became an Accession Country a new map was produced, without changing the substance of the map.

At the same time, Germany requested a few amendments to the existing EUR 15 map in their country. The Habitats Committee accepted changes to the borders between Atlantic and Continental, and between Alpine and Continental regions.

At the request of Austria, it was also agreed that a relatively small area in Voralberg, previously considered as Continental, would be included within the Alpine region.

The EUR 15 + 12 map, including the small changes for Germany and Austria was adopted during the Habitats Committee meeting of 23/10/2000 (Figure 6)

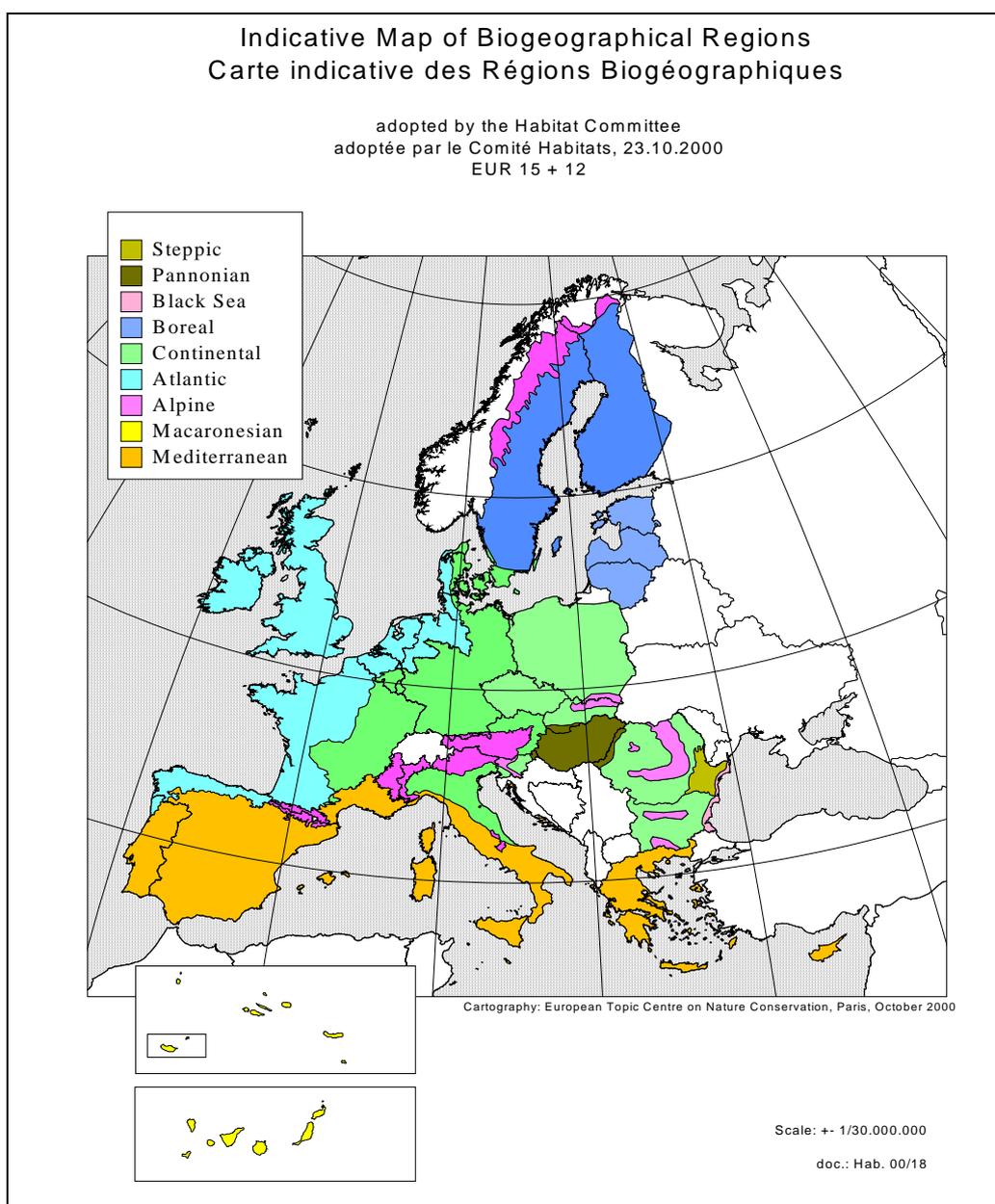


Figure 6 - Biogeographical Regions EU 15+12 doc: Hab. 00/18

Revision of the pan-European Map 2000/2001

For Turkey, the revision was made using the digital version of the Map of Natural Vegetation of the Member Countries of the European Community and of the Council of Europe (Noirfalise A., 1987). The revised map according to comments in the meetings of the Emerald Pilot projects, was presented to the Standing Committee of the Bern Convention in its 21st meeting in Strasbourg (26-30 November 2001) – including already the adjustments of doc:Hab 00/18 – and adopted as the final version of the Biogeographical Regions map for the Pan-European area (Figure 7).

In its meeting of March 2002, the Habitats Committee, accepted this new version of the EU15+12 biogeographical map (doc: Hab. 02/03) (Figure 8).

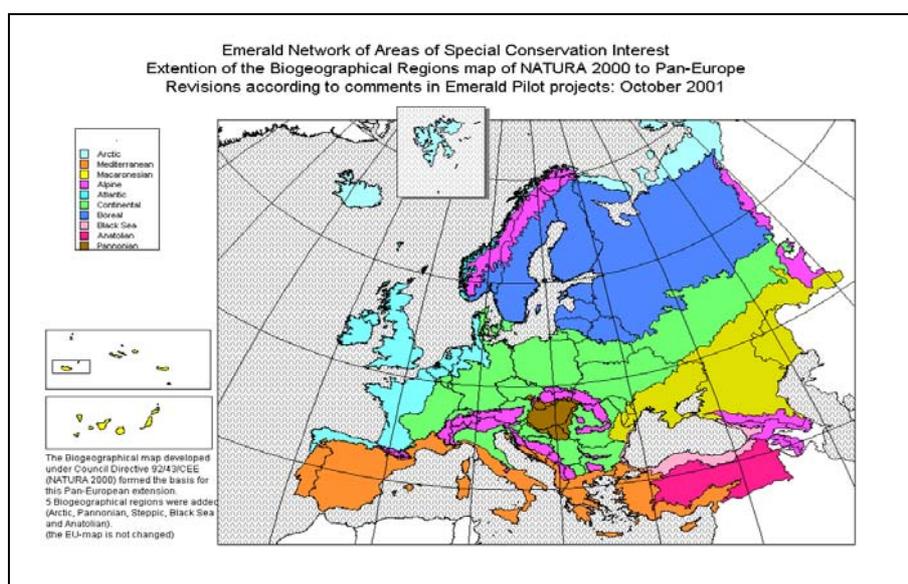


Figure 7 - The Pan European Map of Biogeographical Regions 2001 (T-PVS 2001/89, Appendix V)

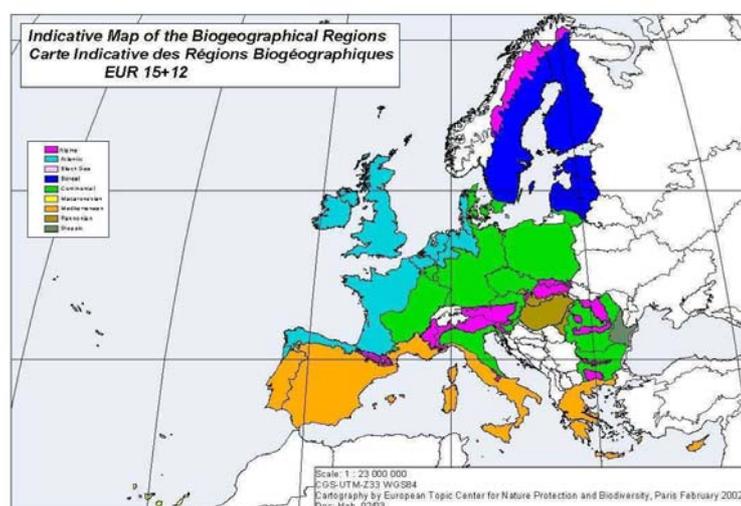


Figure 8 – Indicative Map of the Biogeographical regions EU15+12 doc: Hab 02/03

The current version of the Indicative Map of the Biogeographical Regions

At the request of the Czech Republic, Lithuania, Slovakia and a few other non-EU countries, the Group of Experts for setting up the Emerald Network of Areas of Special Conservation Interest recommended amendments to the 2001 Pan European Map of Biogeographical Regions. Their recommendations to slightly change the boundary between the Pannonian and the Continental regions in the Czech Republic, modify the boundary between the Pannonian and the Alpine regions in Slovakia, and to place the entire territory of Lithuania in the Boreal Region were adopted by the 23rd meeting of the Standing Committee of the Bern Convention (1-4 December, 2003) (report - T-PVS (2003) 8).

This version of the map was adopted by the Habitats Committee in its meeting of April 2005, as an annex of doc:Hab 05-04-03, as illustrated by Figure 9.

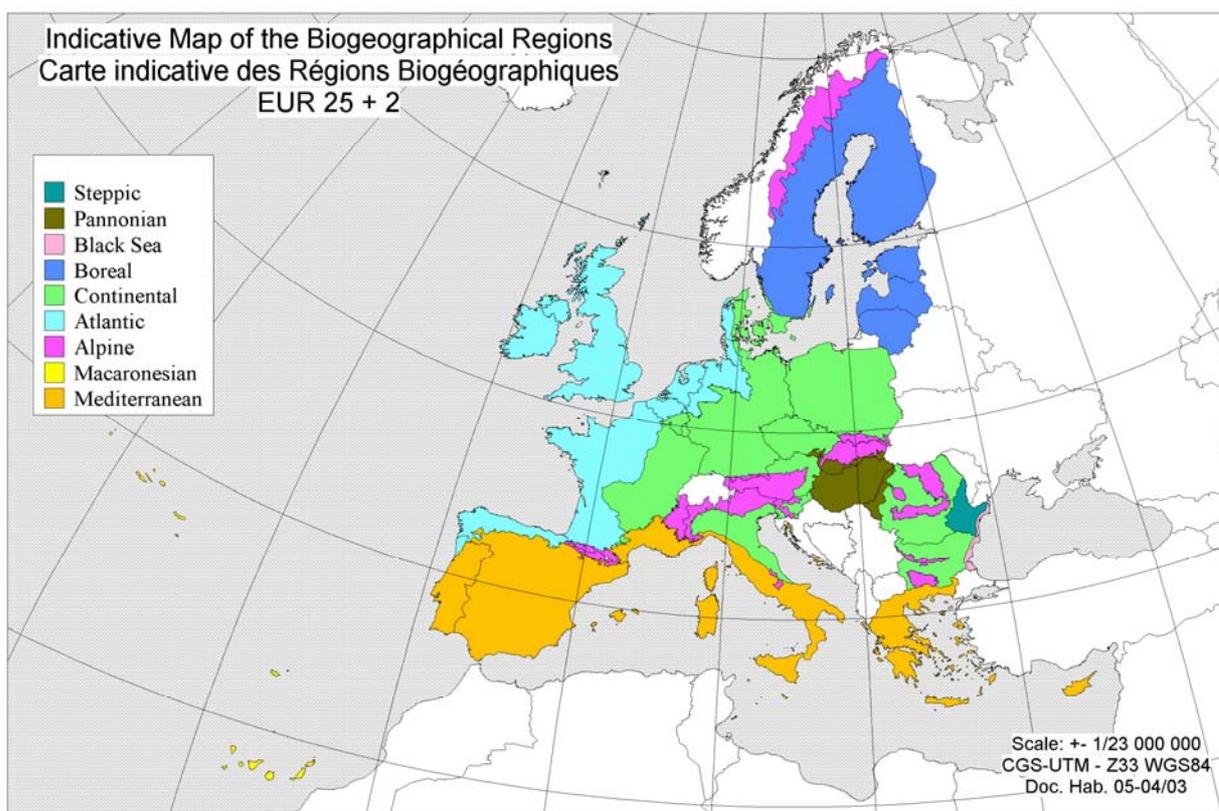


Figure 9 – indicative Map of the Biogeographical Regions EU 25 + 2 (doc: Hab. 05-04-03)

Summary of important milestones during the development of the Biogeographical Regions Map

- 21/5/1992: Adoption of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, defining 5 Biogeographical Regions in art. 1 c (iii).
- 3-4/2/1994: Adoption of the EUR 12 version (see Figure 1) by the Habitats Committee
- 13-14/7/1995: Adoption of the EUR 15 version (see Figure 2) by the Habitats Committee. Following accession of AT, FI and SE, a Boreal Region was added to the Habitats Directive
- 12/1997: Adoption of the Pan-European version of the Biogeographical Regions Map under the Emerald network (Figure 3).
- 27-28/9/1999: Principle agreement on revising the 1997 Emerald map based on the digital version of the European Natural Vegetation Map.
- 4/10/1999: Adoption of the EUR 15+11 version as an extract of the 1997 Emerald version to include 11 accession countries by the Habitats Committee
- 18-19/9/2000: The Emerald expert group takes note of the amended version according to the discussions and decisions in the Emerald pilot projects workshops in each of the countries (Figure 5)
- 23/10/2000: Adoption of the EUR 15+12 version as an extract of the 1997 Emerald version to include 12 accession countries by the Habitats Committee (Figure 6)
- 26-30/11/2001: The Standing Committee of the Bern Convention took note of the final version as it was shown at the Emerald expert group. (Figure 7)
- 1-4/12/2003: The Standing Committee of the Bern Convention took note of changes in the borders of Continental, Pannonian and Alpine regions for Czech Republic and Slovakia, and that Lithuania would have only Boreal Region
- 5/04/2005: The Habitats Committee adopted the extract of the Biogeographical Regions Map approved by the Standing Committee of the Bern Convention for EU 25+2 (Figure 9)

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