Development of vegetation syntaxa crosswalks to EUNIS habitat classification and related data sets

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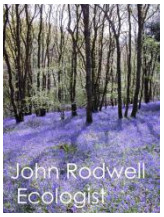

TABLE OF CONTENTS

1 Introduction

Documenting, monitoring and assessing habitats in a comparable manner across Europe is required for reporting under the EU Habitats Directive and Bern Convention, within the frame of the Common Agricultural Policy and Regional Development Funds. The EUNIS Habitat Classification (Davies & Moss 1999; Davies et al. 2004; Moss 2008) provides a pan-European reference set of units for meeting such requirements for particular policy objectives and for supporting applications that relate to biodiversity monitoring and reporting. As such, it also will be a relevant reference framework for the INSPIRE Directive (2007), which was set up to establish an infrastructure for spatial information in Europe to support Community environmental policies as well as policies or activities which may have an impact on the environment.

Enhanced capability in such operations is expected under the recently announced EU and global biodiversity targets for 2020. In addition, the Biodiversity Information System for Europe (BISE), along with the Water Information System for Europe (WISE), anticipates an integration of ecosystem assessment across Europe. The Global Monitoring for Environment & Security (GMES) will also demand links between in situ monitoring of biodiversity and remote sensing.

In this context, as part of the current review of information relating to habitat types and ecosystems, the EEA anticipates a revision of the existing scientific basis for the EUNIS Habitat Classification and a demonstration of the capacity of in situ vegetation recording for demonstrating trends in habitat diversity and quality, two objectives both related to the large vegetation datasets available nowadays. The outcomes will inform and support decisions required of the EEA and EIONET to implement and monitor the 2020 Biodiversity Strategy. The objectives were specified as tasks in this project EEA/NSV/12/001. The first 'task' has resulted in revised crosswalks (see Rodwell et al. 1998, 2002) between the EUNIS-3 habitat classification (terrestrial and fresh water) and the phytosociological syntaxa, in report and electronic form (Chapter 2 and Appendices A-C). The second 'task' has resulted in an assessment of the advantages and disadvantages of different strategies with regard to the analysis of trends of vegetation change based on vegetation plot records (Chapter 3).

More specifically the following research questions have been addressed, respectively under task 1 and task 2:

- What has been changed in the two classification systems (EUNIS and EU syntaxa) compared to earlier versions?
- What are the consequences of these changes for the crosswalks (EUNIS classes level 3 and EU syntaxa level alliances)?
- How can the re-computed crosswalks be included in the information system SynBioSys Europe?

- What are the consequences of the changes induced for EU policy and which remaining gaps exist?

and

- What are the available data sources and networks with respect to vegetation plot data in Europe to analyse changes in habitat diversity and quality?
- What can be concluded from existing literature on this topic?
- What methodology can be developed, giving two different sets of information: (1) a huge amount (> 4 million) vegetation plots sampled at different times and in different places, and (2) a much smaller set of repeated sampling of fixed plots?
- What analytical methods can be found that are sufficiently robust with respect to the signal present in the overall data set (European Vegetation Archive)?
- How can the rationale and the proposed methodology be demonstrated? .

Instructions for the user

Nature policy is a dynamic process, due to the changing demands of the society with regard to safeguarding the environment and the ongoing flow of information and availability of new data.

The number of available vegetation plot data in the *European Vegetation Archive* (EVA) is constantly increasing since 2012 when these crosswalks were made. This affects the EUNIS habitat classification and the EuroVegChecklist. Already in 2013, work on the review of the EUNIS forest classification (EEA/NSV/13/005), for the first time resulted in a structural underpinning of this habitat classification with in situ vegetation data.

The present report is based on the 'July 2012 version' of the EuroVegChecklist, after which some changes have been made. An updated version of the EuroVegChecklist (May 2013 version), has been consequently developed and at present, the latest version of the EuroVegChecklist is submitted for publication in *Applied Vegetation Science*.

The crosswalks in the present report should not be treated as the final ones, as further work is on-going. Updates are shown in the on-line presentation of these crosswalks in EUNIS web application.

Wageningen, 6 June 2014

2 Crosswalks between EUNIS and phytosociological syntaxa

2.1 Background

The most detailed and comprehensive classifications of vegetation types across Europe are provided by phytosociology, the tradition which uses small-scale plot data on plant species composition and cover for 'bottom-up' fine-grained delimitation and characterisation of plant associations (Braun-Blanquet 1928; Tüxen 1937). Recent estimates suggest that the total number of such plots in Europe exceeds 4.3 million (Schaminée et al. 2009) and there is an enormous phytosociological literature describing and classifying vegetation types from many countries in the EU and beyond.

Although formal rules exist for naming plant associations and organising them in higher syntaxonomic units of alliances, orders and classes (Barkman et al. 1986; Weber et al. 2000), their delimitation remains incomplete and contentious due to various theoretical constraints and methodological problems. In an attempt to achieve a respectable level of stability, the European Vegetation Survey (EVS) developed the first overview of European vegetation units at the levels of alliances, orders and classes, published in *The Diversity of European Vegetation*, funded by the Dutch National Reference Centre for Agriculture, Nature and Fisheries (Rodwell et al. 2002). This created a pragmatic framework which has gained widespread respect among practitioners and environmental policy players across Europe, providing an important standardising tool for the European Environment Agency. Meanwhile, the EUNIS Habitat Classification (Davies & Moss 1999) brought structural redefinition and simplicity to the Palaearctic Habitats Classification (Devillers & Devillers-Terschuren 1996) that extended the geographic coverage of the CORINE biotopes programme to provide a foundation for the Habitats Directive. Effectively, EUNIS provided a comprehensive hierarchical classification of the terrestrial and freshwater habitats for the whole of European continent and associated islands. Cross linkages have enabled users of other habitat classifications to relate their national schemes to the international level, in particular to the Annex I habitats of the EU Habitats Directive.

The development of the EUNIS Habitat Classification afforded a fresh opportunity to provide a sound scientific cross-reference between widely accepted European habitats and phytosociological definitions of vegetation types. With funding from the ETC-BD, under contract to the EEA, an EVS team developed a cross-walk

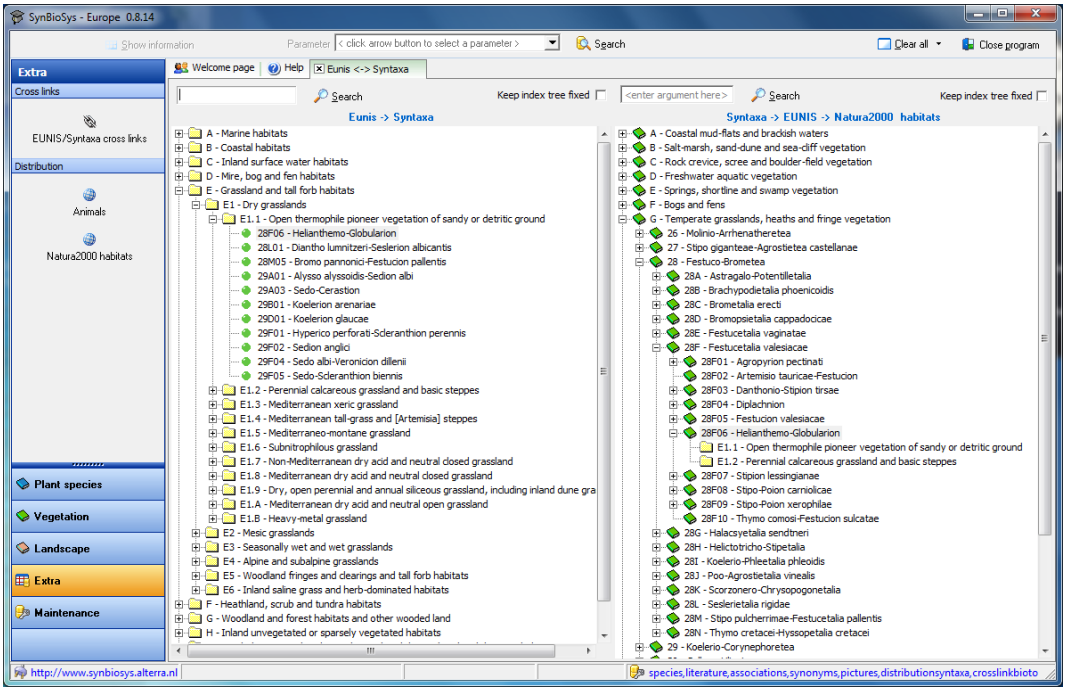

Figure 2.1. Screen shot of SynBioSys Europe, showing the crosswalks from EUNIS to syntaxa (left panel) and syntaxa to EUNIS (right panel).

between phytosociological units to the level of the alliance and EUNIS habitats at Level 3. *The Scientific Background to the EUNIS Habitat Classification* (Rodwell et al. May 1998, revised October 1998) provided a complete overview of European vegetation types to the level of alliance, accompanied by brief verbal definitions of these units, and crosswalks from the EUNIS-3 habitats to the syntaxa and vice versa. The background files held by the EVS also provided a limited synonymy and bibliography for the phytosociological units. The syntaxa to EUNIS-3 habitats crosswalk and an introduction to the background and application of the work was published in *The Diversity of European Vegetation* (Rodwell et al. 2002).

Since that time, changes have been made to the EUNIS Habitat Classification and much more substantially to the overview of European syntaxa at the levels of alliance, order and class, in a detailed revision by an EVS team headed by Ladislav Mucina. This new EuroVegChecklist is more up-to-date and thorough as far as syntaxonomy is concerned and more geographically comprehensive. The version dated 8 July 2012 has been made available for developing a new crosswalk with the revised EUNIS-3.

The resulting crosswalks will be implemented in the information system SynBioSys Europe (Schaminée et al. 2007), as was done for the 1998 versions (see Fig. 2.1). This desktop tool, an anitiative of the European Vegetation Survey (EVS) and coordinated by Alterra (Wageningen, The Netherlands), integrates different biological levels: species, community and landscape. It incorporates a GIS platform for the visualization of the various layers of information, enabling the analysis of patterns and processes relating the

individual levels. For the individual levels of the system, specific sources are available, notably national and regional Turboveg databases (Hennekens & Schaminée 2001) for the community level and data from the Map of Natural Vegetation of Europe (Bohn et al. 2000-2004) for the landscape level. The structure of the system and its underlying databases allow user-defined queries.

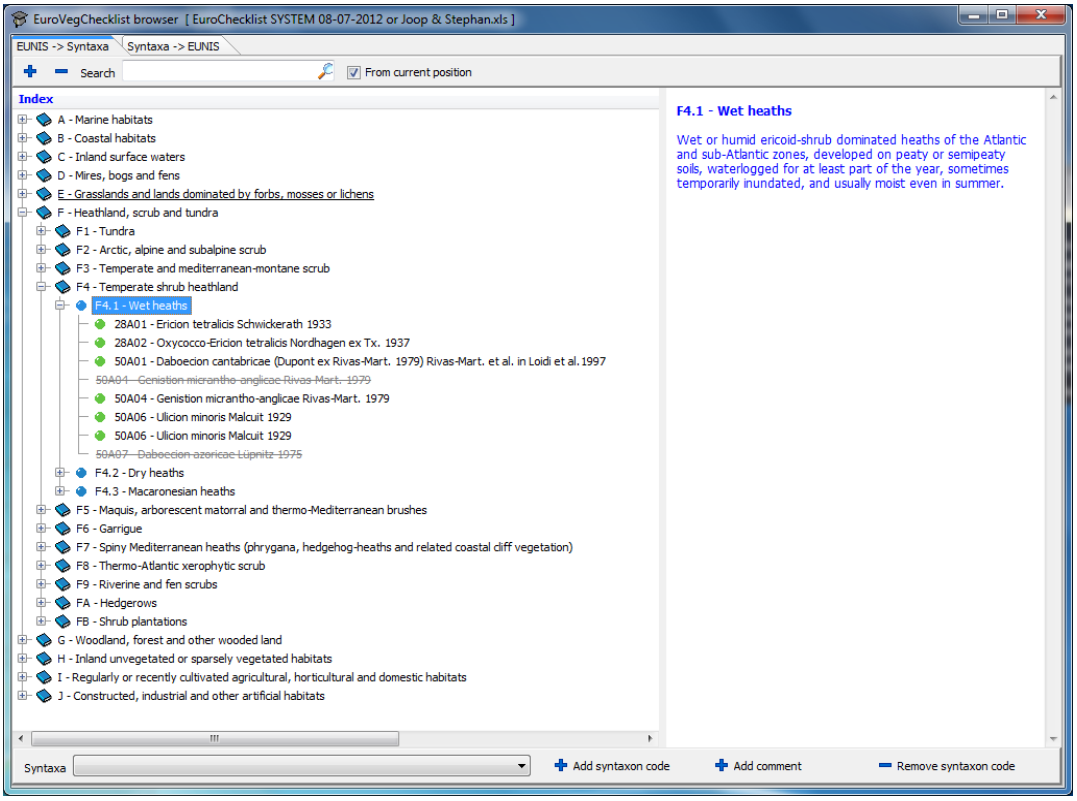

Figure 2.2. EuroVegChecklist (Mucina et al. in prep.) browser with tab "Syntaxa -> EUNIS" open.

2.2 Procedure

The revision of the crosswalk was carried out in three stages: the assessment of changes to EUNIS-3 and the development of a new EUNIS-3 habitats x old alliances crosswalk, the assessment of changes in the EuroVegChecklist (Mucina et al. in prep.) and the development of an old alliances x new alliances crosswalk,

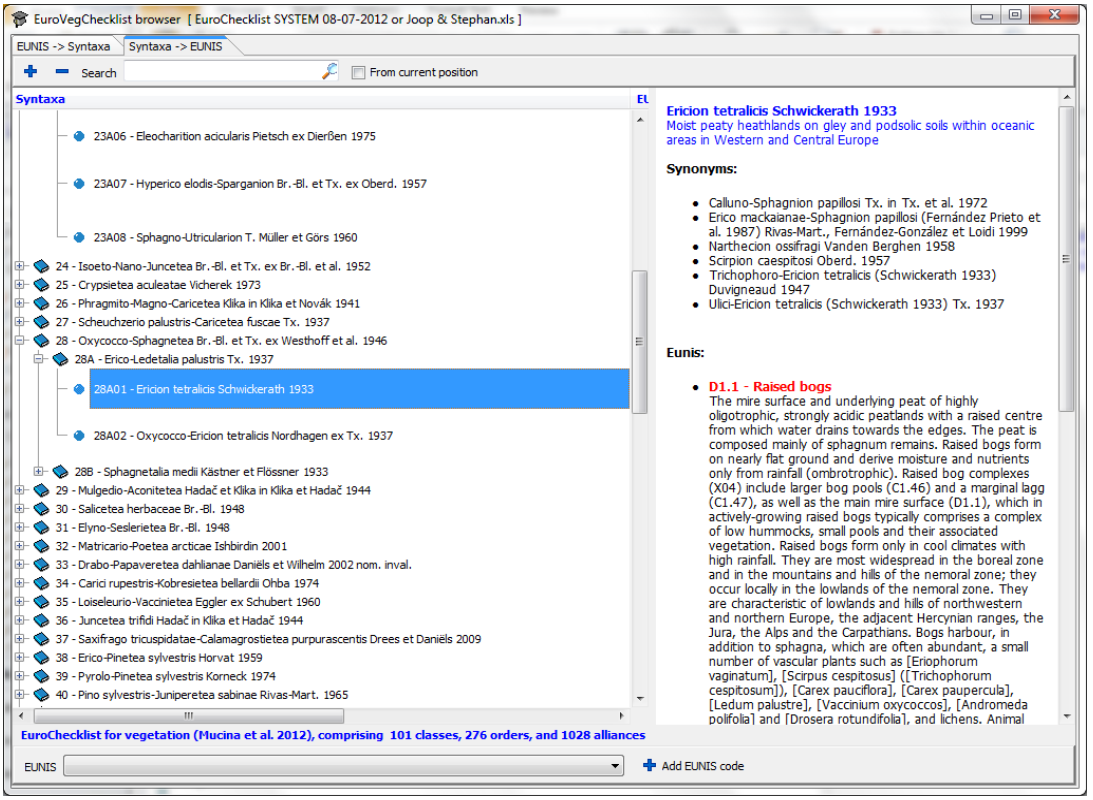

Figure 2.3. EuroVegChecklist browser with tab "EUNIS -> Syntaxa" open.

and the development of a crosswalk between new EUNIS-3 habitats x new alliances. This last phase was conducted in both directions: alliances → EUNIS-3 and EUNIS-3 → alliances. The changes in EUNIS-3, the EuroVegChecklist and the new EUNIS-3 x EuroVegChecklist crosswalk are summarised below, and the implications of the findings considered.

To ease the work-flow, a tool, called the EuroVegChecklist browser (see Fig. 2.2 and 2.3), has been developed for linking EUNIS codes to syntaxa codes.

2.3 Changes in EUNIS-3

The changes in EUNIS-3 were reviewed by comparing old and new files received from the ETC-BD. Among those units which had existing equivalences with syntaxa, we detected four kinds of change. In addition, the new files list units which were not represented in the original version of EUNIS-3. These changes are listed below and the relevant changes were made to the masterfile. The changes listed here are those evident by comparing the old and new versions of EUNIS directly, their codes and names and then, if a change appeared to have occurred, by checking the description.

Changes to EUNIS-3 name only: Of the 157 EUNIS-3 units which had some equivalence with syntaxa in *The Diversity of European Vegetation* (Rodwell et al. 2002), 31 (20%) have changed their name while retaining the same EUNIS-3

code. Such changes are often trivial but some rationalise serious oddities in the original nomenclature or provide a more accurate or different definition of a habitat.

- ► B1.1 Angiosperm communities of sand beach driftlines becomes
  Sand beach driftlines;
- ► B2.1 Shingle beach driftline habitats becomes
  Shingle beach driftlines;
- ► C3.5 Pioneer and ephemeral vegetation of periodically inundated shores becomes
  Periodically inundated shores with pioneer and ephemeral vegetation;
- ► D2.2 Poor fens becomes
  Poor fens and soft-water spring mires;
- ► E1.1 Open thermophile pioneer vegetation of sandy and detritic ground becomes
  Inland sand and rock with open vegetation;
- ► E1.5 Mediterraneo-montane grassland becomes
  Mediterranean-montane grassland;
- ► E1.6 Subnitrophilous grassland becomes
  Subnitrophilous annual grassland;
- ► E1.7 Non-Mediterranean dry acid and neutral closed grassland becomes
  Closed non-Mediterranean dry acid and neutral grassland;
- ► E1.8 Mediterranean dry acid and neutral closed grassland becomes
  Closed Mediterranean dry acid and neutral grassland;
- ► E1.9 Dry, open perennial and annual siliceous grassland, including inland dunes become Open non-Mediterranean dry acid and neutral grassland, including inland dunes;
- ► E1.A Mediterranean dry acid and neutral grassland becomes
  Open Mediterranean dry acid and neutral grassland;
- ► E2.2 Coarse permanent grassland and tall herbs, usually mown but little grazed become
  Low and medium altitude hay meadows;
- ► E4. Snow-patch grassland becomes
  Vegetated snow-patch;
- ► E4.4 Calciphilous alpine and subalpine grassland becomes
  Calcareous alpine and subalpine grassland;
- ► E6.1 Mediterranean inland saline grass and herb-dominated habitats becomes
  Mediterranean inland salt steppes;
- ► E6.2 Continental inland saline grass and herb-dominated habitats becomes
  Continental inland salt steppes;
- ► F2.1 Snow-patch dwarf willow scrub becomes
  Subarctic and alpine dwarf willow scrub;
- ► F2.4 [Pinus mugo] scrub becomes
  Conifer scrub close to the tree limit;
- ► F3.2 Mediterraneo-montane broadleaved deciduous thickets becomes
  Submediterranean deciduous thickets and brushes;
- ► F5.5 Thermo-Mediterranean shrub habitats becomes
  Thermo-Mediterranean scrub;
- ► F8.1 Canarian xerophytic habitats becomes
  Canary Island xerophytic scrub;
- ► F8.2 Madeiran xerophytic habitats becomes

Madeiran xerophytic scrub;
- ► F9.1 Riverine and lakeshore [Salix] scrub becomes Riverine scrub;
- ► G1.1 Riparian [Salix], [Alnus] and [Betula] woodland becomes Riparian and gallery woodland, with dominant [Alnus], [Betula], [Populus] or [Salix];
- ► G1.2 Fluvial [Fraxinus]-[Alnus] and [Quercus]-[Ulmus]-[Fraxinius] woodland becomes Mixed riparian floodplain and gallery woodland;
- ► G1.3 Mediterranean [Populus], [Fraxinus], [Ulmus] and related riparian woodland becomes Mediterranean riparian woodland ;
- ► G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana] becomes Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia];
- ► G2.7 Canarian heath woodland becomes Canary Island heath woodland;
- ► H2.1 Boreal siliceous screes becomes Cold siliceous screes;
- ► H2.2 Boreal limestone screes becomes Cold limestone screes;
- ► H5.3 Clay, silt, sand and gravel habitats with very sparse or no vegetation becomes Sparsely- or un-vegetated habitats on mineral substrates not resulting from recent ice activity;
- ► H6.1 Sparsely vegetated volcanic mountain summits, lava and ash fields becomes Active volcanic features.

Changes to EUNIS-3 code only: In other cases, the EUNIS-3 name has remained the same but the EUNIS-3 code has changed which means that all original syntaxa equivalences are therefore switched:

- ► A2.6 Coastal saltmarshes and saline reedbeds becomes A2.5 Coastal saltmarshes and saline reedbeds;
- ► A2.7 Littoral sediments dominated by aquatic angiosperms becomes A2.6 Littoral sediments dominated by aquatic angiosperms.

EUNIS unit subsumed into another: Two EUNIS-3 units have apparently been subsumed into others, so that their original syntax equivalences need to be combined in the new units:

- ► A4.5 Shallow-water sediments dominated by angiosperms (named A4.5 Shallow sublittoral sediments dominated by angiosperms in Rodwell et al 2002) has been subsumed into the new A2.6 Littoral sediments dominated by aquatic angiosperms, mentioned among the renumbered units above.
- ► H6.3 Fumaroles, solfataras and mofettes has been subsumed into H6.1, a unit which is already included in the list of renamed units above.

Change to EUNIS-3 name and definition: One unit has changed both its name and definition in a way which is not entirely meaningful at the moment:

► E5.1Over-grazed arid Mediterranean garrigues (ermes) has become E5.1 Anthropogenic herb stands

Additions to EUNIS-3: 34 habitat complexes, coded X01 to X34, have been added to the list of EUNIS-3 units. These habitat complexes actually should be considered as level 2.

2.4 Changes as featured the EuroVegChecklist

The changes to the EuroVegChecklist (Mucina et al. in prep.) are substantial because of a broader geographical coverage than before, a more thorough search of the phytosociological literature and the involvement of a larger team with wider experience of classification and syntaxonomy. The product therefore represents the state of the art, supposed to experience further development. However, as with the earlier Conspectus, it is possible to explore alternative names and status for syntaxa at any level using the extensive synonymy that lies behind the classification.

The EuroVegChecklist included (on 15 June 2012) 101 classes (compared to 80 in the Conspectus), 276 orders (233) and 1028 alliances (928). This increase is partly because of changes to the existing classification but there are also new classes, orders and alliances.

Comparing the original syntaxa names with the new, less than 1% fail to find a match somewhere within the EuroVegChecklist but, at the lowest level of classification, 293 of 928 alliances (27% of the total) in the original Conspectus have changed their name. This is sometimes because a prior validly published name is now known to exist or because, for some other reason, the earlier name is now considered unacceptable. In other cases, an alliance has been subsumed within another existing or newly-defined alliance: 16% of the original alliance names have been merged, sometimes 2, sometimes 3 names, into one new name. Of the original 233 orders, 51 (22%) have changed their name; and 11 of the original 80 classes (14%).

In some classes, the revision of alliances has been especially substantial. The larger classes where this is the case are (in their new Conspectus order and with the descriptor):

► 10 Festuco-Puccinellietea (36% of alliances with some change)
Saline steppes and derived steppic grasslands of continental eastern and southern Europe;
► 14 Asplenietea (27%)
Open vegetation with ferns and mosses in rock and wall crevices (and rarely on screes);

- 29 Mulgedio-Aconietetea (34%)
  Scrub and tall-herb vegetation at high altitudes, moistened and fertilised by percolating waters;
- 31 Elyno-Seslerietea (33%)
  Alpine and sub-alpine calcicolous grasslands;
- 36 Juncetea trifidi (23%)
  Pastures, rush-heaths and fjell-field on lime-poor soils above the forest belt in alpine and sub-alpine zones;
- 45 Molinio-Arrhenetheretea (35%)
  Anthropogenic pastures and meadows on deeper, more or less fertile soils in lowland regions;
- 46 Festuco-Brometea (35%)
  Steppes, rocky steppe and sandy grasslands of the sub-continental temperate and sub-boreal regions;
- 50 Calluno-Ulicetea (37%)
  Dwarf-shrub and mat-grass heaths on acidic soils from the planare to montane belts;
- 52 Rhamno-Prunetea (25%)
  Sub-scrub and scrub vegetation seral or marginal to broadleaved woodland;
- 54 Quercetea pubescentis (40%)
  Thermophilous woodlands with deciduous oaks of eastern sub-Mediterranean regions;
- 75 Stellarietea mediae (30%)
  Weed communities of arable crops, gardens and waste places;
- 78 Galio-Urticetea (43%)
  Tall-herb mesophilous anthropogenic fringe vegetation of woodlands and scrub and semi-natural tall saum of water courses in temperate Europe.

Larger classes from the original Conspectus with relatively little change are

- 18 Thlaspietea (12%)
  Vegetation of screes and rubble;
- 53 Carpino-Fagetea (previously Querco-Fagetea) (9%)
  Mixed broadleaved woodland of more temperate climates in central and western Europe;
- 60 Quercetea ilicis (10%)
  Mediterranean maquis, pine woods and associated sclerophyllous scrub;
- 61 Helianthemetea guttati (11%)
  Mediterranean terrestrial plant communities dominated by annual low-grown herbs and grasses.

Of the original 80 classes, 13 show no change at all in the names of the alliances allocated to them. Of these classes, 11 have very few alliances and four of these are endemic to Macaronesia. The only larger classes showing no change are:

- 56 Rosmarinietea officinalis
  Low-grown calcicolous west-Mediterranean scrub (matorral, garrique, tomillar);
- 67 Pegano harmalae-Salsoletea vermiculatae
  Thermomediterranean and Macaronesian halo-nitrophilous semi-desert scrub.

In the new EuroVegChecklist, there has also been some rearrangement of alliances within different orders and classes, including some new higher level units not present at all in the original Conspectus. In one sense, this is irrelevant for the new EUNIS-3 x EuroVegChecklist because this has been conducted at the level of, and will used at, the level of the alliances.

2.5 Changes in the EUNIS-3 versus EuroVegChecklist crosswalk

Unassigned EUNIS-3 units: As in the original Crosswalk, many EUNIS-3 units have been assigned no alliances: now 195 EUNIS-3 units out of a total of 362 (54%). Some 72 of these units (20% of the total) are natural habitats, marine, freshwater and terrestrial (mostly in EUNIS A, B and H), that are totally devoid of vegetation except, in some cases, of algae or lichens such as are found on rock surfaces or detritus, and included in EUNIS largely because of their geomorphological or hydrological interest. Of these non-vascular assemblages, only the stonewort communities of the Charetea have generally been treated by phytosociologists and these are included in the EuroVegChecklist and in the Crosswalk. A further 34 EUNIS-3 units (9%) are abiotic habitats from built or industrial environments (EUNIS J1–J6).

In addition to these, 22 EUNIS-3 habitats (6% of the total) are woody croplands or landscape features of one sort or another which have no simple phytosociological equivalent: parklands (E7.1–E7.3), hedgerows (FA.1–FA.4), shrub plantations (EUNIS FB.1–FB.3), vineyards (FB.4), tree plantations (G2.9 & G3.F, G5.1, G5.3–G 5.5 & G5.7), orchards (G1.D & G2.9) and cultivated gardens (EUNIS I2.1–I2.2).

The 15 Mixed deciduous and coniferous woodland (G4.1–G4.F, 4% of the total) have equivalences that cannot be predicted from the EUNIS definitions, while the 34 Habitat complexes (X01–X34, 9 %) are so broadly defined that related syntaxa would be so numerous as to confuse.

At this almost final stage in the work, only 16 EUNIS-3 units which are very sparsely vegetated or of problematic definition (4%) remain to have alliances assigned.

EUNIS-3 habitats with links to alliances: The remaining 161 EUNIS-3 habitats (46% of the total) have been assigned alliances and, as in the original Crosswalk, the vast majority have multiple and sometimes complex equivalences. Appendix A shows the number of alliances and classes for each EUNIS-3 habitat, together with the number of connections to other habitats via the same alliance.

In fact only 10 EUNIS-3 habitats (6% of all with some kind of equivalence) show a 1:1 relationship with a single alliance.

► B2.4 Fixed shingle beaches, with herbaceous vegetation

► C2.2 Permanent non-tidal, fast turbulent watercourses
► F5.4 [Spartium junceum] fields
► F7.2 Central Mediterranean spiny heaths
► F9.2 [Salix] carr and fen scrub
► G1.4 Broadleaved swamp woodland not on acid peat
► G2.2 Eurasian continental sclerophyllous woodland
► G3.3 [Pinus uncinata] woodland
► G3.8 Canary Island [Pinus canariensis] woodland
► I1.4 Inundated or inundatable croplands, including rice-fields

These are narrowly-defined EUNIS-3 habitats or ones where the definition refers to a phytosociologically important species. Even here, however, the equivalence is not always exclusive and the particular alliance is sometimes also related to other EUNIS-3 habitats, as with C2.2 Permanent non-tidal, fast turbulent watercourses (3 other habitats) and [Spartium junceum] fields (5 others) and G2.2 Eurasian Continental sclerophyllous woodland (2 others).

In fact, only 10 EUNIS-3 habitats with more than one alliance (6% of the total with some equivalence) have an exclusive relationship to the alliances equivalent to them:

► B3.3 Rock cliffs, ledges and shores with angiosperms (16 alliances)
► C3.6 Unvegetated or sparsely vegetated shores with soft or mobile sediments (4)
► E1.6 Subnitrophilous annual grassland (6)
► E3.2 Mediterranean short humid grassland (3)
► E3.3 Sub-mediterranean humid meadows (4)
► E5.2 Thermophile woodland fringes (14)
► F2.4 Conifer scrub close to the tree limit (6)
► F6.7 Mediterranean gypsum scrubs (2)
► G1.5 Broadleaved swamp woodland on acid peat (4)
► G3.6 Subalpine Mediterranean [Pinus] woodland (2).

A total of 16 EUNIS-3 habitats (10% of those with some kind of equivalence) are equivalent to more than 20 alliances, substantially higher than in the earlier Crosswalk because of the more thorough procedure used this time. These are not however, always originating from proportionately numerous classes.

► A2.5 Coastal salt-marshes & saline reedbeds (28 alliances, 7 classes)
► B1.4 Coastal stable dune grassland (grey dunes) (21, 3)
► E1.1 Inland sand and rock with open vegetation (36, 3)
► E1.2 Perennial calcareous grassland and basic steppe (32, 2)
► E1.3 Mediterranean xeric grassland (32, 3)
► E4.3 Acid alpine and subalpine grassland (36, 6)
► E4.4 Calcareous alpine & subalpine grassland (29, 3)
► E5.1 Anthropogenic herb stands (44, 5)
► E6.2 Continental salt steppes (27, 4)
► F3.2 Submediterranean deciduous thickets & scrub (23, 3)
► F5.5 Thermo-Mediterranean scrub (33, 6)
► F6.1 Western garriques (20, 3)
► F7.4 Hedgehog heaths (23, 8)

► H3.1 Acid siliceous inland cliffs (22, 3)
► H3.2 Basic & ultrabasic inland cliffs (48, 3) and
► I1.3 Arable land with mixed crops grown by low-intensity agricultural methods (20, 2)

These are broadly-defined (or uncertainly defined) EUNIS-3 categories where phytosociologists would recognise several to many vegetation types within a single habitat type dependent upon fine local variations in environmental conditions (most obviously within A2.5 Coastal salt-marshes & saline reedbeds and B1.4 Coastal stable dune grassland (grey dunes) or regional analogues dependent on climatic differences (in E1.1 Inland sand and rock with open vegetation, E1.2 Perennial calcareous grassland & basic steppe), or both.

Clearly the higher level phytosociological equivalence varies considerably among these EUNIS-3 habitats, being sometimes proportionately diverse as with the A2.5 Coastal salt-marshes & saline reedbeds and F7.4 Hedgehog heaths, sometimes much more consistent as with E1.1, E1.2 & E1.3 Dry grasslands listed above and H3.2 Basic & ultrabasic inland cliffs.

In fact, even when the number of alliances included within a EUNIS-3 habitat is small, these can sometimes originate from several different classes. For example:

► B1.7 Coastal dune woods (5 alliances, 5 classes)
► B1.9 Machair (4, 3)
► C3.6 Unvegetated or sparsely vegetated shores with (4, 3)
► E4.2 Moss and lichen dominated mountain summits (3, 3)
► E5.3 [Pteridium aquilinum] fields (3, 3)
► G3.9 Coniferous woodland dominated by [Cupressaceae]

By contrast, Appendix B shows that a total of 51 EUNIS-3 habitats with more than a single alliance (32% of those with some equivalence) are related to a single class. These mostly have less than 10 alliances but also include:

► E1.4 Mediterranean tall grass and [Artemisia] steppes (13 alliances)
► E5.2 Thermophile woodland fringes (14)
► I1.1 Intensive unmixed crops (11).

Phytosociological relationships at EUNIS-2 level: For a broader picture of phytosociological relationships, Appendix A shows the numbers of alliances and classes equivalent to EUNIS-2 habitat groups. Those groups with the most numerous equivalent alliances, together with an indication of numbers of classes, are:

► B1 Coastal dunes and sandy shores (65 alliances from 18 classes)
► E1 Dry grasslands (155, 17)
► E5 Woodland fringes and clearings and tall forb stands (86, 12)
► F5 Maquis, arborescent mattoral and thermo-Mediterranean (50, 6)
► F6 Garrique (56, 7)
► G1 Broadleaved deciduous woodland (89, 11)

► G3 Coniferous woodland (60, 15)
► H2 Screes (47, 3)
► H3 Inland cliffs, rock pavements and outcrops (82, 5).

For this contract, the Crosswalk was set up in both directions and all but a few still problematic alliances (less than 4% of the total) have been allocated to their nearest EUNIS-3 habitat(s). From the phytosociological perspective, 675 alliances (68%) are crosswalked to a single EUNIS-3 habitat, 244 (25%) to 2 habitats, 45 (5%) to 3 habitats, 15 (2%) to 4 habitats, 5 (<1%) to 5 habitats and 3 (<1%) to 6 habitats.

Those classes with more numerous links are as follows, each with their phytosociological descriptor:

► 12 Cakiletea (5 EUNIS-3 habitats in 3 EUNIS-2 groups)
Pioneer vegetation of nitrophilous annuals on sand & shingle strandlines
► 21 Potamogetonetea (7, 2)
Vegetation of macrophyte communities of rooted, floating or submerged plants in mesotrophic & eutrophic freshwaters
► 27 Scheuchzerio-Caricetea (11, 6)
Vegetation of transition mires, fens and bog hollows
► 28 Oxycocco Sphagnetea (9, 5)
Holarctic ombrotrophic bog vegetation and wet heaths on acidic peaty soils
► 45 Molinio-Arrhenetheretea (18, 8)
Anthropogenic pastures & meadows of deeper, more or less fertile soils of Eurasia
► 48 Koelerio-Corynephoretea (8, 4)
Dry grasslands of sandy soils and rocky outcrops of submeridional to boreal Europe, North Atlantic islands & Greenland
► 50 Calluno-Ulicetea (7, 4)
Heath vegetation of acidic, humus-rich soils of lowland and montane belts of temperate and boreal Europe
► 54 Quercetea pubescentis (8, 4)
Thermophilous oak & conifer woodlands of semi-dry regions in southern & eastern Europe
► 60 Quercetea ilicis (14, 5)
Mediterranean maquis, pine & oak forests and associated sclerophyllous scrub
► 83 Alno-Populetea (8, 3)
Riparian gallery forests of Eurosiberian & Mediterranean regions.

2.6 Implications of the Crosswalk for improving and revising EUNIS

The new Crosswalk provides a more comprehensive and up-to-date scientific basis in phytosociology for the EUNIS Habitat Classification and suggests ways in which EUNIS could be improved and revised by clarifying the definition of habitats, by splitting existing units and by adding further units. It also suggests

how EUNIS could provide a sounder basis for monitoring habitat condition and change and furnish a typology for Red List evaluation.

The systematic cataloguing of relationships between the EUNIS-3 habitats and alliances, this time conducted in both directions, renders the EUNIS Habitat Classification more meaningful and appealing to a widely-dispersed constituency of users already familiar with phytosociology within and beyond Europe. This benefit will be all the greater because this exercise has used the improved coverage of the high-rank syntaxa cuptered in the EuroVegChecklist (version 15 June 2012). The Crosswalk should greatly enhance the value of the EUNIS Habitat Classification as a 'clearing house' between other habitat schemes, notably Annex I of the Habitats Directive.

That being said, the most obvious feature of the Crosswalk is the uneven relationships between EUNIS-3 habitats and phytosociological units. Although described as a habitat classification, EUNIS is in fact a complex mixture of categories of varying character and scale. Some EUNIS-3 units with a biotic element are defined in a narrow fashion, others more broadly. In some definitions, biogeographic distinctions are made (eg. Atlantic, Mediterranean, Macaronesian, Continental, Alpine); in others, terrain, soil or hydrological conditions are invoked (eg. trophic state, soil moisture levels, droughtiness or salinity) or aspects of management highlighted (eg. tillage, fertilising, coppicing); in yet others, physiognomic features of the vegetation are used (open or closed swards, herbage height, kinds of woody canopy) or particular species or genera used, either alone (eg. Spartium junceum, Ilex aquifolium, Pinus) or in groups (eg. Alpine Larix-Pinus). Relationships with units defined primarily in relation to species content are therefore inevitably going to be complex.

In some cases, the results of this top-down hybrid approach coincide neatly with the outcome of the more uniform bottom-up methodology of phytosociology. Only rarely does this result in 1:1 relationships between particular EUNIS-3 habitats and single alliances (and then not always exclusively) but, more frequently, in almost a third of the EUNIS-3 habitats, there is a useful simplicity of equivalence expressed in links at class level. Even where large numbers of alliances are involved in such equivalences, this indicates some measure of coherence in the character of the vegetation represented within EUNIS-3 habitats.

Where EUNIS-3 units are more heterogeneous in their phytosociological relationships, with many equivalent alliances or even different classes, the Crosswalk can help resolve problems of habitat definition. In some cases, this heterogeneity occurs because the EUNIS-3 categories are obviously broadly-defined habitats whose internal vegetation patterns are widely acknowledged and understood. In other cases, heterogeneity reflects the occurrence within a EUNIS-3 habitat of analogous vegetation types occurring in different climatic regions. Sometimes both these reasons coincide. In such cases, the phytosociological relationships revealed by the Crosswalk could be used to make further splits among EUNIS-3 habitats so as to reflect habitat or biogeographical distinctions.

In fact, phytosociological alliances are not themselves equal in content or weight in the syntaxonomic hierarchy. Some alliances comprise few associations, others many and the range of variation in floristic composition that they encompass is

very variable. What alliances are assumed to be, however, is mutually exclusive, each comprising distinctive vegetation types with a unique relationship to a particular combination of climate, soils and biotic influences. Inevitably, in a classification like EUNIS, where habitats are defined more broadly or using different criteria in different groups, vegetation of the same alliance may be represented in several EUNIS-3 categories. The Crosswalk could also help identify those situations where the EUNIS-3 habitats are not defined in a mutually exclusive fashion and suggest further improvements to the classification.

Where clearly different alliances are linked to a single EUNIS-3 habitat, or where the linkage seems inappropriate, the Crosswalk can help identify possible additions to the EUNIS Habitat Classification. For example, 36A02 Nardo-Caricion rigidae includes moderately snow-loving vegetation, at present linked to the very compendious E4.3 Acid alpine and sub-alpine grassland, whereas a new EUNIS-3 category of snow-field vegetation could bring together this and various other alliances at present subsumed into E4.1 Vegetated snowbed. Again, the rock-crevice vegetation of the 14P01 – 14P03 alliances of the Parietarietalia, being usually associated with walls, has to be linked to E5.1 Anthropogenic herb stands rather than to a distinctive category of sparsely vegetated constructions. Other alliances of crevice vegetation can also occur on walls, so should they figure in J2.5 Constructed boundaries which are said to be 'virtually devoid of plant and animal life' or should H3 Inland cliffs, rock pavements and outcrops also explicitly include made analogues?

The other great benefit which phytosociology could bring to the definition of EUNIS habitats is that alliances comprise associations which are referred to type relevés and often supported by numerous vegetation plot data, whose more frequent and diagnostic species provide the basis of their definition (see Paragraph 3.1 below). Even where EUNIS-3 habitats comprise numerous alliances, therefore, it should be possible to combine lists of such species to produce broad floristic profiles, supposed to help to define, interpretate and identify the EUNIS-3 habitats. This could also provide a sounder basis for using EUNIS as a framework for monitoring by highlighting species that could serve as indicators of condition or change.

If habitats at the scale of EUNIS-3 were to be adopted as the typology for Red List evaluation (rather than more broadly-defined ecosystems), then the Crosswalk could provide local phytosociological interpretation of these habitats and enable cross-comparison of evaluation scores from country to country with the EU and beyond (see Paragraph 4.1 below).

3 The use of vegetation-plot databases for assessment of vegetation change over time[1]

3.1 Background

Records of plant species composition in plots of 1 m^2 to a few hundreds m^2 (further referred to as vegetation plots) have been collected by European phytosociologists ever since the early 20th century (Braun-Blanquet 1928; Mueller-Dombois & Ellenberg 1974). Vegetation plots typically include a complete list of plant species, cover-abundance estimates for each of them, and basic geographical and environmental data (Mucina et al. 2000). Most plots are dated and spatially located, although with variable accuracy. Most of them were established for phytosociological purposes, i.e. for documenting the diversity of vegetation types or as the source data for vegetation classification (phytosociological plots, also called relevés), but some have also been established for other purposes, most notably monitoring of vegetation change over time (permanent plots; Rodwell et al. 1993; Smits et al. 2002; Smart et al. 2003). Vegetation plots have also been collected as a part of some national forest inventories (Tomppo 2010).

A recent estimate, based on data from 32 countries (Schaminée et al. 2009), suggested that more than 4.3 million vegetation plots have been recorded in Europe to date (Table 1, Fig. 1). Most of these plots have been sampled in the countries of central and western Europe, particularly Germany, the Netherlands and France, but considerable numbers of existing vegetation plots were also recorded for Poland, Spain, the Czech Republic, Italy, the United Kingdom and Austria. Many of these plots are already available in electronic format, but the density of electronic relevés varies considerably between countries (Fig. 2). The recently established metadatabase Global Index of Vegetation-Plot Databases (GIVD; Dengler et al. 2011) provides up-to-date information on electronic databases of vegetation plots and the information on individual databases registered in GIVD has been summarized in a recent volume on vegetation databases (Dengler et al. 2012). Already 123 European databases comprising almost 1.9 million relevés have been registered in GIVD by October 2012. These databases contain very valuable historical reference information, which may provide a baseline for assessment of changes in vegetation and plant diversity over the last century. According to the GIVD data, most vegetation plots (>85%) stored in the European databases were made after the year 1970, more than 95% after 1950 and nearly 100% after 1920 (Dengler et al. 2011; Jansen et al. 2011). Therefore these databases can be useful for assessment of vegetation change especially for various periods within the last 50 years, but for some areas or some vegetation types also over longer periods.

[1] Updated results of the study reported in this chapter have been published as a scientific paper: Chytrý, M., Tichý, L., Hennekens, S.M. & Schaminée, J.H.J. (2014). Assessing vegetation change using vegetation-plot databases: a risky business. *Applied Vegetation Science* 17: 32–41.

Table 1. In Europe, more than 4.3 million vegetation plot records have been collected during the last century, according to a recent inventory (Schaminée et al. 2009). "Turboveg" column reports the number of plots computerized in Turboveg format, which is currently the most widespread program for vegetation database management (all these data are easily exchangeable due to using a single format).

Country	**Contact**	**Total**	**Computerized**	**Turboveg**
Austria	Willner	100,000	47,000	80%
Belgium	Hoffmann	58,000	45,300	73%
Bosnia-	Redžić	27,000	7,000	20%
Bulgaria	Apostolova	>6600	>3,700	100%
Croatia	Stančić	>12,000	>12,000	100%
Czech Republic	Chytrý	150,000	140,000	99%
Denmark	Ejrnæs	85,000	78,000	0%
Estonia	Paal	4,500	3,500	0%
Faeroe Islands	Fossaa	1,000	700	70%
Finland	Virtanen	>15,000	>5,000	Unknown
France	Gégout	>350,000	>310,000	0%
Germany	Bergmeier	155,000	55,000	98%
Germany	Various	1,500,000	37,500	40%
Greece (Crete)	Bergmeier	6,800	6,500	60%
Greece	Dimopoulos	25,000	19,500	100%
Hungary	Csiky	45,000	26,000	50%
Iceland	Elmarsdóttir	>1,000	1,000	0%
Ireland	Fitzpatrick	24,000	7000	100%
Italy	Di Pietro	150,000	20,000	5%
Latvia	Pakalne	12,700	8,200	35%
Lithuania	Rasomavičius	34,000	16,000	45%
Luxembourg	Ries	18,000	17,000	90%
Macedonia	Kusterevska	3,800	700	11%
Netherlands	Schaminée	625,000	600,000	100%
Norway	Halvorsen	25,000	6,000	Unknown
Poland	Kacki	180,000	15,000	Unknown
Portugal	Font	20,000	1,500	Unknown
Romania	Szabó	>70,000	unknown	<1%
Russia	Ermakov	57,000	35,000	75%
Serbia	Lakušić	>16,000	350	Unknown
Slovakia	Šibík	85,000	55,000	100%
Slovenia	Čarni	>22,000	>12,000	100%
Spain	Font	165,000	77,000	20%
Sweden	Diekmann	8,000	1,000	Unknown
Switzerland	Wohlgemuth	112,000	68,000	0%
Turkey	Uğurlu	20,000	1,200	100%
Ukraine	Iakushenko	43,000	10,000	8%
United Kingdom	Rodwell	132,000	107,000	24%
Total		**>4,364,000**	**>1,852,000**	

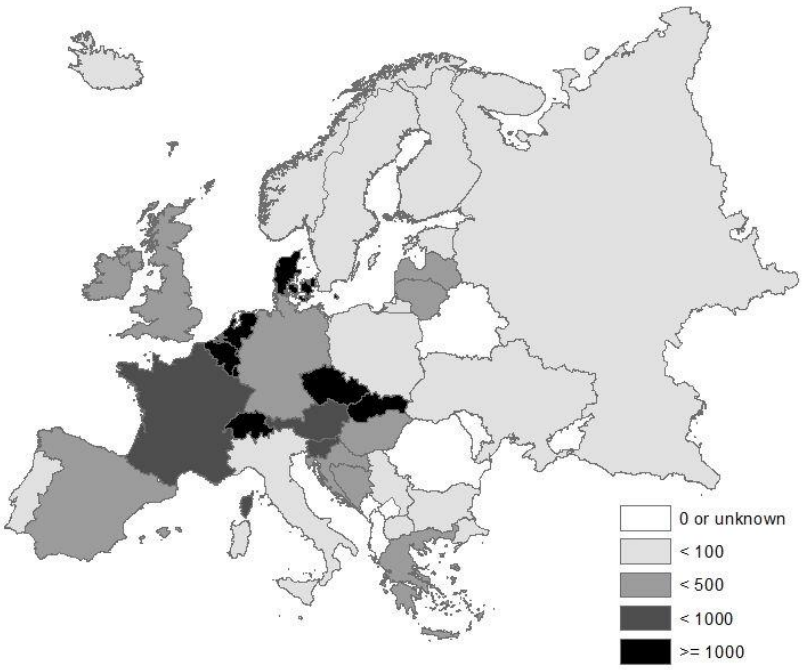

Figure 1. Estimated density of all existing vegetation plots per 1000 km^2 in European countries (from Schaminée et al. 2009).

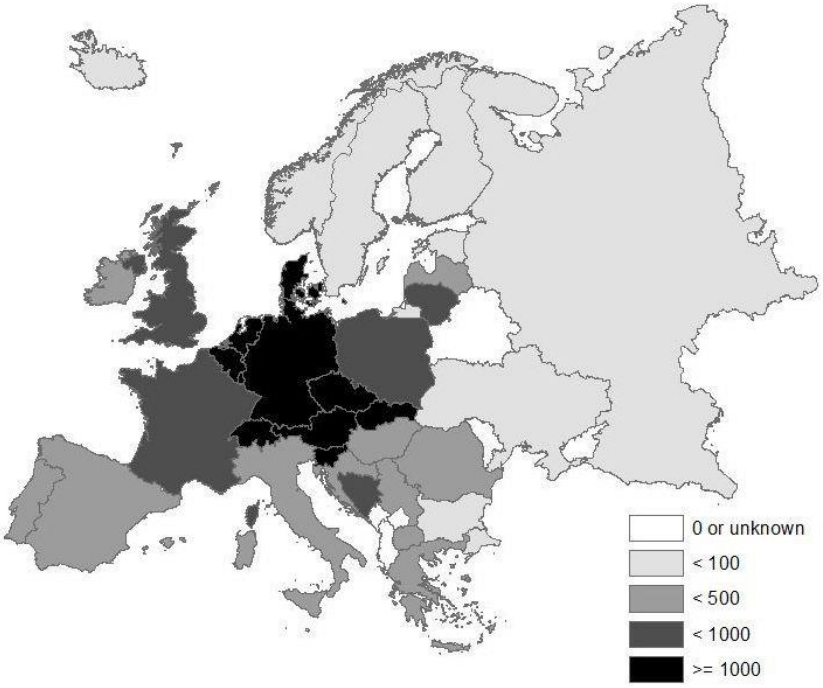

Figure 2. Estimated density of computerized vegetation plots per 1000 km^2 in European countries (from Schaminée et al. 2009).

Three basic strategies are used here to assess the trends of vegetation change based on vegetation plots. The advantages and disadvantages will be assessed in the following paragraphs (3.2-3.5):

- comparison of old and new records from permanent plots;
- repeated sampling at the sites of historical phytosociological plots;
- comparison of large sets of old and new phytosociological plots from the same general area but different sites.

3.2 Common advantages and disadvantages of all three groups of methods

Major advantage of all three groups of the methods is that they deal with a fine-scale change in biodiversity. They include recording of full species composition of plant communities, which can be used for assessment of changes in occurrence or performance of individual species, target species groups (e.g. Red List species, alien or invasive species), general indicators of diversity (e.g. species richness, diversity indices), parameters related to ecosystem services (e.g. vegetation cover) and change in vegetation or habitat types. They can also be used for bioindication, for example using Ellenberg indicator values (Ellenberg et al. 1992). These values express the average realized niches of species along seven gradients (light, temperature, continentality, soil moisture, soil reaction, nutrient and salinity). They can indicate changes in these factors, thus providing better insight into the drivers that could have forced the observed changes, in addition to looking at the changes in species composition (e.g. Chytrý & Danihelka 1993; Schaminée et al. 2002; Kuiters et al. 2009; Smits 2010). In many contexts, these advantages make studies based on permanent plots superior to other approaches such as remote sensing, which does not contain fine-scale biodiversity information at the species level.

A common disadvantage of assessing vegetation change from vegetation plots is observer bias. Very often old and new sampling is done by different researchers, especially if the period elapsed from the first sampling is longer. It is well-known that involvement of different researchers may generate certain differences between the old and new vegetation samples which are not real, but result from different skills and experiences of researchers (Lepš & Hadincová 1992; Klimeš et al. 2001; Vittoz & Guisan 2007). In particular the estimates of species cover may vary greatly among observers (Klimeš 2003) or depending on the time of the season when the sampling was done (Vymazalová et al. 2012). However, some studies show that in certain cases presence/absence of species may represent vegetation change equally well as data containing species abundances (Wilson 2012).

3.3 Comparison of old and new records from permanent plots

Permanent plots are accurately marked plots in which plant species composition has been sampled repeatedly over a period of time, at least twice (Smits et al. 2002). Some European countries possess quite extensive sets of permanent plots. For example, in The Netherlands more than 6,000 permanent plots have been established across the country during the 20th century, mostly in grasslands, forests and on dunes, with 40% of these plots sampled five times and 25% at least ten times (Smits et al. 2002). Within the Ecological Monitoring Network, the Dutch government has now established a new network of 7000 permanent stratified-random plots to monitor effects of environmental change in semi-natural vegetation. In some parts of this country, permanent plots established in the 1970s with the aim of vegetation monitoring can be used for valuable analyses of vegetation change (de Snoo et al. 2012). In the UK, the Countryside Survey has provided regular analyses since 1978 of vegetation change in plots across the UK (Carey et al. 2008). The Floodplain Meadows Partnership possess many thousands of repeated records from permanent plots in a range of grassland types from 18 floodplains across England, which are successfully used to monitor the effects of variations in flooding regime from year to year (Gowing et al. 2002). Various types of permanent plots were also established at sites of ILTER (International Long-term Research Network; www.ilternet.edu). A phytosociological classification can provide a valuable sampling frame for locating permanent plots in a full range of vegetation types within which stratified random recording can be employed (Rodwell et al. 1993).

<u>Advantages</u>

- Very high spatial accuracy, usually given by fixed marking of the plot in the field, which guarantees that new and old records are from exactly the same place.

<u>Disadvantages</u>

- Permanent plots are much less numerous than phytosociological plots (Schmidt 1974, Bakker et al. 1996). While there are several millions of phytosociological plots, there are only tens of thousands permanent plots in Europe, which are strongly concentrated in some countries (e.g. The Netherlands; Smits et al. 2002) and certain vegetation types. Moreover, many vegetation plots established as permanent plots are no longer marked in the field and documentation on their exact spatial position is missing. Therefore permanent plots can be used for assessing vegetation change only in some regions and some vegetation types.

- Many permanent plots were established at sites where vegetation change had been expected, because their purpose was to document such change. The national inventory of permanent plots in the Netherlands (Smits et al. 2002) revealed that most plots were established with the aim of monitoring vegetation succession, vegetation change due to shifts in nature

management or ecological restoration measures, or to document the impact of major environmental transformations in the landscape. We are not aware of any comparable recent inventories of permanent plots from other countries, but earlier studies usually made a explicit link between permanent plots and studies of vegetation succession (Schmidt 1974). Examples for establishment of permanent plots listed by Bakker et al. (1996) indicate that the Dutch case is most probably very similar to situation in other countries, except for permanent plot networks established as a part of carefully planned national or regional monitoring programmes (Carey et al. 2008). Therefore, composite sets of permanent plots are clearly biased toward the sites where vegetation change is going on and the use of permanent plots for trend detection over large areas would clearly overestimate the actual vegetation change. To obtain unbiased results, only permanent plots established with no a priori expectation of vegetation change would have to be selected for the analysis, but this may result in very restricted data sets for some areas with a limited possibility of broader generalization of the results.

3.4 Repeated sampling at the sites of historical phytosociological plots

Historical phytosociological plots, if located with sufficient accuracy, can be revisited and resampled using the same field sampling protocols as used in the original sampling. Examples include repeated sampling of central and north-western European forests (Chytrý & Danihelka 1993; Hédl 2004; Baeten et al. 2009; Hédl et al. 2010; Lenoir et al. 2010), central European dry grasslands (Fischer & Stöcklin 1997; Török & Szitár 2010; Jírová et al. 2012; Wesche et al. 2012), vegetation of Finnish islands (Hannus & von Numers 2010), tundra in Greenland and on Jan Mayen Island (Daniëls et al. 2011; Kapfer et al. 2012) or British upland vegetation (McGovern et al. 2011; Ross et al. 2012). On the European scale, Verheyen et al. (2012) provided a meta-analysis of several studies of vegetation change in forests.

Advantages

- Phytosociological plots are the most common type of vegetation plots, recorded in nearly all vegetation types across Europe, although with varying density in different areas (Schaminée et al. 2009; Dengler et al. 2011, 2012).

- Phytosociological plots were established for a different purpose than documenting vegetation change. Therefore their sites were selected with no a priori expectation of future vegetation stability or change, which makes them good baseline data set for assessing mean changes occurring in the landscape and particular habitats.

Distadvantages

- Historical phytosociological plots are usually not permanently marked and the accuracy of their location varies. In particular, this holds true for the plots sampled before the use of GPS technology became common in fieldwork at about the year 2000. This may result in so-called pseudo-turnover, i.e. change in species composition due to shift in plot location rather than change in time (Fischer & Stöcklin 1997). However, many plots can be located with accuracy of a few metres and/or to the same vegetation stand as the original plot, especially if the historical documentation contains maps with an indication of plot locations. In addition, protocols used for repeated sampling can reduce the error in vegetation change assessment due to non-exact matching of the old and new plot site. In particular, it is recommended to sample several plots in the probable site of the historical plot and compare the variation in species composition among current plots with the mean difference between the historical plot and the current plots (Fischer & Stöcklin 1997; Hédl 2004; Ross et al. 2010). If species composition of the old plot falls within the range of variation in species composition of the new plots, it would indicate that probably no or insignificant change occurred over time. However, significant deviation of the old plot composition from the whole set of new plots would indicate a significant temporal change.

- Data from repeatedly sampled plots are few and existing studies are probably biased to the areas or vegetation types where a change was expected to occur and to be detected by resampling. To obtain unbiased data set, new field sampling at the sites of historical plots is necessary.

3.5 Comparison of large sets of old and new phytosociological plots from the same area but different sites

Large vegetation-plot databases contain both historical and recent phytosociological plots from the same vegetation types and the same areas, though rarely from exactly the same locations. Some studies have attempted to compare large sets of phytosociological plots from the same area and vegetation type but different periods to assess vegetation change (Schaminée et al. 2002; Haveman & Janssen 2008; Bertrand et al. 2011; Jandt et al. 2011; Bodin et al. 2013).

Advantages are the same as for repeated sampling of phytosociological plots (see above). In addition:

- Old and new phytosociological plots are readily available in vegetation-plot databases for many European countries and many vegetation types.

Disadvantages

- Old and new phytosociological plots are from different locations, therefore some proportion of the difference between the sets of old and new plots

can be due to their different spatial position rather than a vegetation change over time. Haveman & Janssen (2008) demonstrated that geographically stratified resampling of the data set can change the results of the analysis (probably by decreasing the difference between old and new plots due to spatial mismatch), but the size of the relative effect of spatial difference on the results still remains unknown and it cannot be entirely separated out from the data.

- Data sets of phytosociological plots from different periods can also be affected by changes in sampling strategy over time. Over the history of phytosociology, there has been a clear tendency to focus field sampling on those areas or vegetation types that have been neglected or poorly documented in the previous periods (Chytrý & Rafajová 2003; Schaminée et al. 2012). Therefore there is a high probability that phytosociological data sets from one period will contain predominantly plots from different areas or different vegetation (sub)types than those from another period. Thus a significant but unknown proportion of the differences between the old and new data sets can be due to changes in sampling strategy rather than real vegetation change over time (see example in Fig. 3).

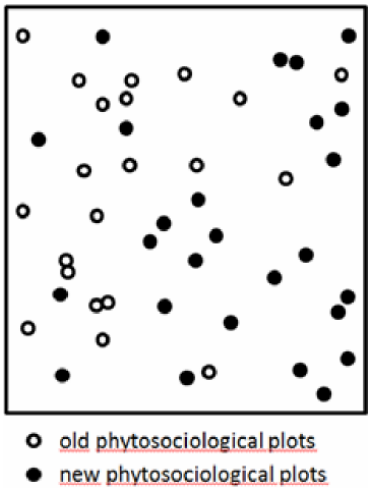

Figure 3. Conceptual representation of the bias in the comparisons of large sets of old and new phytosociological plots from the same area but collected in different sites. The box represents a map of an area with positions of old and new phytosociological plots (open and black circles, respectively). Older sampling focused mainly on the upper and left part of the area, while new sampling mainly on its lower and right part (more recently phytosociologists preferably sampled areas with existing gaps). If there are differences in vegetation between the upper left and lower right part of the area (e.g. due to slight environmental differences), the results of a comparison of old and new plots will partly reflect vegetation changes in time and partly differences in vegetation between different parts of the area. Unfortunately, with such data it is not possible to quantify relative proportions of vegetation differences due to space and time.

3.6 Methodological study to quantify the error in comparisons of old and new phytosociological data sets

A comparison of old and new sets of phytosociological plots is a possible way of analysing vegetation change over time, which may use large amounts of such data stored in electronic databases, which cover large part of Europe and most of its vegetation types. However, such comparisons can be strongly biased by spatial mismatch between old and new plots and changes in sampling strategy over time (Fig. 3). The purpose of this study is to test the relative effect of spatial mismatch on the results of the analysis of temporal change, with sampling strategy being constant over time.

Method: For testing, we used four sets of permanent plots or repeatedly sampled phytosociological plots, each with two records made in different time periods (Fig. 4):

- Dutch acidophilous oak forests: 365 permanent plots of the *Quercion robori-petraeae* alliance from across the Netherlands sampled in 1999-2003 and resampled in 2006-2010. These plots are part of a network of about 10,000 permanent plots setup in the Netherlands (CBS 2010).

- Czech mountain bogs: 51 permanent plots from the Hrubý Jeseník and Jizerské hory Mountains sampled in 1991-1994 and resampled in 2005-2008 (Hájková et al. 2011).

- Czech oak-hornbeam forests: 46 phytosociological plots from Milovice Wood in the SE Czech Republic sampled in 1953-54 and resampled in 1992 (Chytrý & Danihelka 1993).

- Dutch dune slacks: 90 permanent plots of coastal dune slack grasslands with scattered bushes of Salix repens from Oostvoorne sampled in 1965-1974 and resampled in 1979-1988 by Dick van der Laan (unpublished).

For each of these four data sets, records from old and new plots together were subjected to ordination (principal components analysis applied to Hellinger distances of square-root transformed species covers; Legendre & Legendre 1998; Legendre & Gallagher 2001) using the R program and its libraries vegan and labdsv (R Development Core Team 2012). In the ordination diagram, old and new records from each plot were connected by arrows, pointing from the old to the new record, and the set of all arrows was represented by a single arrow of mean length and direction plotted on the ordination diagram to represent the mean change of species composition between old and new records.

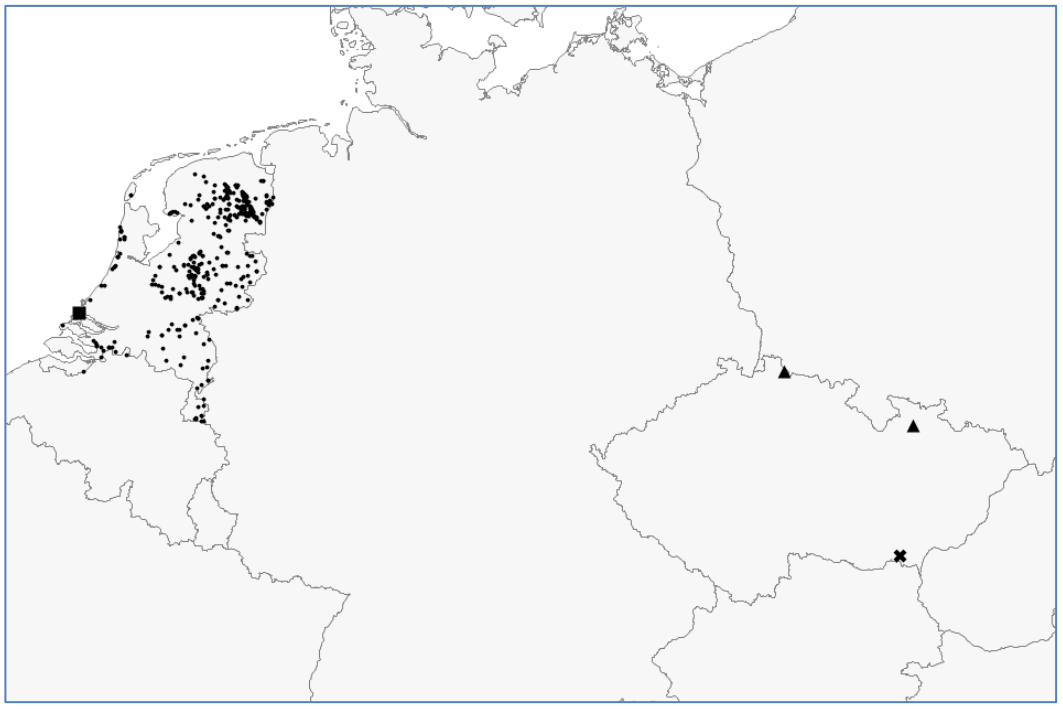

Figure 4. Geographical location of the four datasets used for the methodological study to quantify the error in comparisons of old and new phytosociological data sets. The dots represent the Dutch acidophilous oak forests plots, rectangles the Czech mountain bog plots, the cross the Czech oak-hornbeam forests plots, and the square the Dutch dune slacks plots.

Subsequently, subsets of half of the plot observations from each data set were generated to represent (a) a reference data set of permanent plots or repeatedly sampled phytosociological plots and (b) a database of phytosociological plots in which old and new plots were sampled at different sites (Fig. 5). In case (a) old and new records of half of the plots of the original data set were randomly selected and deleted. The other half of the plots was represented in the data set by both old and new records. This procedure was repeated 100 times with different random divisions and resulted in 100 data subsets with a structure typical of permanent plot data or data from repeatedly sampled phytosociological plots. In case (b) the plots were also randomly divided into two halves: in the first half, all old records were retained and all new records deleted, and in the second half, old records deleted and new retained. In such a way, each plot was represented in the data set only once, by either old or new record. This procedure was also repeated 100 times, resulting into 100 data subsets with a structure typical of a database of phytosociological plots, but because random division of the plots was used, there was no bias of the type demonstrated in Figure 1.

Ordination as described above was applied to each of these 200 data subsets. Using Procrustes analysis (R program, library vegan), the point pattern from each of these 200 ordinations was placed on the ordination diagram of the original data set, using rotation and dilatation or constriction, so as the plot positions in the subset ordination were as close as possible to the positions of

the same plots in the ordination of the original data set. For each subset ordination, a green point was plotted on the graph in the tip of the arrow that represented the summary change from the old to the new records (the beginning of the arrow is in the same position as that of the arrow from the ordination of the original data set).

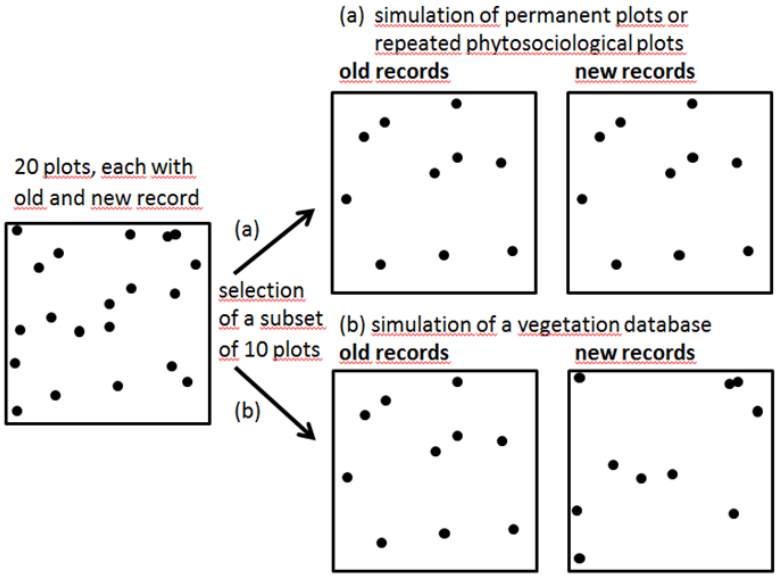

Figure 5. Conceptual representation of subset selections from the initial set of 20 plots, each with old and new record: (a) simulation of a data set of permanent plots or repeated phytosociological plots, in which old and new records are from the same plot; (b) simulation of a vegetation database, in which old and new records are from different plots.

Results: The results are represented in ordination diagrams (Figs. 6-9), which contain the positions of individual vegetation-plot records (small black dots) and the arrows representing general vegetation change averaged over the whole data set. The green arrow represents the analysis of the full data set of permanent plots or repeatedly sampled phytosociological plots, i.e. actual vegetation change. 100 green dots in each diagram represent tips of the arrows based on individual subsets; each of these arrows begins in the starting point of the green arrow. Concentration of all the green dots near the tip of the green arrow means that subsets indicated a similar direction and magnitude of vegetation change as the original data set. In contrast, green

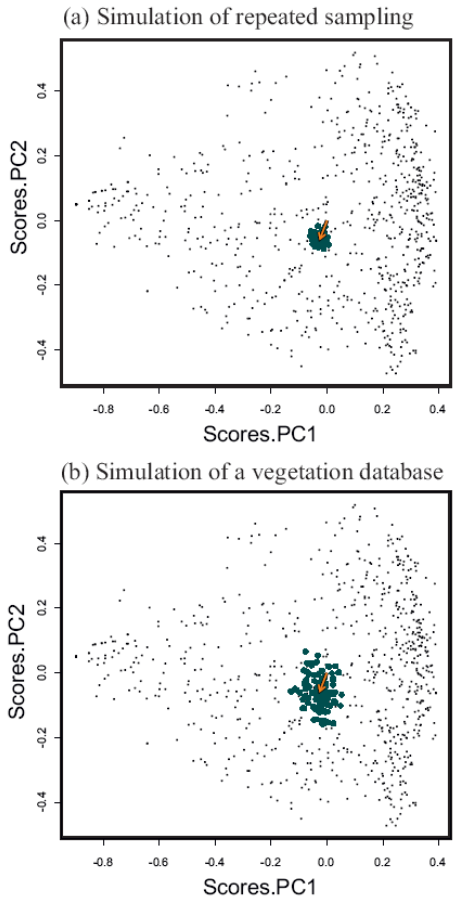

Figure 6. Ordination diagrams showing the results of simulated analyses of vegetation change in a set of repeated plots from the ***Dutch acidophilous oak forests*** *(a) and in a set of old and new phytosociological plots from different sites, generated from the same data set (b). Real vegetation change is indicated by an arrow, while changes detected from simulated data sets are indicated by green dots, each of them representing a tip of an arrow which starts at the starting point of the green arrow shown on the graph. Small black dots indicate individual plot records, both old and new. The analysis shows a moderate vegetation change, which is detected erroneously based on some data sets of old and new phytosociological plots.*

dots that are in a distance from the tip of the green arrow indicate that some subsets erroneously suggested vegetation change of different direction or magnitude than the original data set.

The results were similar for Dutch acidophilous oak forests (Fig. 6) and Czech mountain bogs (Fig. 7). In both cases, similar direction and magnitude of change between old and new records was detected in all data subsets simulating permanent plots (or repeated sampling of phytosociological plots; simulation a). In the subsets that simulated a database of unrepeated vegetation plots (simulation b), similar change as in permanent plot data set was indicated in most cases, but in several cases the direction or magnitude of change was different, and in a few cases even opposite to that detected for a database of permanent plots.

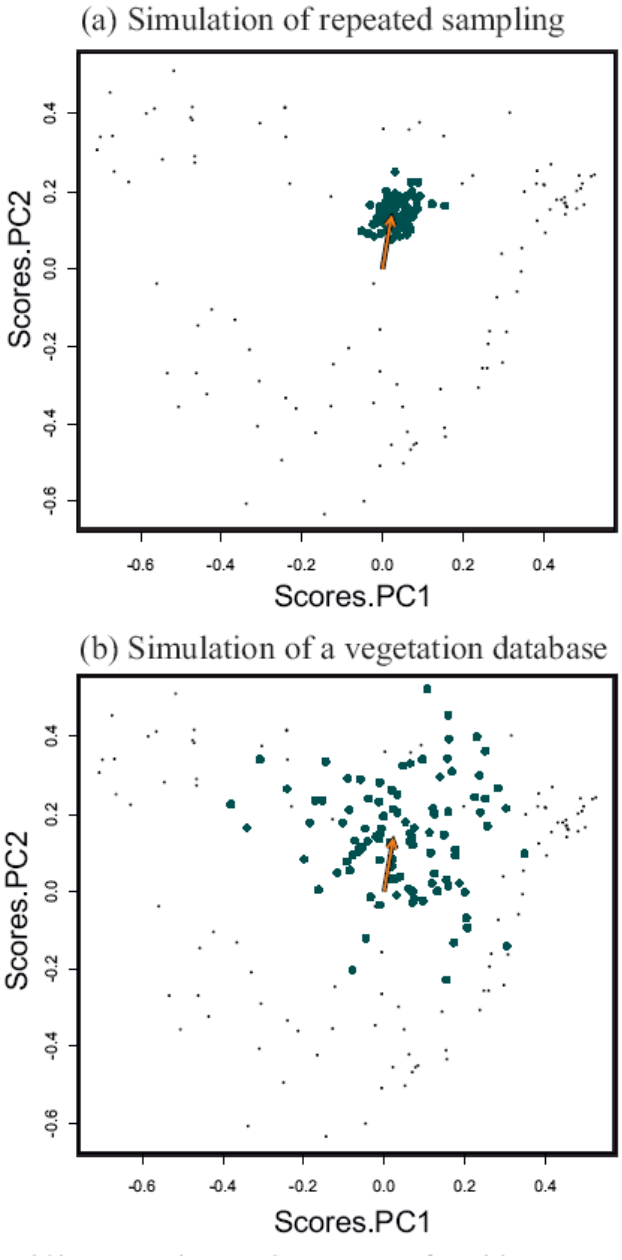

Figure 7. Ordination diagrams showing the results of simulated analyses of vegetation change in a set of repeated plots from the ***Czech mountain bogs*** *(a) and in a set of old and new phytosociological plots from different sites, generated from the same data set (b). See Fig. 6 for further details. The analysis shows a moderate vegetation change, which is detected erroneously based on some data sets of old and new phytosociological plots.*

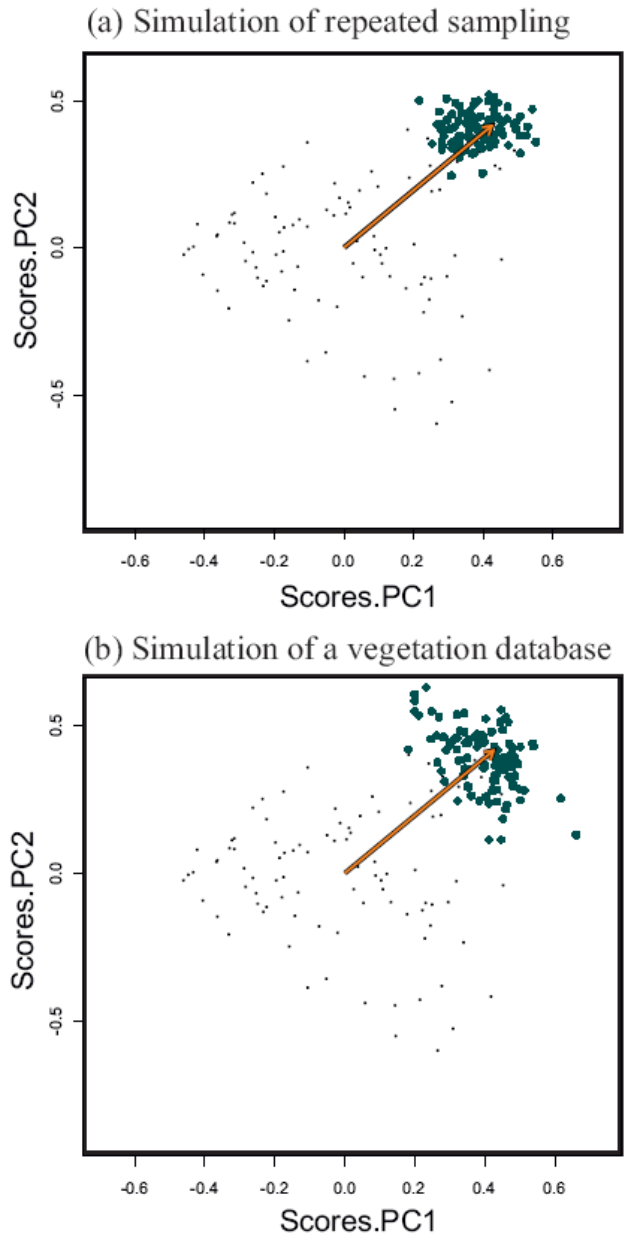

Figure 8. Ordination diagrams showing the results of simulated analyses of vegetation change in a set of repeated plots from the ***Czech oak-hornbeam forests*** *(a) and in a set of old and new phytosociological plots from different sites, generated from the same data set (b). See Fig. 6 for further details. The analysis shows a strong vegetation change, which is reasonably well detected by all vegetation data sets.*

For Czech oak-hornbeam forests (Fig. 8), the magnitude of change was large, because a game preserve with high densities of ungulates was established in the area between old and new sampling, leading to a dramatic vegetation change. In this case, very similar direction and magnitude of change was detected by subsets of both repeated and non-repeated plot observations.

For Dutch dune slacks (Fig. 9), the direction and magnitude of change were very variable in different subsets with repeated plots (simulation a). This indicates no consistent trend of temporal change in this vegetation type. Naturally, the variation in direction and especially magnitude of change was larger among the data subsets with non-repeated plots (simulation b).

We ran this analysis also with the data on presence/absence of species (i.e. disregarding species cover information), but the results were very similar in all data sets and general trends were the same (not shown).

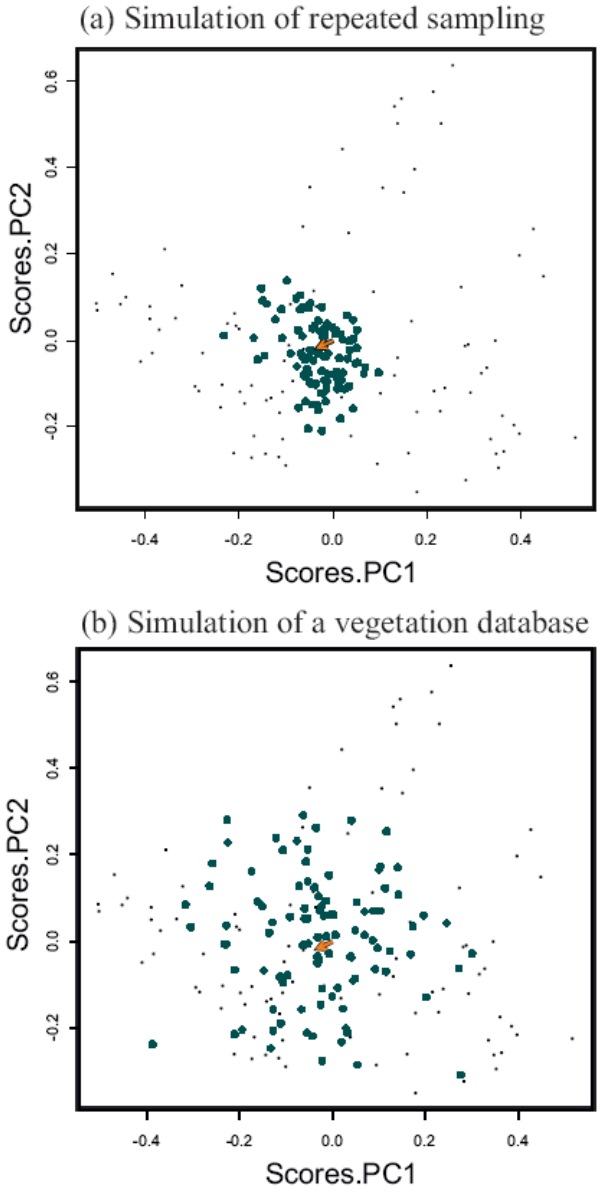

*Figure 9. Ordination diagrams showing the results of simulated analyses of vegetation change in a set of repeated plots from the **Dutch dune slacks** (a) and in a set of old and new phytosociological plots from different sites, generated from the same data set (b). See Fig. 6 for further details. The analysis shows a minor and inconsistent vegetation change, therefore each data set indicates different magnitude and direction of the change.*

Interpretation: This case study shows that comparisons of old and new phytosociological data sets from the same area but using different plots may correctly detect the real vegetation change, especially if this change was strong and occurred over the whole or most of the study area, such as in the data set of Czech oak-hornbeam forests. However, if the change is moderate and does not occur consistently over the whole or most of the study area, some data sets can provide erroneous results, indicating a different magnitude and direction (in some cases even the opposite direction) of vegetation change than has actually occurred. These errors are due to different spatial location of old and new plots. Larger number of plots does not

guarantee a more reliable result of the analysis. In this study, we tested only the error due to different spatial positions of old and new plots, but we did not include the effect of change in sampling strategy over time. In this respect, these studies were similar to studies from repeated stratified inventories such as the French National Forest Inventory (Bertrand et al. 2011; Bodin et al. 2013) rather than typical vegetation databases, which probably often include this kind of bias. If so, the error in the analysis may become much larger than if only different spatial location would affect the results. Based on the experience from this study, we do not recommend the use of the comparisons of old and new phytosociological data sets from different sites to detect vegetation change. However, as some studies following this approach show, it can be used to generate hypotheses about possible vegetation change (Schaminée et al. 2002).

3.7 Conclusions

This discussion paper and associated case study evaluated the use of different types of vegetation plots and different data analysis strategies for the assessment of trends of vegetation change. Based on this experience, we draw the following conclusions and recommendations:

1. Vegetation data from permanent plots are the most reliable existing source of information on past vegetation change, but only if they were established with no intention to document a specific type of expected vegetation change. Unfortunately, such data from permanent plots are few and concentrated in few countries/regions and few vegetation types. Therefore they do not enable comprehensive analyses of recent vegetation change across large areas in Europe. However, for assessment of future vegetation change, the establishment of permanent plot networks should be a preferred option. Spatial arrangement of plots in such networks should be done according to the statistical plans based on landscape and habitat stratification (e.g. stratified random sampling), following an example of established programmes such as the British Countryside Survey (Carey et al. 2008).

2. Repeated sampling of historical phytosociological plots is the most powerful method for detecting past vegetation change which has occurred between specific periods in the past and the present. Some studies applying this approach are available from different parts of Europe and different vegetation types, but many more studies can be done with the use of historical phytosociological plots available in European vegetation databases. These plots cover different areas, different habitats and different periods in the past, therefore the analyses can be rather comprehensive on the European scale. The system of phytosociological syntaxa, or the EUNIS classification system linked to syntaxa, and distribution information for syntaxa contained in

European vegetation databases can be used to stratify repeated sampling to cover all the representative European regions and habitats. However, this approach would involve new fieldwork to obtain new records at sites of historical phytosociological plots.

3. Comparisons of old and new phytosociological plots are affected by spatial mismatch between the old and new plots and by changing sampling strategies over time. Therefore in some cases they may erroneously indicate different or even opposite vegetation change than has actually occurred. The results of such studies must be interpreted with utmost caution and verified by independent studies based on repeated sampling or permanent plots. However they may still be useful for generating hypotheses about what kind of change may have occurred, but such hypotheses must either be treated as mere hypotheses (not interpreted as facts) or further tested using reliable methods and data, if available.

4. For monitoring past (including recent) vegetation change, historical reference data are needed. Of these, data from permanent plots that were established without anticipation of specific vegetation change or data from revisitation studies of phytosociological plots are preferable to comparison of old and new plots from phytosociological databases. To make use of historical data on the European scale, the following steps might be taken:

- To perform a critical review of existing studies from the literature that analysed vegetation change using historical data in different regions and different habitats. There are several dozens or perhaps hundreds of such studies, but most of them are from north-western and central Europe. Also, the approaches used in the literature are not standardized and individual studies focus on different facets of vegetation/habitat change, and sometimes on very specific processes. Examples of such studies are cited in this report.

- To launch a project that would deliver an inventory of existing (and still marked) permanent plots or repeatedly sampled phytosociological plots across Europe. Such a project would require participation of representatives from individual countries, particularly managers of national vegetation databases, who have relatively easy access to such data. The national inventory of permanent plots done in the Netherlands (Smits et al. 2002) can be used as an example. If such data were collected, trends of vegetation change at the European scale could be assessed, though with some limitations such as unbalanced representation of such data across Europe (again, concentration in north-western and central Europe, lack of data in northern, southern and eastern Europe).

- To launch a project aimed at revisitation of a stratified subset of selected historical phytosociological plots. Historical phytosociological plots are available in European vegetation databases (Schaminée et al. 2009;

Dengler et al. 2011, 2012) and are sufficiently abundant to cover the whole of Europe with a representative sample. Stratification can be done using European biogeographical regions or existing environmental strata (Metzger et al. 2005; Mücher et al. 2010) on the larger scale, and within EUNIS habitats on the smaller scale. The newly developed crosswalk between syntaxa, used for coding vegetation plots in the databases, and EUNIS habitat types can significantly facilitate such a stratification and selection of plots for revisitation.

5. For monitoring future vegetation change, the best strategy is the establishment of a network of permanent plots, with a spatial arrangement stratified to represent all the regions and all major habitats of Europe. No consideration of the expected future change or stability at particular sites should be taken into consideration when establishing such a network. Experience from the established monitoring programmes such as the British Countryside Survey (Carey et al. 2008) should be used. Again, landscape stratification existing on the European scale (Metzger et al. 2005; Mücher et al. 2010), combined with the fine scale stratification based on the EUNIS habitat types, should be used for preparation of stratified random plan of spatial arrangement of permanent plots. The optimal approach would be establishment of permanent plots at sites of appropriate historical permanent or phytosociological plots, because in such a case assessment of past vegetation change with monitoring of future vegetation change could be realized within a single framework.

4 Next steps

With revising the crosswalks between the EUNIS-3 habitat classification – terrestrial and fresh water – and the phytosociological syntaxa (Chapter 2), and assessing the advantages and disadvantages of different strategies to the analysis of trends in vegetation changes based on vegetation plot records (Chapter 3), we hope to have strengthened the scientific basis for European nature and landscape policy. For the near future, we consider three possible next steps to be undertaken, which can be seen as recommendations for the European Environmental Agency and the European Commission.

1. The crosswalks reveal that phytosociological syntaxa could help to characterise (even redefine) the existing EUNIS-3 units more precisely in terms of their geographic, physiognomy, floristic and environmental parameters as well as define new EUNIS-3 units where omissions are obvious.

2. The trend analysis makes clear that the best strategy for monitoring future vegetation change would be the establishment of new permanent plots, stratified spatially according to phytogeographic regions and habitat types. For setting up the network, historical (incidental and repeated) vegetation plot data can be used as a guideline. Historical plots can also be used for assessing recent vevegation change by repeating sampling (see Paragraph 3.7).

3. The syntaxa overview at the level of alliances, cross-walked with EUNIS, should be populated with data from actual locations, widely available in phytosociological databases throughout Europe. The resulting synoptic tables will offer a wide variety of applications.

To underpin the vegetation types with floristic data, a two-step approach should be followed. In the first step, synoptic tables for all 1,028 alliances of European vegetation would be compiled using input both from literature and electronic sources. The resulting table-based synopsis would provide a provisional overview of the species composition of all alliances and higher syntaxa throughout Europe. In the second step, the assignment of single relevés to syntaxa would be carried out by means of identification software (e.g. Van Tongeren et al. 2008). This procedure would not only improve the content of each individual syntaxon (at the level of alliance, order and class), but also open the possibility of evaluating the distribution of these vegetation units, as many of the phytosociological relevés are georeferenced. It would offer the possibility of compiling country-based distribution maps for syntaxa and (by cross-walking) of EUNIS habitat types, and ultimately grid-based distribution maps (see Figure 4.1). This coincides with the objectives of the European Vegetation Survey (EVS) and the ambition to set up a European Vegetation Archive (EVA) for the storage of the more than 4.2 million vegetation plots which have been recorded during the last century in Europe

(Paragraph 2.1; Schaminée et al. 2009). The EVS network could be consulted by specific questionnaires to improve the distribution maps. For the purpose of management and evaluation, the information would be stored in SynBioSys Europe (Schaminée et al. 2007). As indicated earlier in Paragraph 2.1, this information system, connected to web-based databases, allows the management, evaluation and spatial analysis of vegetation data, on the level of the plant community itself, but also in relation to plant species and landscapes.

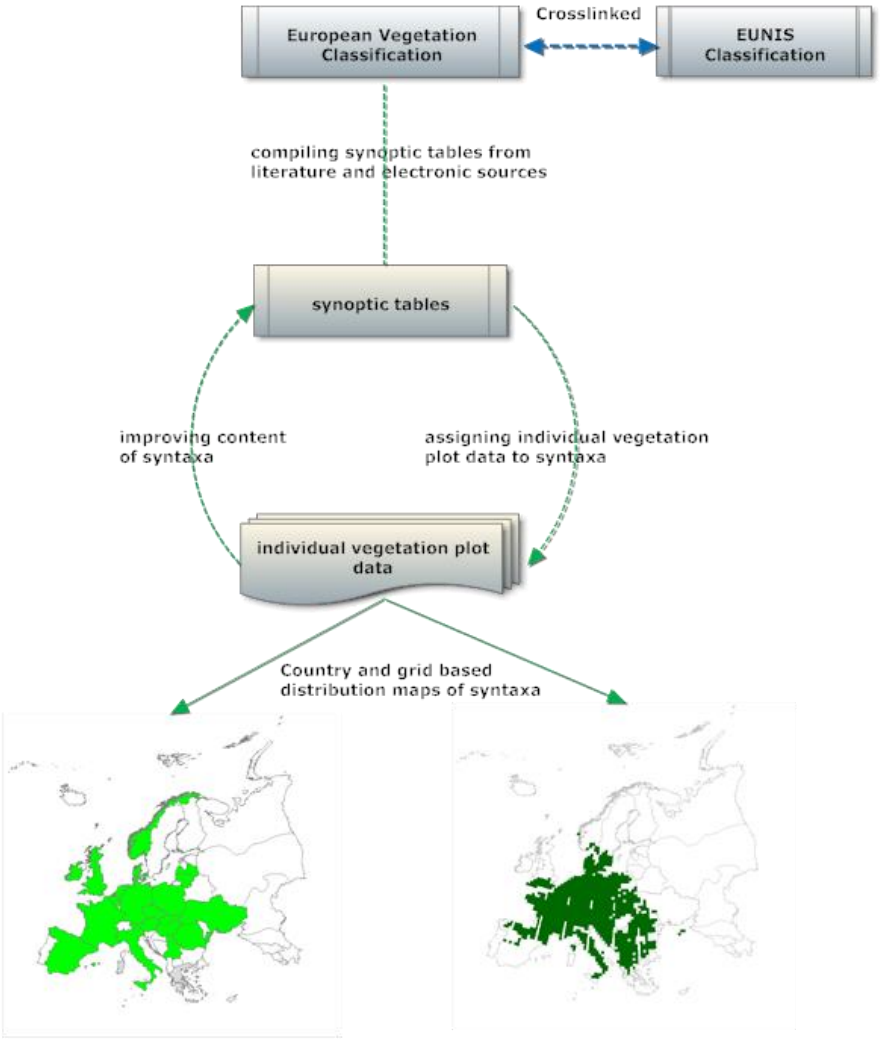

Figure 4.1. Work flow chart showing the usage of vegetation data to embody the European Vegetation Classification and the associated EUNIS classification, resulting in an improved classification system and distribution maps for syntaxa and EUNIS-3 habitat types. A synoptic table (constancy table, frequency table) is a summary of a set of individual vegetation plots of a specific syntaxon or plant community, showing the floristic composition of the vegetation unit as well as frequency of each species.

4.1 Examples of application

To illustrate the importance of grounding the syntaxa overview with actual vegetation observations from the field, four examples are presented, dealing respectively with the The Map of the Natural Vegetation of Europe, the Red List Assessment of European habitat types, European Forest ecosystems, and Ecosystem Mapping and Assessment.

The Map of the Natural Vegetation of Europe: For landscape planning and landscape management the spatial configuration of habitat types has proven to be of great value (Chytrý 1998). Mapping of habitat types is generally based on vegetation classification and related vegetation mapping, but at larger spatial scales (such as for Europe) this is not feasible since there are too many different vegetation units often spanning the entire range from initial to mature successional stages. As a solution for this the concept of potential natural vegetation (PNV) was developed by Tüxen (1956). Various PNV maps that were constructed at the national level formed the basis for and culminated in The Map of the Natural Vegetation of Europe (Bohn et al. 2000-2004). More than 100 geobotanists from 31 European countries cooperated in this project, both in developing the legend and composing the explanatory text.

The Map is available as 9 sheets at a scale of 1:2,5 million and as an interactive CDrom. The legend is built-up of different hierarchical levels, comprising 19 major formations and 700 mapping units. Each mapping unit, representing specific landscape types is documented by a general description and information on composition and structure of the main natural vegetation types, on distribution, ecology, land use, landscape pattern, actual plant communities, and nature conservation. The background data from each country list the local equivalents for each mapping unit and replacement vegetation under different management, often classified as phytosociological syntaxa (eg. Rodwell & Winstanley 1995). Applications of the Map for scientific and policy purposes are multifarious (Bohn et al. 2005) and include its value for the delivery of the Natura 2000 network (Evans 2005). The 700 mapping units would gain huge expressiviness by systematic cross-walking to alliances and EUNIS habitats and by populating the constituent vegetation units with actual vegetation data. This will best be accomplished within SynBioSys where the Map of the Natural Vegetation of Europe is already used as a basis for the landscape level of the information system.

Red Lists Assessment of European habitat types: Key questions for Red List assessment of species assemblages are what typology should be used for the units of assessment and over what scale the assessment should be conducted, whether by country, by region or internationally. So far, such Red List assessments have used either phytosociological frameworks of alliances or plant associations, classifications of habitats or biotopes of some kind or ecosystem typology. The first approach has been so far the most frequent

across Europe, both within and beyond the EU, with numerous published volumes and unpublished reports. Projects using the habitat approach have been less numerous but have gained purchase on EU environmental policy frames through reference to CORINE biotopes or EUNIS habitats. An ecosystem approach, being at present promoted by IUCN, has gained most support outside Europe where landscape variation is of continental scale, less complicated by cultural interaction and where the tradition of scientific perception is more attuned to large-scale patterns and responsibilities.

A parallel feasibility study on Red List Assessment in Europe for DG Environment, in which two of the present authors (John Rodwell & Joop Schaminée) are involved, suggests that the mid-scale of habitats is the most practicable typology for Europe and that the EUNIS Habitat Classification has the great advantage of providing a single framework for the marine as well as the terrestrial and freshwater realms. It is moreover fully compatible with the typology of the MAES (Mapping and Assessment of Ecosystems and their Services) refinement of the EU 2010 Biodiversity Baseline.

The Crosswalk between EUNIS-3 and phytosociological syntaxa for vegetated habitats (documented, as indicated, with synoptic tables and their species assemblages) enables the EUNIS typology to be interpreted locally by an extensive international community of practitioners already skilled in the recognition of species assemblages in their own territories, interested in Red List evaluation and often familiar with Conservation Status Assessment (Article 17 reporting). Agreement on Red List criteria and thresholds could therefore enable country evaluations for different alliances to be more readily equilibrated and combined within EUNIS-3 habitats extending across whole biogeographical regions or occurring internationally. This would also have the virtue of reinforcing concern for the status and condition of habitats outside the frame of Annex I of the Habitats Directive.

European Forest ecosystems: In Europe, progress towards Sustainable Forest Management (SFM) is periodically monitored through the set of 35 pan-European indicators endorsed under the FOREST EUROPE process. The next State of Europe's Forest will be published in 2015 and is expected again in 2020. Seven indicators have been reported by forest types based on national data.

The European Forest Types (EFTs) were developed by an international consortium (and published by the EEA as a Technical report; Barbati et al. 2006; see also Barbati et al. 2007) and a pilot reporting exercise using these was conducted for the latest State of Europe's Forests (SoEF 2011). The 2006 EEA publication does give EUNIS equivalents for each EFT class (eg. EFT 6.2 Hemiboreal forest and nemoral coniferous and mixed broadleaved coniferous forest = EUNIS G4.3 Mixed sub-taiga woodland with acidophilous oak) although there is no table giving the full crosswalk or links from EUNIS to EFT.

The application of the EFTs aimed at improving the reporting of complex data into logical, understandable and ecologically relevant units, at having the

potential for better integrating forest data in a wide range of policies (e.g. policies concerning land-use planning, environment, climate, biodiversity, agriculture or water), and having the potential to be used in assessing climate change effects on forest ecosystems, including biodiversity. These aims would serve to further harmonise European forest monitoring activities.

The need for an improved classification was already expressed by the Ministerial Conference in Vienna 2003 to replace the currently applied system for the time being. The current classes are defined e.g. by the TBFRA-2000 terms and definitions: (1) Predominantly broadleaved: Forest in which more than 75% of the tree crown cover consists of broadleaved species; (2) Predominantly coniferous: Forest in which more than 75% of the tree crown cover consists of coniferous species; (3) Mixed: Forest in which neither coniferous, nor broadleaved, nor palms, bamboos, etc. account for more than 75% of the tree crown area.

This classification system application is relatively straightforward, as practically all countries have information about the distribution of their main tree species, either from sample surveys or from some kind of full-cover mapping. However, the Vienna Resolution 4 contains a commitment to "…contribute to harmonised international classification systems through developing a pan-European understanding on forest classification systems including forest types, naturalness and introduced forest species". Although the three forest types adopted so far represent a feasible system to standardise forest information on a global level, they will hardly serve the European requirements for the interpretation of SFM indicators. Within the vast European forest area, FOREST EUROPE indicators show a considerable range of variation, due to natural conditions and past and present anthropogenic influences.

In general the countries are positive about the outcome of the pilot classification by EFT. However this classification can be demanding resource-wise. All EU countries are already applying EUNIS and Annex I framework on habitats for the reporting to the Habitats Directives and are thus reluctant to apply one more classification system. At two recent meetings of the Advisory Group of the next FOREST EUROPE Reporting 2015 and a meeting on EFTs at the UNECE/Timber Section in Geneva (which included representatives of FOREST EUROPE), the future reporting of the 7 indicators by EFTs was seen to depend on the existence of a crosswalk from EUNIS to the EFTs. There is thus a need to test the feasibility (including reliability) of such a cross-walk. The collection of data for the next SoEF2015 will start already in 2013. It is thus very unlikely that the 2015 reporting will include the EFTs. However, there is a willingness to apply a more elaborated forest type classification if it is shown to be robust, reliable, not requiring new measurements and making use of existing European forest type classifications like aggregated EUNIS or Annex 1 for forests. In this respect, again, the European overview of syntaxa, supported by the proposed set of synoptic tables, could be of great value.

Ecosystem mapping and assessment: The European Environment Agency aims to support the EU biodiversity strategy to 2020 (Target 2 Action 5) by providing a conceptual framework for ecosystem mapping and assessment and proposing ecosystem status indicators. According to the Strategy, Ecosystem mapping and assessment will provide reliable information for identification of Europe's ecosystems to be part of Green Infrastructure or to be restored (15% target). Ecosystem mapping and assessment will be directly linked to the approaches of Ecosystem Services Mapping (ESS) and Ecosystem Capital Accounts (ECA). The framework will address: (1) Ecosystem structure, by mapping of their biophysical delineation and health, and (2) Ecosystem functions, as predisposition to deliver ecosystem services).

Ecosystem classification will be based on EUNIS, taking into account mapping feasibility at a European scale and – at the same time – remaining compatible with national mapping approaches. From an operational point of view, it will apply regular mapping exercises, like CORINE Land Cover, and reporting data flows, such as Natura 2000 (Art. 17). EEA initial considerations and proposals for ecosystem mapping were submitted to the MAES group. As the prime goal is to map spatially delineated ecosystems, the only European wall-to-wall spatial dataset (CORINE Land Cover, CLC) was taken as a base. As CLC represents only land cover, EEA tried to apply EUNIS classification to reclassify CLC classes into EUNIS habitat/ecosystems (level 1) following EUNIS 2004 reporting and EUNIS-CLC crosswalks (eea.europa.eu). Whilst reclassifying to EUNIS 1 proved to be quite simple and straightforward, breakdown to level 2 or 3 (following EUNIS criteria) requires additional considerations and spatial data. An outline was drafted for reclassification to EUNIS 2 based on modelling physical conditions of the locality (stand) by applying for e.g. biogeographical regions and altitude. However, going further into level 3 would require referring to direct information on vegetation.

It might be obvious that information on syntaxa (and the Syntaxa to EUNIS-3 crosswalk) will complement the present top-down modelling approach with bottom-up information based on ground truthing, especially when these syntaxa are supported by existing synoptic tables and individual vegetation plot data. Furthermore, the EEA is currently running two supporting projects for Global Monitoring for Environment and Security (GEMS, the European Programme for the establishment of a European capacity for Earth Observation): GMES In-situ data and GIO land. Again, mapping (for validation) and consequent assessment would benefit from access to real ground data on vegetation.

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6 Appendices: relationships between high-level European syntaxa (EuroVegChecklist; Mucina et al. in prep., version 15 June 2012) and European habitat classification (EUNIS)

Appendix A: Crosswalk EUNIS to syntaxa

Appendix B: Crosswalk syntaxa to EUNIS

APPENDIX A: Crosswalk EUNIS to syntaxa

A - Marine habitats
- A1 - Littoral rock and other hard substrata
  - A1.1 - High energy littoral rock
  - A1.2 - Moderate energy littoral rock
  - A1.3 - Low energy littoral rock
  - A1.4 - Features of littoral rock
- A2 - Littoral sediment
  - A2.1 - Littoral coarse sediment
  - A2.2 - Littoral sand and muddy sand
  - A2.3 - Littoral mud
  - A2.4 - Littoral mixed sediments
  - A2.5 - Coastal saltmarshes and saline reedbeds
    - * Spartinion glabrae Conard 1935
    - * Thero-Salicornion Br.-Bl. 1933
    - * Salicornion dolichostachyo-fragilis Géhu et Rivas-Mart. ex Géhu et Géhu-Franck 1984
    - * Salicornion ramosissimae Tx. 1974
    - * Juncion maritimi Br.-Bl. ex Horvatic 1934
    - * Plantaginion crassifoliae Br.-Bl. in Br.-Bl. et al. 1952
    - * Limonio ovalifolii-Frankenion laevis Arbesú et al. in Rivas-Mart. et al. 2002
    - * Agropyro-Artemision coerulescentis Pignatti 1953
    - * Scirpion maritimi Dahl et Hadac 1941
    - * Agropyrion pungentis Géhu 1968
    - * Agrostio-Elytrigion athericae S. Brullo et Siracusa 2000
    - * Festucion maritimae Christiansen 1927
    - * Armerion maritimae Br.-Bl. et De Leeuw 1936
    - * Puccinellion phryganodis Hadac 1946
    - * Dupontion fischeri Hadac 1946
    - * Saginion maritimae Westhoff et al. 1962
    - * Spergularion macrorhizae Gamisans 1990
    - * Lolio-Plantaginion commutatae Horvatic 1934
    - * Romuleo bulbocodii-Saginion (Wolff 1968) Mucina 2012
    - * Frankenion pulverulentae Rivas-Mart. ex Castroviejo et Porta 1976
    - * Pholiuro-Spergularion Pignatti 1952
    - * Mesembryanthemion nodiflori Géhu et al. 1990
    - * Salicornion fruticosae Br.-Bl. 1933
    - * Arthrocnemion glauci Rivas-Mart. et Costa 1984
    - * Suaedion brevifoliae Br.-Bl. et O. de Bolòs 1958
    - * Limoniastrion monopetali Pignatti 1952
    - * Puccinellion giganteae Dubyna et Neuhäuslová 2000
    - * Atriplicion littoralis Nordhagen 1940
  - A2.6 - Littoral sediments dominated by aquatic angiosperms
    - * Zosterion marinae Br.-Bl. et Tx. ex Pignatti 1953
    - * Zosterion noltii Den Hartog in Mucina et al. in prep.
    - * Posidonion oceanicae Br.-Bl. 1933
    - * Cymodoceion nodosae Den Hartog 1976
    - * Ruppion maritimae Br.-Bl. ex Westhoff in Bennema et al. 1943
    - * Charion canescentis Krausch 1964
  - A2.7 - Littoral biogenic reefs
  - A2.8 - Features of littoral sediment
- A3 - Infralittoral rock and other hard substrata

- A3.1 - Atlantic and Mediterranean high energy infralittoral rock
- A3.2 - Atlantic and Mediterranean moderate energy infralittoral rock
- A3.3 - Atlantic and Mediterranean low energy infralittoral rock
- A3.4 - Baltic exposed infralittoral rock
- A3.5 - Baltic moderately exposed infralittoral rock
- A3.6 - Baltic sheltered infralittoral rock
- A3.7 - Features of infralittoral rock

A4 - Circalittoral rock and other hard substrata

- A4.1 - Atlantic and Mediterranean high energy circalittoral rock
- A4.2 - Atlantic and Mediterranean moderate energy circalittoral rock
- A4.3 - Atlantic and Mediterranean low energy circalittoral rock
- A4.4 - Baltic exposed circalittoral rock
- A4.5 - Baltic moderately exposed circalittoral rock
- A4.6 - Baltic sheltered circalittoral rock
- A4.7 - Features of circalittoral rock

A5 - Sublittoral sediment

- A5.1 - Sublittoral coarse sediment
- A5.2 - Sublittoral sand
- A5.3 - Sublittoral mud
- A5.4 - Sublittoral mixed sediments
- A5.5 - Sublittoral macrophyte-dominated sediment
- A5.6 - Sublittoral biogenic reefs
- A5.7 - Features of sublittoral sediments

A6 - Deep-sea bed

- A6.1 - Deep-sea rock and artificial hard substrata
- A6.2 - Deep-sea mixed substrata
- A6.3 - Deep-sea sand
- A6.4 - Deep-sea muddy sand
- A6.5 - Deep-sea mud
- A6.6 - Deep-sea bioherms
- A6.7 - Raised features of the deep-sea bed
- A6.8 - Deep-sea trenches and canyons, channels, slope failures and slumps on the continental slope
- A6.9 - Vents, seeps, hypoxic and anoxic habitats of the deep sea

A7 - Pelagic water column

- A7.1 - Neuston
- A7.2 - Completely mixed water column with reduced salinity
- A7.3 - Completely mixed water column with full salinity
- A7.4 - Partially mixed water column with reduced salinity and medium or long residence time
- A7.5 - Unstratified water column with reduced salinity
- A7.6 - Vertically stratified water column with reduced salinity
- A7.7 - Fronts in reduced salinity water column
- A7.8 - Unstratified water column with full salinity
- A7.9 - Vertically stratified water column with full salinity
- A7.A - Fronts in full salinity water column

A8 - Ice-associated marine habitats

- A8.1 - Sea ice
- A8.2 - Freshwater ice
- A8.3 - Brine channels
- A8.4 - Under-ice habitat

B - Coastal habitats

B1 - Coastal dunes and sandy shores

- B1.1 - Sand beach driftlines
  - * Atriplicion littoralis Nordhagen 1940
  - * Elymo littorei-Rumicion crispi (Nordhagen 1940) Isermann et Dengler in Isermann 2004

* Cakilion edentulae Thannheiser 1981
* Atriplicion nudicaulis Golub et al. 2003
* Euphorbion peplidis Tx. ex Oberd. 1952
* Cakilion euxinae Géhu et al. 1994
* Salsolo kali-Honckenyion peploidis Tx. ex Tx. et Böckelmann 1957

B1.2 - Sand beaches above the driftline
* Atriplicion littoralis Nordhagen 1940
* Cakilion edentulae Thannheiser 1981
* Atriplicion nudicaulis Golub et al. 2003
* Euphorbion peplidis Tx. ex Oberd. 1952
* Cakilion euxinae Géhu et al. 1994
* Salsolo kali-Honckenyion peploidis Tx. ex Tx. et Böckelmann 1957
* Ammophilion Br.-Bl. 1921
* Elymion gigantei Morariu 1957
* Elymion arenarii Christiansen 1927
* Agropyro-Honckenyion peploidis Tx. in Br.-Bl. et Tx. 1952 nom. mut.
* Medicagini-Triplachnion nitentis Mayer 1995

B1.3 - Shifting coastal dunes
* Atriplicion nudicaulis Golub et al. 2003
* Ammophilion Br.-Bl. 1921
* Elymion gigantei Morariu 1957
* Elymion arenarii Christiansen 1927

B1.4 - Coastal stable dune grassland (grey dunes)
* Crucianellion maritimae Rivas Goday et Rivas-Mart. 1958
* Euphobio paraliae-Lotion glauci Jardim et al. 2003
* Helichrysion picardii (Rivas-Mart., Costa et Izco in Rivas-Mart. et al. 1990) Rivas-Mart., Fernández-González et Loidi 1999
* Sileno thymifoliae-Jurineion kilaeae Géhu et Uslu ex Mucina in Mucina et al. in prep.
* Cynodonto-Teucrion polii Korzhenevsky et Klyukin 1990
* Verbascion pinnatifidii Korzhenevsky et Klyukin 1990
* Scabiosion ucranicae Sanda et al. 1980
* Corynephorion canescentis Klika 1931
* Euphorbio portlandicae-Helichrysion stoechadis Géhu et Tx. ex Sissingh 1974
* Koelerion arenariae Tx. 1937 corr. Gutermann et Mucina 1993
* Diantho catalaunici-Scrophularion humifusae Baudiere et Simonneau 1974
* Thero-Airion Tx. ex Oberd. 1957
* Violion caninae Schwickerath 1944
* Helianthemion guttati Br.-Bl. in Br.-Bl. et al. 1940
* Alkanno-Maresion nanae Rivas Goday ex Rivas Goday et Rivas-Mart. 1963 corr. Díez Garretas et al. 2001
* Anthyllido hamosae-Malcolmion lacerae Rivas Goday 1958
* Cutandio maritimae-Vulpion membranaceae de Foucault et Géhu in de Foucault 1999
* Laguro-Vulpion fasciculatae Géhu et Biondi 1994
* Linarion pedunculatae Díez Garretas et al. in Díez Garretas 1984
* Ononidion tournefortii Géhu et al. 1996
* Psammo-Vulpion Pignatti 1953

B1.5 - Coastal dune heaths
* Ericion cinereae Böcher 1940
* Ericion umbellatae Br.-Bl. in Br.-Bl. et al. 1952
* Ulicion minoris Malcuit 1929
* Genisto pilosae-Vaccinion Br.-Bl. 1926
* Empetrion nigri Schubert ex Westhoff et Den Held 1969

B1.6 - Coastal dune scrub
* Crucianellion maritimae Rivas Goday et Rivas-Mart. 1958
* Euphobio paraliae-Lotion glauci Jardim et al. 2003

* Helichrysion picardii (Rivas-Mart., Costa et Izco in Rivas-Mart. et al. 1990) Rivas-Mart., Fernández-González et Loidi 1999
* Sileno thymifoliae-Jurineion kilaeae Géhu et Uslu ex Mucina in Mucina et al. in prep.
* Cynodonto-Teucrion polii Korzhenevsky et Klyukin 1990
* Berberidion vulgaris Br.-Bl. ex Tx. 1952 nom. conserv.
* Pruno spinosae-Rubion radulae Weber 1974
* Pruno spinosae-Rubion ulmifolii O. de Bolòs 1954
* Holoschoeno australis-Salicion arenariae Neto et al. 2004
* Ligustro-Hippophaeion Géhu et Géhu-Franck 1983
* Salicion arenariae Tx. ex Passarge in Scamoni 1963
* Oleo-Ceratonion siliquae Br.-Bl. ex Guinochet et Drouineau 1944
* Juniperion turbinatae Rivas-Mart. 1975 corr. 1987
* Quercion fruticosae Rothmaler 1954
* Rubo longifoliae-Coremation albi Rivas-Mart. in Rivas-Mart. et al. 1980
* Rhamno graeci-Juniperion lyciae Costa et al. 1984
* Traganion moquinii Sunding 1972
* Polycarpaeo niveae-Euphorbion paraliae Rivas-Martínez et Wildpret in Rivas-Mart. et al. 2002

B1.7 - Coastal dune woods
* Pinion (Libbert 1933) Oberd. 1957 nom. ambig. propos.
* Carpinion betuli Issler 1931
* Quercion roboris Malcuit 1929
* Quercion ilicis Br.-Bl. ex Molinier 1934
* Alnion incanae Pawlowski et al. 1928

B1.8 - Moist and wet dune slacks
* Saginion maritimae Westhoff et al. 1962
* Spergularion macrorhizae Gamisans 1990
* Lolio-Plantaginion commutatae Horvatic 1934
* Romuleo bulbocodii-Saginion (Wolff 1968) Mucina 2012
* Hyperico elodis-Sparganion Br.-Bl. et Tx. ex Oberd. 1957
* Preslion cervinae Br.-Bl. ex Moor 1936
* Caricion davallianae Klika 1934
* Caricion canescenti-fuscae Nordhagen ex Tx. 1937
* Potentillion anserinae Tx. 1947

B1.9 - Machair
* Ammophilion Br.-Bl. 1921
* Koelerion arenariae Tx. 1937 corr. Gutermann et Mucina 1993
* Armerion elongatae Pötsch 1962
* Thero-Airion Tx. ex Oberd. 1957
* Violion caninae Schwickerath 1944

B2 - Coastal shingle

B2.1 - Shingle beach driftlines
* Atriplicion littoralis Nordhagen 1940
* Elymo littorei-Rumicion crispi (Nordhagen 1940) Isermann et Dengler in Isermann 2004
* Cakilion edentulae Thannheiser 1981

B2.2 - Unvegetated mobile shingle beaches above the driftline

B2.3 - Upper shingle beaches with open vegetation
* Elymo littorei-Rumicion crispi (Nordhagen 1940) Isermann et Dengler in Isermann 2004
* Salsolo kali-Honckenyion peploidis Tx. ex Tx. et Böckelmann 1957

B2.4 - Fixed shingle beaches, with herbaceous vegetation
* Mertensio maritimae-Honckenyion diffusae Tx. et Géhu ex Géhu 1998

B2.5 - Shingle and gravel beaches with scrub

B2.6 - Shingle and gravel beach woodland

B3 - Rock cliffs, ledges and shores, including the supralittoral

B3.1 - Supralittoral rock (lichen or splash zone)

B3.2 - Unvegetated rock cliffs, ledges, shores and islets
B3.3 - Rock cliffs, ledges and shores, with angiosperms
* Crithmo-Daucion halophili Rivas-Mart. et al. 1990
* Astragalion tragacanthae (Folch ex Rivas-Mart., Fernández-González et Loidi 1999) Rivas-Mart. et al. 2002
* Launaeion cervicornis (O. de Bolòs et Vigo ex Gil et Llorens 1995) Rivas-Mart., Fernández-González et Loidi 1999
* Crithmo-Staticion Molinier 1934
* Anthyllidion barbae-jovis S. Brullo et De Marco 1989
* Crucianellion rupestris S. Brullo et Furnari 1990
* Plantagini-Thymelaeion hirsutae Bartolo et S. Brullo in Bartolo et al. ex Mayer 1995
* Staticion dalmaticum Horvatic 1934
* Crithmo-Frankenion hirsutae Mayer 1995
* Kochio prostratae-Limonion meyeri Korzhenevsky 1987
* Crithmion maritimi Tx. et Oberd. 1958
* Silenion maritimae Malloch 1971
* Frankenio-Astydamion latifoliae Santos 1976
* Euphorbio azoricae-Festucion petraeae Lüpnitz 1976
* Helichrysion obconico-devium Rivas-Mart. et al. 2002
* Asplenion marini Segal 1969
B3.4 - Soft sea-cliffs, often vegetated
C - Inland surface waters
C1 - Surface standing waters
C1.1 - Permanent oligotrophic lakes, ponds and pools
* Charion fragilis Krausch 1964
* Nitellion flexilis Krause 1969
* Littorellion uniflorae Koch ex Tx. 1937
* Hyperico elodis-Sparganion Br.-Bl. et Tx. ex Oberd. 1957
* Sphagno-Utricularion T. Müller et Görs 1960
C1.2 - Permanent mesotrophic lakes, ponds and pools
* Charion fragilis Krausch 1964
* Nitellion flexilis Krause 1969
* Lemnion minoris O. de Bolòs et Masclans 1955
* Utricularion vulgaris Passarge 1964
* Hydrocharition morsus-ranae (Passarge 1964) Westhoff et Den Held 1969
* Potamogetonion Libbert 1931
* Nymphaeion albae Oberd. 1957
* Batrachion fluitantis Neuhäusl 1959
* Ranunculion aquatilis Passarge 1964
* Hyperico elodis-Sparganion Br.-Bl. et Tx. ex Oberd. 1957
C1.3 - Permanent eutrophic lakes, ponds and pools
* Lemnion minoris O. de Bolòs et Masclans 1955
* Hydrocharition morsus-ranae (Passarge 1964) Westhoff et Den Held 1969
* Potamogetonion Libbert 1931
* Nymphaeion albae Oberd. 1957
* Nelumboion nuciferae Losev et Golub in Golub et al. 1991
* Batrachion fluitantis Neuhäusl 1959
* Ranunculion aquatilis Passarge 1964
C1.4 - Permanent dystrophic lakes, ponds and pools
* Potamogetonion Libbert 1931
* Nymphaeion albae Oberd. 1957
* Sphagno-Utricularion T. Müller et Görs 1960
* Rhynchosporion albae Koch 1926 nom. ambig. propos.
C1.5 - Permanent inland saline and brackish lakes, ponds and pools
* Ruppion maritimae Br.-Bl. ex Westhoff in Bennema et al. 1943

* Charion canescentis Krausch 1964
* Ranunculion aquatilis Passarge 1964

C1.6 - Temporary lakes, ponds and pools
* Ruppion maritimae Br.-Bl. ex Westhoff in Bennema et al. 1943
* Charion fragilis Krausch 1964
* Ranunculion aquatilis Passarge 1964
* Subularion Hadac 1971
* Rorippion islandicae Béguin & Theurillat nom. ined.
* Deschampsion litoralis Oberd. et Dierßen in Dierßen 1975
* Lobelion dortmannae Vanden Berghen 1964
* Littorellion uniflorae Koch ex Tx. 1937
* Eleocharition acicularis Pietsch ex Dierßen 1975
* Hyperico elodis-Sparganion Br.-Bl. et Tx. ex Oberd. 1957
* Isoetion Br.-Bl. 1935
* Cicendion (Rivas Goday in Rivas Goday et Borja 1961) Br.-Bl. 1967
* Lythrion tribracteati Rivas Goday et Rivas-Mart. ex Rivas Goday 1970
* Preslion cervinae Br.-Bl. ex Moor 1936
* Agrostion salmanticae Rivas Goday 1958

C1.7 - Permanent lake ice

C2 - Surface running waters

C2.1 - Springs, spring brooks and geysers
* Adiantion Br.-Bl. ex Horvatic 1934
* Pinguiculion longifoliae Fernandez Casas 1970
* Caricion remotae Kästner 1941
* Cratoneuro filicini-Calthion laetae Hadac 1983
* Mniobryo-Epilobion hornemannii Nordhagen 1943
* Koenigio-Microjuncion Sörensen 1942
* Cardamino-Montion Br.-Bl. 1926
* Swertio perennis-Anisothecion palustris Hadac 1983
* Epilobio nutantis-Montion Zechmeister in Zechmeister et Mucina 1994
* Cratoneurion commutati Koch 1928
* Lycopo europaei-Cratoneurion commutati Hadac 1983
* Myosotidion stoloniferae Rivas-Mart. et al. 1984
* Ranunculion omiophyllo-hederacei Rivas-Mart. et al. 2002
* Pinguiculo balcanicae-Cardaminion acris Carni et Matevski 2010

C2.2 - Permanent non-tidal, fast, turbulent watercourses
* Batrachion fluitantis Neuhäusl 1959

C2.3 - Permanent non-tidal, smooth-flowing watercourses
* Potamogetonion Libbert 1931
* Nymphaeion albae Oberd. 1957
* Batrachion fluitantis Neuhäusl 1959
* Ranunculion aquatilis Passarge 1964

C2.4 - Tidal rivers, upstream from the estuary

C2.5 - Temporary running waters
* Glycerio-Sparganion Br.-Bl. et Sissingh in Boer 1942
* Paspalo-Agrostidion semiverticillati Br.-Bl. in Br.-Bl. et al. 1952

C2.6 - Films of water flowing over rocky watercourse margins

C3 - Littoral zone of inland surface waterbodies

C3.1 - Species-rich helophyte beds
* Carici-Rumicion hydrolapathi Passarge 1964
* Glycerio-Sparganion Br.-Bl. et Sissingh in Boer 1942
* Eleocharito palustris-Sagittarion sagittifoliae Passarge 1964
* Alopecuro-Glycerion spicatae S. Brullo et al. 1994

C3.2 - Water-fringing reedbeds and tall helophytes other than canes

* Scirpion maritimi Dahl et Hadac 1941
* Phragmition communis Koch 1926
* Typhion laxmannii Losev et Golub in Golub et al. 1991
* Magno-Caricion elatae Koch 1926
* Magno-Caricion gracilis Géhu 1961
* Carici-Rumicion hydrolapathi Passarge 1964
* Scrophulario umbrosae-Caricion paniculatae Koska in Dengler et al. 2004
* Phalaridion arundinaceae Kopecký 1961
* Eleocharito palustris-Sagittarion sagittifoliae Passarge 1964

C3.3 - Water-fringing beds of tall canes
* Molinio-Holoschoenion Br.-Bl. ex Tchou 1948
* Imperato cylindricae-Saccharion ravennae Br.-Bl. et O. de Bolòs 1958

C3.4 - Species-poor beds of low-growing water-fringing or amphibious vegetation
* Subularion Hadac 1971
* Rorippion islandicae Béguin & Theurillat nom. ined.
* Deschampsion litoralis Oberd. et Dierßen in Dierßen 1975
* Lobelion dortmannae Vanden Berghen 1964
* Littorellion uniflorae Koch ex Tx. 1937
* Eleocharition acicularis Pietsch ex Dierßen 1975
* Hyperico elodis-Sparganion Br.-Bl. et Tx. ex Oberd. 1957

C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
* Glaucion flavi Br.-Bl. ex Tchou 1948
* Scrophularion sciophilae O. de Bolòs 1957
* Nanocyperion Koch 1926
* Elatino macropodae-Damasonion alismatis de Foucault 1988
* Eleocharition soloniensis Philippi 1968
* Cypero-Spergularion salinae Slavnic 1948
* Verbenion supinae Slavnic 1951
* Lepidion latifolii Golub et Mirkin 1986
* Heleochloion Br.-Bl. ex Rivas Goday 1956
* Bidention tripartitae Nordhagen 1940
* Chenopodion rubri (Tx. in Poli et J. Tx. 1960) Hilbig et Jage 1972
* Paspalo-Agrostidion semiverticillati Br.-Bl. in Br.-Bl. et al. 1952

C3.6 - Unvegetated or sparsely vegetated shores with soft or mobile sediments
* Festucion duriotaganae Capelo et al. 1998
* Salicion incanae Aichinger 1933
* Calamagrostion pseudophragmitis Rivas-Mart. et al. 1984
* Euphorbion rigidae S. Brullo et Spampinato 1990

C3.7 - Unvegetated or sparsely vegetated shores with non-mobile substrates

C3.8 - Inland spray- and steam-dependent habitats

D - Mires, bogs and fens

D1 - Raised and blanket bogs

D1.1 - Raised bogs
* Caricion lasiocarpae Vanden Berghen in Lebrun et al. 1949
* Rhynchosporion albae Koch 1926 nom. ambig. propos.
* Ericion tetralicis Schwickerath 1933
* Oxycocco-Ericion tetralicis Nordhagen ex Tx. 1937
* Oxycocco microcarpi-Empetrion hermaphroditi Nordhagen ex Du Rietz 1954
* Sphagnion medii Kästner et Flössner 1933

D1.2 - Blanket bogs
* Rhynchosporion albae Koch 1926 nom. ambig. propos.
* Ericion tetralicis Schwickerath 1933
* Oxycocco-Ericion tetralicis Nordhagen ex Tx. 1937

D2 - Valley mires, poor fens and transition mires

- D2.1 - Valley mires
  - * Caricion lasiocarpae Vanden Berghen in Lebrun et al. 1949
  - * Rhynchosporion albae Koch 1926 nom. ambig. propos.
  - * Ericion tetralicis Schwickerath 1933
  - * Oxycocco-Ericion tetralicis Nordhagen ex Tx. 1937
  - * Sphagnion medii Kästner et Flössner 1933
- D2.2 - Poor fens and soft-water spring mires
  - * Sphagno-Utricularion T. Müller et Görs 1960
  - * Caricion canescenti-fuscae Nordhagen ex Tx. 1937
  - * Festucion frigidae Rivas-Mart. et al. 2002
  - * Bellidio-Bellion nivalis Gamisans 1975
  - * Caricion lasiocarpae Vanden Berghen in Lebrun et al. 1949
  - * Rhynchosporion albae Koch 1926 nom. ambig. propos.
- D2.3 - Transition mires and quaking bogs
  - * Caricion canescenti-fuscae Nordhagen ex Tx. 1937
  - * Sphagno-Caricion canescentis Passarge (1964) 1978
  - * Caricion lasiocarpae Vanden Berghen in Lebrun et al. 1949
  - * Rhynchosporion albae Koch 1926 nom. ambig. propos.

D3 - Aapa, palsa and polygon mires

- D3.1 - Palsa mires
  - * Caricion atrofusco-saxatilis Nordhagen 1943
  - * Caricion canescenti-fuscae Nordhagen ex Tx. 1937
  - * Sphagno-Tomentypnion Dahl 1956
  - * Caricion lasiocarpae Vanden Berghen in Lebrun et al. 1949
  - * Rhynchosporion albae Koch 1926 nom. ambig. propos.
  - * Oxycocco microcarpi-Empetrion hermaphroditi Nordhagen ex Du Rietz 1954
- D3.2 - Aapa mires
  - * Caricion atrofusco-saxatilis Nordhagen 1943
  - * Caricion canescenti-fuscae Nordhagen ex Tx. 1937
  - * Sphagno-Tomentypnion Dahl 1956
  - * Caricion lasiocarpae Vanden Berghen in Lebrun et al. 1949
  - * Rhynchosporion albae Koch 1926 nom. ambig. propos.
  - * Oxycocco microcarpi-Empetrion hermaphroditi Nordhagen ex Du Rietz 1954
  - * Sphagnion medii Kästner et Flössner 1933
- D3.3 - Polygon mires
  - * Caricion atrofusco-saxatilis Nordhagen 1943
  - * Caricion canescenti-fuscae Nordhagen ex Tx. 1937
  - * Sphagno-Tomentypnion Dahl 1956
  - * Caricion lasiocarpae Vanden Berghen in Lebrun et al. 1949
  - * Rhynchosporion albae Koch 1926 nom. ambig. propos.
  - * Oxycocco microcarpi-Empetrion hermaphroditi Nordhagen ex Du Rietz 1954

D4 - Base-rich fens and calcareous spring mires

- D4.1 - Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks
  - * Caricion atrofusco-saxatilis Nordhagen 1943
  - * Caricion davallianae Klika 1934
  - * Sphagno-Tomentypnion Dahl 1956
- D4.2 - Basic mountain flushes and streamsides, with a rich arctic-montane flora
  - * Caricion atrofusco-saxatilis Nordhagen 1943
  - * Caricion davallianae Klika 1934

D5 - Sedge and reedbeds, normally without free-standing water

- D5.1 - Reedbeds normally without free-standing water
  - * Phragmition communis Koch 1926
  - * Phalaridion arundinaceae Kopecký 1961
- D5.2 - Beds of large sedges normally without free-standing water

* Magno-Caricion elatae Koch 1926
* Magno-Caricion gracilis Géhu 1961
* Carici-Rumicion hydrolapathi Passarge 1964
* Scrophulario umbrosae-Caricion paniculatae Koska in Dengler et al. 2004
* Caricion broterianae (Rivas-Mart. et al. 1986) J.A. Molina 1996
* Caricion microcarpae Gamisans 1975
* Deschampsion argenteae Capelo et al. 2000

D5.3 - Swamps and marshes dominated by [Juncus effusus] or other large [Juncus] spp.
* Juncion maritimi Br.-Bl. ex Horvatic 1934
* Potentillion anserinae Tx. 1947
* Juncion inflexi Knapp 1971

D6 - Inland saline and brackish marshes and reedbeds

D6.1 - Inland saltmarshes
* Puccinellion limosae Soó 1933
* Puccinellion convolutae Micevski 1965
* Puccinellion lagascanae Rivas-Mart. in Rivas-Mart. et Costa 1976 corr. Alonso et De la Torre 2004
* Juncion gerardii Wendelberger 1943
* Halo-Trichophorion pumili Vicherek 1973

D6.2 - Inland saline or brackish species-poor helophyte beds normally without free-standing water
* Scirpion maritimi Dahl et Hadac 1941
* Lygeo-Lepidion cardaminis Rivas Goday et Rivas-Mart. ex Rivas-Mart. et Costa 1984
* Lygeo sparti-Limonion furfuracei Rigual 1972
* Limonion catalaunico-viciosoi Rivas-Mart. et Costa 1984
* Limonion confusi (Br.-Bl. 1933) Rivas-Mart. et Costa 1984
* Triglochino barrelieri-Limonion glomerati Biondi et al. 2001
* Typhion laxmannii Losev et Golub in Golub et al. 1991
* Meliloto dentati-Bolboschoenion maritimi Hroudová et al. 2009

E - Grasslands and lands dominated by forbs, mosses or lichens

E1 - Dry grasslands

E1.1 - Inland sand and rock with open vegetation
* Xero-Bromion erecti Zoller 1954
* Festuco-Bromion Barbero et Loisel 1971
* Alysso-Festucion pallentis Moravec in Holub et al. 1967
* Asplenio septentrionali-Festucion pallentis Zólyomi 1936 corr. 1966
* Avenulo adsurgentis-Festucion pallentis Mucina in Mucina et Kolbek 1993
* Bromo pannonici-Festucion pallentis Zólyomi 1966 nom. conserv. propos.
* Helianthemo cani-Festucion pallentis Kolbek in Moravec et al. 1983
* Chrysopogono-Festucion dalmaticae Borhidi 1996
* Galio campanulatae-Poion versicoloris Kukovitsa et al. 1994 nom. inval.
* Diantho lumnitzeri-Seslerion (Soó 1971) Chytrý et Mucina in Mucina et Kolbek 1993
* Seslerion rigidae Zólyomi 1936
* Polygonion albanicae Ritter-Studnicka 1970
* Centaureo-Bromion fibrosi Blecic et al. 1969
* Alyssion heldreichii Bergmeier et al. 2009
* Artemisio hololeucae-Hyssopion cretacei Romashchenko et al. 1996
* Euphorbio cretophilae-Thymion cretacei Didukh 1989
* Alyssion bertolonii E. Pignatti et Pignatti 1977
* Aconogonion alpini Yamalov et Mikrin 2010
* Hyperico perforati-Scleranthion perennis Moravec 1967
* Armerion elongatae Pötsch 1962
* Sedo-Cerastion arvensis Sissingh et Tideman 1960
* Koelerion glaucae Volk 1931
* Sileno conicae-Cerastion semidecandri Korneck 1974
* Bassio laniflorae-Bromion tectorum Borhidi 1996 nom. conserv. propos.

* Festucion vaginatae Soó 1929
* Festucion beckeri Vicherek 1972
* Sedo-Scleranthion biennis Br.-Bl. 1955
* Sedion anglici Br.-Bl. in Br.-Bl. et Tx. 1952
* Sedion pyrenaici Tx. in Rivas-Mart. et al. 2011
* Sedo albi-Veronicion dillenii Korneck 1974
* Scabioso-Trifolion dalmatici Horvatic et N. Randelovic in N. Randelovic 1977
* Thero-Airion Tx. ex Oberd. 1957
* Alysso alyssoidis-Sedion albi Oberd. et T. Müller in T. Müller 1961
* Tortello tortuosae-Sedion albi Hallberg ex Dengler et Löbel 2006
* Sedion micrantho-sediformis Rivas-Mart., P. Sánchez et Alcaraz ex P. Sánchez et Alcaraz 1993
* Aethionemion saxatilis Bergmeier et al. 2009

E1.2 - Perennial calcareous grassland and basic steppes
* Bromion erecti Koch 1926
* Cirsio-Brachypodion pinnati Hadac et Klika in Klika et Hadac ex Klika 1951
* Filipendulo vulgaris-Helictotrichion pratensis Dengler et Löbel in Dengler et al 2003
* Gentianello amarellae-Helictotrichion pratensis Royer ex Dengler in Mucina et al. 2009
* Potentillo splendentis-Brachypodion pinnati Br.-Bl. 1967
* Festucion sulcatae Soó 1930
* Stipion lessingianae Soó 1947
* Artemisio-Kochion Soó 1964
* Stipo-Poion xerophilae Br.-Bl. et Tx. ex Br.-Bl. 1949
* Pimpinello-Thymion zygoidi Dihoru et Donita 1970
* Bassio-Artemision austriacae Solomeshch in Mirkin et al. 1986
* Artemisio tauricae-Festucion Korzhenevsky et Klyukin 1991
* Centaureo carbonatae-Koelerion talievii Romashchenko et al. 1996
* Agropyrion pectinati Golub et Uzhametskaya 1991
* Caricion stenophyllae Golub et Savelyeva 1991
* Helictotricho desertori-Stipion rubentis Toman 1969
* Centaurion sumensis Golub et Uzhametskaya 1992
* Tanaceto achilleifolii-Stipion lessingianae Royer ex Lysenko et Mucina 2013
* Stipion korshinskyi Toman 1969
* Diantho lumnitzeri-Seslerion (Soó 1971) Chytrý et Mucina in Mucina et Kolbek 1993
* Seslerion rigidae Zólyomi 1936
* Saturejo-Thymion Micevski 1971
* Saturejion montanae Horvat in Horvat, Glavac et Ellenberg 1974
* Adonido vernalis-Stipion tirsae Didukh 1983 nom. inval.
* Carici humilis-Androsacion tauricae Didukh 1983 nom. inval.
* Veronico multifidae-Stipion ponticae Didukh 1983 nom. inval.
* Brachypodion phoenicoidis Br.-Bl. ex Molinier 1934
* Chrysopogono-Saturejion subspicatae Horvat et Horvatic 1934
* Cytiso spinescentis-Bromion erecti Bonin 1978
* Hippocrepido glaucae-Stipion austroitalicae Forte et Terzi in Forte et al. 2005
* Brachypodion genuensis (Biondi et al. 1995) Di Pietro et al. 2012
* Aconogonion alpini Yamalov et Mikrin 2010

E1.3 - Mediterranean xeric grassland
* Brachypodion distachyi Rivas-Mart. 1978
* Diantho humilis-Velezion rigidae Korzhenevsky 1990
* Hypochoeridion achyrophori Biondi et Guerra 2008
* Omphalodion commutatae Rivas-Mart. et al. ex Izco 1976 corr. Pérez Raya et al. 1991
* Sedo-Ctenopsion gypsophilae Rivas Goday et Rivas-Mart. ex Izco 1974
* Stipion retortae Br.-Bl. et O. de Bolòs ex O. de Bolòs 1957
* Vulpion ligusticae Aubert et Loisel 1971
* Xeranthemion annui Oberd. 1954

* Vulpio ciliatae-Crepidion neglectae Poldini 1989
* Asterisco-Velezion rigidae (Rivas Goday 1964) S. Brullo 1985
* Dauco-Catananchion luteae S. Brullo 1985
* Plantagini-Catapodion marini S. Brullo 1985
* Onobrychido-Ptilostemion stellati S. Brullo et al. 2001
* Trifolio subterranei-Periballion minutae Rivas Goday 1964
* Plantaginion serrariae Galán de Mera et al. 2000
* Poo bulbosae-Astragalion sesamei Rivas Goday et Ladero 1970
* Serapion Aubert et Loisel 1971
* Plantaginion cupanii S. Brullo et Grillo 1978
* Romulion Oberd. 1954
* Thero-Brachypodion retusi Br.-Bl. 1925
* Triseto velutini-Brachypodion boissieri Rivas-Mart. et al. 2002
* Festucion scariosae Martínez-Parras et al. 1984
* Stipion parviflorae De la Torre et al. 1996
* Leontodono tuberosi-Bellion sylvestris Biondi et al. 2001
* Reichardio maritimae-Dactylidion hispanicae Biondi et al. 2001
* Cymbopogono hirti-Brachypodion ramosi Horvatic 1963
* Hyparrhenion hirtae Br.-Bl. et al. 1956
* Agropyro pectinati-Lygeion sparti Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart., Fernández-González et Loidi 1999
* Moricandio-Lygeion sparti S. Brullo et al. 1990
* Polygonion tenoreani S. Brullo et al. 1990
* Stipion tenacissimae Rivas-Mart. 1984
* Scorzonero creticae-Lygeion sparti S. Brullo et al. 2002

E1.4 - Mediterranean tall-grass and [Artemisia] steppes
* Thero-Brachypodion retusi Br.-Bl. 1925
* Triseto velutini-Brachypodion boissieri Rivas-Mart. et al. 2002
* Festucion scariosae Martínez-Parras et al. 1984
* Stipion parviflorae De la Torre et al. 1996
* Leontodono tuberosi-Bellion sylvestris Biondi et al. 2001
* Reichardio maritimae-Dactylidion hispanicae Biondi et al. 2001
* Cymbopogono hirti-Brachypodion ramosi Horvatic 1963
* Hyparrhenion hirtae Br.-Bl. et al. 1956
* Agropyro pectinati-Lygeion sparti Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart., Fernández-González et Loidi 1999
* Moricandio-Lygeion sparti S. Brullo et al. 1990
* Polygonion tenoreani S. Brullo et al. 1990
* Stipion tenacissimae Rivas-Mart. 1984
* Scorzonero creticae-Lygeion sparti S. Brullo et al. 2002

E1.5 - Mediterranean-montane grassland
* Cytiso spinescentis-Bromion erecti Bonin 1978
* Teesdaliopsio confertae-Luzulion caespitosae Rivas-Mart. 1987
* Jasionion carpetanae González-Albo 1941
* Ptilotrichion purpurei Quézel 1953
* Hieracio castellani-Plantaginion radicatae Rivas-Mart. et Cantó 1987
* Armerion eriophyllae Pinto da Silva 1970
* Thymion serpylloidis Rivas Goday et Rivas-Mart. in Rivas-Mart. 1965
* Ononidion striatae Br.-Bl. et Susplugas 1937
* Ononidion cristatae Royer 1991
* Festucion scopariae Br.-Bl. 1948
* Genistion lobelii Molinier 1934
* Avenion sempervirentis Barbero 1968
* Festucion burnatii Rivas Goday et Rivas-Mart. ex Mayor et al. 1973
* Minuartio-Poion ligulatae O. de Bolòs 1962

* Plantagini discoloris-Thymion mastigophori Molina et Izco 1989
* Plantaginion insularis Klein 1972

E1.6 - Subnitrophilous annual grassland
* Alysso granatensis-Brassicion barrelieri Rivas-Mart. et Izco 1977
* Resedo lanceolatae-Moricandion Fernandez Casas et M.E. Sánchez 1972
* Laguro ovati-Bromion rigidi Géhu et Géhu-Franck 1985
* Linario polygalifoliae-Vulpion alopecuroidis Br.-Bl. et al. in Br.-Bl. et al. 1972
* Taeniathero-Aegilopion geniculatae Rivas-Mart. et Izco 1977
* Erysimo wittmannii-Hackelion Bernátová 1986

E1.7 - Closed non-Mediterranean dry acid and neutral grassland
* Artemisio albae-Dichanthion ischaemi X. Font ex Rivas-Mart. et M.L. López in Rivas-Mart. et al. 2002
* Diplachnion serotinae Br.-Bl. 1961
* Scorzonerion villosae Horvatic 1963
* Armerion elongatae Pötsch 1962
* Sedo-Cerastion arvensis Sissingh et Tideman 1960
* Armerion junceae Br.-Bl. In Br.-Bl. et al. 1952
* Diantho pinifolii-Jasionion heldreichii Bergmeier et al. 2009
* Violion caninae Schwickerath 1944
* Agrostion curtisii de Foucault 1986

E1.8 - Closed Mediterranean dry acid and neutral grassland
* Campanulo herminii-Nardion strictae Rivas-Mart. 1964
* Agrostion castellanae Rivas Goday ex Rivas-Mart. et al. 1980
* Festucion merinoi Rivas-Mart. et Sánchez-Mata in Rivas-Mart. et al. 1986 corr. Rivas-Mart. et Sánchez-Mata in Rivas-Mart. et al. 2002
* Agrostio castellanae-Stipion giganteae Rivas Goday ex Rivas-Mart. et Fernández González 1991
* Deschampsio maderensis-Parafestucion albidae Capelo et al. 2000

E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland
* Armerio-Potentillion Micevski 1978
* Chrysopogono-Danthonion Kojic 1957
* Corynephorion canescentis Klika 1931
* Hyperico perforati-Scleranthion perennis Moravec 1967
* Armerion elongatae Pötsch 1962
* Sedo-Cerastion arvensis Sissingh et Tideman 1960
* Armerion junceae Br.-Bl. In Br.-Bl. et al. 1952
* Diantho pinifolii-Jasionion heldreichii Bergmeier et al. 2009
* Koelerion glaucae Volk 1931
* Sileno conicae-Cerastion semidecandri Korneck 1974
* Thero-Airion Tx. ex Oberd. 1957

E1.A - Open Mediterranean dry acid and neutral grassland
* Ornithopo pinnati Gaudinion coarctatae Aguiar, J.A. Fernández Prieto et E. Dias 2006 nom. inval.
* Helianthemion guttati Br.-Bl. in Br.-Bl. et al. 1940
* Crassulo tillaeae-Sedion caespitosi de Foucault 1999
* Molinerion laevis Br.-Bl. et al. 1952
* Sedion pedicellato-andegavensis Rivas-Mart. et al. 1986
* Trifolion cherleri Micevski 1972
* Sclerantho-Myositidion incrassatae S. Brullo et al. 2001
* Thymion micans J.C. Costa et al. 2005 nom. inval.
* Anthyllido hamosae-Malcolmion lacerae Rivas Goday 1958
* Corynephoro articulati-Malcolmion patulae Rivas Goday 1958
* Vulpio-Lotion Horvatic 1963
* Trifolio subterranei-Periballion minutae Rivas Goday 1964
* Serapion Aubert et Loisel 1971
* Romulion Oberd. 1954
* Festucion francoi Lüpnitz 1976 corr. J.A. Fernández Prieto et C. Aguiar hoc loco

* Tolpido succulentae-Agrostion congestiflorae Aguiar, J.A. Fernández Prieto et E. Dias 2006 nom. inval.
* Hieracio castellani-Plantaginion radicatae Rivas-Mart. et Cantó 1987
* Armerion eriophyllae Pinto da Silva 1970
* Thymion serpylloidis Rivas Goday et Rivas-Mart. in Rivas-Mart. 1965

E1.B - Heavy-metal grassland
* Thlaspion rotundifolii Jenny-Lips 1930
* Thlaspion calaminariae Ernst 1965
* Armerion halleri Ernst 1965
* Armerion elongatae Pötsch 1962

E1.C - Dry mediterranean lands with unpalatable non-vernal herbaceous vegetation

E1.D - Unmanaged xeric grassland

E1.E - Trampled xeric grasslands with annuals
* Eragrostion cilianensis-minoris Tx. ex Oberd. 1954
* Eragrostio-Polygonion arenastri Couderc et Izco ex Carni et Mucina 1998
* Euphorbion prostratae Rivas-Mart. 1976
* Polycarpo-Eleusinion indicae Carni et Mucina 1998
* Polygono-Coronopodion Sissingh 1969
* Polycarpion tetraphylli Rivas-Mart. 1975

E2 - Mesic grasslands

E2.1 - Permanent mesotrophic pastures and aftermath-grazed meadows
* Cynosurion cristati Tx. 1947
* Molinion caeruleae Koch 1926
* Deschampsion cespitosae Horvatic 1930
* Potentillion anserinae Tx. 1947

E2.2 - Low and medium altitude hay meadows
* Glycyrrhizion echinatae Golub et Savelyeva in Golub 1995
* Glycyrrhizion glabrae Golub et Mirkin in Golub 1995
* Glycyrrhizion korshinskyi Lysenko 2010
* Arrhenatherion elatioris Luquet 1926
* Cynosurion cristati Tx. 1947
* Festucion pratensis Sipailova et al. 1985
* Molinion caeruleae Koch 1926
* Calthion palustris Tx. 1937
* Deschampsion cespitosae Horvatic 1930
* Conioselinion tatarici Golub et al. 2003

E2.3 - Mountain hay meadows
* Phyteumato-Trisetion (Hundt ex Passarge 1969) Ellmauer et Mucina 1993
* Triseto flavescentis-Polygonion bistortae Br.-Bl. et Tx. ex Marschall 1947
* Pancicion serbicae Lakušic 1966
* Polygonion krascheninnikovii Kashapov 1985
* Calthion palustris Tx. 1937
* Dactylorhizo-Juncion striati S. Brullo et Grillo 1978

E2.4 - Iberian summer pastures (vallicares)
* Agrostion castellanae Rivas Goday ex Rivas-Mart. et al. 1980
* Festucion merinoi Rivas-Mart. et Sánchez-Mata in Rivas-Mart. et al. 1986 corr. Rivas-Mart. et Sánchez-Mata in Rivas-Mart. et al. 2002

E2.5 - Meadows of the steppe zone
* Zygophyllion albi Géhu, Costa et Uslu 1990
* Deschampsion cespitosae Horvatic 1930
* Trifolion montani Naumova 1986
* Artemision ponticae Golub et Savelyeva in Golub 1995
* Seselion libanotis Ageleulov et Golub in Golub 1995
* Agrostion vinealis Sipailova et al. 1985

E2.6 - Agriculturally-improved, re-seeded and heavily fertilised grassland, including sports fields and grass lawns

* Cynosurion cristati Tx. 1947
* Potentillion anserinae Tx. 1947

E2.7 - Unmanaged mesic grassland
* Arrhenatherion elatioris Luquet 1926
* Aegopodion podagrariae Tx. 1967

E2.8 - Trampled mesophilous grasslands with annuals
* Alchemillo-Ranunculion repentis Passarge 1979
* Poion supinae Rivas-Mart. et Géhu 1978
* Saginion procumbentis Tx. et Ohba in Géhu et al. 1972

E3 - Seasonally wet and wet grasslands

E3.1 - Mediterranean tall humid grassland
* Molinio-Holoschoenion Br.-Bl. ex Tchou 1948
* Sieglingion decumbentis Gamisans 1976

E3.2 - Mediterranean short humid grassland
* Aphyllanthion Br.-Bl. et Pawlowski 1931 nom. ambig. propos.
* Gaudinio fragilis-Hordeion bulbosi Galán de Mera et al. 1997
* Trifolio fragiferi-Cynodontion Br.-Bl. et O. de Bolòs 1958

E3.3 - Sub-mediterranean humid meadows
* Molinio-Hordeion secalini Horvatic 1934
* Trifolion resupinati Micevski 1957
* Trifolio-Ranunculion pedati Slavnic 1948
* Ranunculion velutini Pedrotti 1978

E3.4 - Moist or wet eutrophic and mesotrophic grassland
* Glycyrrhizion echinatae Golub et Savelyeva in Golub 1995
* Glycyrrhizion glabrae Golub et Mirkin in Golub 1995
* Glycyrrhizion korshinskyi Lysenko 2010
* Molinion caeruleae Koch 1926
* Calthion palustris Tx. 1937
* Filipendulo-Petasition Br.-Bl. ex Duvigneaud 1949
* Deschampsion cespitosae Horvatic 1930
* Conioselinion tatarici Golub et al. 2003
* Potentillion anserinae Tx. 1947
* Juncion inflexi Knapp 1971
* Oenanthion fistulosae de Foucault 2009
* Althaeion officinalis Golub et Mirkin in Golub 1995
* Euphorbion palustris Ageleulov et Golub in Golub 1995
* Lythro-Euphorbion Mirkin et Naumova 1986

E3.5 - Moist or wet oligotrophic grassland
* Caricion canescenti-fuscae Nordhagen ex Tx. 1937
* Molinion caeruleae Koch 1926
* Galio saxatilis-Festucion vivipareae de Foucault 1994
* Nardo-Juncion squarrosi (Oberd. 1957) Passarge 1964
* Campanulo herminii-Nardion Rivas-Mart. 1964

E4 - Alpine and subalpine grasslands

E4.1 - Vegetated snow-patch
* Salicion herbaceae Br.-Bl. in Br.-Bl. et Jenny 1926
* Salici herbaceae-Caricion lachenalii Béguin et Theurillat 1982
* Festucion picturatae Krajina 1933 corr. Dúbravcová 2007
* Ranunculion crenati Lakušic 1966
* Sedion candollei Rivas-Mart., Fernández González et Loidi in Rivas-Mart. et al. 2011
* Hyalopoion ponticae Rabotnova et Onipchenko in Onipchenko 2002
* Cassiopo-Salicion herbaceae Nordhagen 1943
* Ranunculo-Oxyrion Nordhagen 1943
* Arabidion caeruleae Br.-Bl. in Br.-Bl. et Jenny 1926

E4.2 - Moss and lichen dominated mountain summits, ridges and exposed slopes
* Allosuro-Athyrion alpestris Nordhagen 1943
* Carici-Juncion trifidi Nordhagen 1943
* Cisto salviifoliae-Ericion cineraeae Géhu in Bardat et al. 2004

E4.3 - Acid alpine and subalpine grassland
* Calamagrostion villosae Pawlowski et al. 1928
* Trisetion fusci Krajina 1933
* Calamagrostion arundinaceae (Luquet 1926) Oberd. 1957
* Festucion xanthinae Lakušic et al. 1969
* Campanulion albanicae Lakušic 1966
* Festucion versicoloris Krajina 1933
* Agrostion alpinae Jeník et al. 1980
* Kobresion capilliformis Tsepkova 1987
* Carici-Juncion trifidi Nordhagen 1943
* Nardo-Caricion rigidae Nordhagen 1943
* Anemonastro sibirici-Festucion ovinae Chytrý et al. 1993
* Caricion curvulae Br.-Bl. 1925
* Juncion trifidi Krajina 1933
* Festucion supinae Br.-Bl. 1948
* Festucion eskiae Br.-Bl. 1948
* Anemonion speciosae Minaeva ex Onipchenko 2002
* Nardion strictae Br.-Bl. 1926
* Festucion variae Br.-Bl. 1925
* Festucion spadiceae Nègre 1969
* Festucion macratherae Avena et Bruno 1975 corr. Petriccione et Persia 1995
* Potentillo montenegrinae-Festucion paniculatae Redžic ex Carni et Mucina 2012
* Agrostion schraderanae Grabherr 1993
* Festucion woronowii Tsepkova 1987
* Campanulo herminii-Nardion strictae Rivas-Mart. 1964
* Plantaginion thalackeri Quézel 1953
* Sesamoido pygmaeae-Poion violaceae Gamisans 1975
* Festuco-Poion violaceae Horvat 1936 nom. inval.
* Seslerion comosae Horvat et al. 1937
* Trifolion parnassii Quézel ex Quézel et al. 1992
* Saxifrago tricuspidatae-Calamagrostion purpurascentis Cooper ex Drees et Daniëls 2009
* Potentillo-Polygonion vivipari Nordhagen ex Dierßen 1992
* Equiseto-Galion borealis Tx. in Tx. et Böttcher 1969
* Nardo-Agrostion tenuis Sillinger 1933
* Ranunculo pollinensis-Nardion strictae Bonin 1972
* Achilleo-Arnicion Horvat et Pawlowski in Horvat 1960
* Potentillo ternatae-Nardion Simon 1958

E4.4 - Calcareous alpine and subalpine grassland
* Seslerion albicantis Br.-Bl. in Br.-Bl. et Jenny 1926 corr. Oberd. 1983
* Caricion austroalpinae Sutter 1962
* Caricion ferrugineae Br.-Bl. 1931
* Caricion firmae Gams 1936
* Seslerio-Asterion alpini Hadac ex Hadac et al. 1969
* Seslerion tatrae Pawlowski 1935 corr. Klika 1955
* Festuco saxatilis-Seslerion bielzii (Pawlowski et Walas 1949) Coldea 1984
* Laserpitio nestleri-Ranunculion thorae Vigo ex Molero 1981
* Primulion intricatae Br.-Bl. ex Vigo 1972
* Armerion cantabricae Rivas-Mart. et al. 1984
* Seslerion tenuifoliae Horvat 1930
* Seslerio juncifoliae-Caricion firmae Trinajstic 2005

* Festucion pungentis Horvat 1930
* Festuco-Knaution longifoliae Jovanovic-Dunjic 1955
* Seslerion apenninae Bruno et Furnari 1966
* Oxytropidion dinaricae Lakušic 1966
* Anthyllido-Seslerion klasterskyi Simon 1958
* Seslerio-Festucion xanthinae Horvat in Horvat, Glavac et Ellenberg 1974
* Seslerion nitidae Horvat 1936
* Caricion nardinae Nordhagen 1936
* Oxytropido-Elynion myosuroidis Br.-Bl. (1948) 1949
* Festucion versicoloris Krajina 1933
* Agrostion alpinae Jeník et al. 1980
* Kobresion capilliformis Tsepkova 1987
* Ononidion striatae Br.-Bl. et Susplugas 1937
* Ononidion cristatae Royer 1991
* Festucion scopariae Br.-Bl. 1948
* Avenion sempervirentis Barbero 1968
* Festucion burnatii Rivas Goday et Rivas-Mart. ex Mayor et al. 1973

E4.5 - Alpine and subalpine enriched grassland
* Triseto flavescentis-Polygonion bistortae Br.-Bl. et Tx. ex Marschall 1947
* Pancicion serbicae Lakušic 1966
* Poion alpinae Gams ex Oberd. 1950
* Poion supinae Rivas-Mart. et Géhu 1978

E5 - Woodland fringes and clearings and tall forb stands

E5.1 - Anthropogenic herb stands
* Parietario judaicae-Centranthion rubri Rivas-Mart. 1960
* Parietario judaicae-Hyoscyamion aurei S. Brullo et Guarino 1998
* Cymbalario muralis-Asplenion Segal 1969
* Chenopodion muralis Br.-Bl. in Br.-Bl. et al. 1936
* Mesembryanthemion crystallini Rivas-Martínez et al. 1993
* Eragrostion cilianensis-minoris Tx. ex Oberd. 1954
* Chenopodion botryos S. Brullo et Marcenó 1980
* Diplotaxidion erucoidis Br.-Bl. in Br.-Bl. et al. 1936
* Matricario chamomillae-Chenopodion albi Timár 1954
* Salsolion ruthenicae Philippi 1971
* Atriplicion Passarge 1978
* Malvion neglectae (Gutte 1972) Hejný 1978
* Sisymbrion officinalis Tx. et al. ex von Rochow 1951
* Echio plantaginei-Galactition tomentosae O. de Bolòs et Molinier 1969
* Hordeion murini Br.-Bl. in Br.-Bl. et al. 1936
* Allion triquetri O. de Bolòs 1967
* Cardaminion graecae Biondi et al. 2004 nom. inval.
* Euphorbio taurinensis-Geranion lucidi Matevski et Carni in Mucina et al. 2009
* Geranio purpurei-Torilidion Lohmeyer et Trautmann 1970
* Geranio pusilli-Anthriscion caucalidis Rivas-Mart. 1978
* Parietarion lusitanico-mauritanicae Rivas-Mart. et al. 2002
* Valantio-Galion muralis S. Brullo in S. Brullo et Marcenó 1985
* Veronico-Urticion urentis S. Brullo in S. Brullo et Marcenó 1985
* Onopordion acanthii Br.-Bl. et al. 1936
* Dauco-Melilotion Görs ex Rostanski et Gutte 1971
* Cirsion richterano-chodati (Rivas-Mart. in Rivas-Mart. et al. 1984) Rivas-Mart. et al. 1991
* Carduo carpetani-Cirsion odontolepidis Rivas-Mart. et al. 1986
* Convolvulo-Agropyrion Görs 1966
* Artemisio absinthii-Agropyrion intermedii T. Müller et Görs 1969
* Artemisio marschalliani-Elytrigion intermedii Korotchenko et Didukh 1997

* Silybo mariani-Urticion piluliferae Sissingh ex Br.-Bl. et O. de Bolòs 1958
* Onopordion castellani Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart. et al. 2002
* Onopordion illyrici Oberd. 1954
* Scolymion hispanici Morariu 1967
* Inulo viscosae-Agropyrion repentis Biondi et Allegrezza 1996
* Bromo madritensis-Oryzopsion miliaceae O. de Bolòs 1970
* Hyperico perforati-Ferulion communis Vicente Orellana et Galán de Mera 2008
* Arction lappae Tx. 1937
* Aegopodion podagrariae Tx. 1967
* Parietarion officinalis Boscaiu et al. 1964
* Balloto-Conion maculati S. Brullo et Marcenó 1985
* Anthriscion nemorosae S. Brullo in S. Brullo et Marcenó 1985
* Ecliption albae Lebrun 1947
* Eleusinion indicae Léonard 1954

E5.2 - Thermophile woodland fringes
* Trifolion medii T. Müller 1962
* Knaution dipsacifoliae Julve ex Dengler et Boch 2008
* Geranion sanguinei Tx. in T. Müller 1962
* Galio litoralis-Geranion sanguinei Géhu et Géhu-Franck in de Foucault et al. 1983
* Stachyo lusitanicae-Cheirolophion sempervirentis (Capelo 1996) Capelo stat. nov. hoc loco
* Dictamno albi-Ferulagion galbaniferae (van Gils et al. 1975) de Foucault et al. ex Carni et Dengler in Mucina et al. 2009
* Lathyro laxiflori-Trifolion velenovskyi (Carni et al. 2000) Carni 2005
* Melampyrion pratensis Passarge 1979
* Violo rivinianae-Stellarion holosteae Passarge 1994
* Poion nemoralis Dengler et al. 2006
* Teucrion scorodoniae de Foucault et al. 1983
* Linarion triornithophorae Rivas-Mart. et al. 1984
* Origanion virentis Rivas-Mart. et O. de Bolòs in Rivas-Mart. et al. 1984
* Ranunculo cortusifolii-Geranion canariensis Rivas-Mart. et al. 1993

E5.3 - [Pteridium aquilinum] fields
* Violion caninae Schwickerath 1944
* Holco mollis-Pteridion aquilini Passarge (1994) 2002
* Lonicero-Rubion silvatici Tx. et Neumann ex Wittig 1977

E5.4 - Moist or wet tall-herb and fern fringes and meadows
* Petasition officinalis Sillinger 1933
* Senecionion samniti Bonin 1978
* Filipendulo-Petasition Br.-Bl. ex Duvigneaud 1949
* Deschampsion cespitosae Horvatic 1930
* Althaeion officinalis Golub et Mirkin in Golub 1995
* Euphorbion palustris Ageleulov et Golub in Golub 1995
* Lythro-Euphorbion Mirkin et Naumova 1986
* Senecionion fluviatilis Tx. ex Moor 1958
* Archangelicion litoralis Tx. ex Scamoni et Passarge 1963
* Nardosmion laevigatae Klotz et Köck 1986
* Cynancho-Convolvulion sepium Rivas Goday et Rivas-Mart. ex Rivas-Mart. 1977
* Dorycnion recti Géhu et Biondi 1989
* Ipomoeo acuminatae-Ageratinion adenophorae Espírito-Santo et al. 2004
* Dactylido-Aegopodion Passarge 1967 nom. conserv. propos.
* Impatienti noli-tangere-Stachyion sylvaticae Görs ex Mucina 1993
* Aegopodion podagrariae Tx. 1967

E5.5 - Subalpine moist or wet tall-herb and fern stands
* Adenostylion alliariae Br.-Bl. 1926 nom. conserv. propos.
* Dryopterido-Athyrion distentifolii (Holub ex Sýkora et Štursa 1973) Jeník et al. 1980

* Delphinion elati Hadac ex Hadac et al. 1969
* Cirsion flavispinae Quézel 1953
* Doronicion corsici Gamisans 1975
* Cirsion appendiculati Horvat et al. 1937
* Rumicion alpini Rübel ex Scharfetter 1938
* Mulgedion alpinI Nordhagen 1943
* Polemonio acutiflori-Veratrion lobeliani Telyatnikov 2012
* Triseto sibiricae-Aconition septentrionalis Ermakov et al. 2000

E5.6 - Lowland habitats colonised by tall nitrophilous herbs

E5.7 - Boulder fields

E6 - Inland salt steppes

E6.1 - Mediterranean inland salt steppes

* Frankenion pulverulentae Rivas-Mart. ex Castroviejo et Porta 1976
* Gaudinio-Podospermion cani S. Brullo et Siracusa 2000
* Mesembryanthemion nodiflori Géhu et al. 1990
* Lygeo-Lepidion cardaminis Rivas Goday et Rivas-Mart. ex Rivas-Mart. et Costa 1984
* Lygeo sparti-Limonion furfuracei Rigual 1972
* Limonion catalaunico-viciosoi Rivas-Mart. et Costa 1984
* Limonion confusi (Br.-Bl. 1933) Rivas-Mart. et Costa 1984
* Triglochino barrelieri-Limonion glomerati Biondi et al. 2001
* Halo-Artemision Pignatti 1953
* Heleochloion Br.-Bl. ex Rivas Goday 1956

E6.2 - Continental inland salt steppes

* Salicornion prostratae Géhu 1992
* Microcnemion coralloidis Rivas-Mart. et Gàhu in Rivas-Mart. 1984
* Suaedion acuminatae Golub et Tsorbadze in Golub 1995 corr. Lysenko in Mucina et al. in prep.
* Thero-Camphorosmion annuae Vicherek 1973
* Camphorosmo songoricae-Suaedion corniculatae Freitag et al. 2001
* Kalidion caspici Golub et al. 2001
* Climacoptero crassae-Suaedion acuminatae Golub et Corbadze 1989 corr. Lysenko in Mucina et al. in prep.
* Artemisio santonicae-Puccinellion fominii Shelyag-Sosonko et al. 1989
* Camphorosmo-Agropyrion desertori Korzhenevsky et Klyukin 1991
* Festucion pseudovinae Soó 1933
* Peucedano officinalis-Asterion sedifolii Borhidi 1996
* Puccinellion limosae Soó 1933
* Artemision maritimae Micevski 1970
* Atraphaxo-Capparidion Korzhenevsky 1992
* Plantagini salsae-Artemision santonici Lysenko & Mucina in Lysenko et al. 2011
* Limonion sareptani Golub 1994
* Limonion tomentelli Agafonov et Golub in Golub 1994
* Festuco valesiacae-Limonion gmelinii Mirkin in Golub et Solomakha 1988
* Diantho guttati-Million vernalis Umanets et Solomakha 1998
* Alhagion pseudalhagi Golub et Czorbadze in Golub 1994
* Artemisio pauciflorae-Camphorosmion monspeliacae Karpov 2001
* Beckmannion eruciformis Soó 1933
* Agrostio stoloniferae-Beckmannion eruciformis Mirkin in Barabash et al. 1989
* Carici dilutae-Juncion gerardii Mucina et Lysenko in Mucina et al. in prep.
* Cirsion esculenti Golub 1994
* Cypero-Spergularion salinae Slavnic 1948
* Lepidion latifolii Golub et Mirkin 1986

E7 - Sparsely wooded grasslands

E7.1 - Atlantic parkland

E7.2 - Sub-continental parkland

E7.3 - Dehesa

F - Heathland, scrub and tundra

F1 - Tundra

F1.1 - Shrub tundra

* Loiseleurio-Arctostaphylion Kalliola 1939
* Phyllodoco-Vaccinion myrtilli Nordhagen 1943

F1.2 - Moss and lichen tundra

* Dryadion integrifoliae Ohba ex Daniëls 1982
* Loiseleurio-Arctostaphylion Kalliola 1939

F2 - Arctic, alpine and subalpine scrub

F2.1 - Subarctic and alpine dwarf willow scrub

* Salicion herbaceae Br.-Bl. in Br.-Bl. et Jenny 1926
* Salici herbaceae-Caricion lachenalii Béguin et Theurillat 1982
* Arabidion caeruleae Br.-Bl. in Br.-Bl. et Jenny 1926

F2.2 - Evergreen alpine and subalpine heath and scrub

* Caricion nardinae Nordhagen 1936
* Dryadion integrifoliae Ohba ex Daniëls 1982
* Loiseleurio-Arctostaphylion Kalliola 1939
* Phyllodoco-Vaccinion myrtilli Nordhagen 1943
* Loiseleurio-Vaccinion Br.-Bl. in Br.-Bl. et Jenny 1926
* Rhododendro ferrugineae-Vaccinion Schnyder 1930
* Juniperion nanae Br.-Bl. in Br.-Bl. et al. 1939
* Bruckenthalion spiculifoliae Horvat 1949
* Rhododendrion caucasici Onipchenko 2002
* Salici kazbekensis–Empetrion nigrae Onipchenko 2002
* Aconito nasuti–Juniperion NANAE Onipchenko 2002
* Ericion carneae Rübel ex Grabherr et al. 1993
* Pino sylvestris-Juniperion sabinae Rivas Goday in Rivas Goday et Borja 1961
* Cytision oromediterranei Tx. in Tx. et Oberd. 1958 corr. Rivas-Mart. 1987
* Genisto versicoloris-Juniperion hemisphaericae Rivas-Mart. et J.A. Molina in Rivas-Mart., Fernández-González et Loidi 1999
* Pruno prostratae-Juniperion sabinae Rivas-Mart. et J.A. Molina in Rivas-Mart., Fernández-González et Loidi 1999
* Daphno-Genistion radiatae N. Randelovic et Rexhepi 1980
* Daphno oleoidis-Juniperion alpinae Stanisci 1997
* Genisto pilosae-Vaccinion Br.-Bl. 1926

F2.3 - Subalpine deciduous scrub

* Adenostylion alliariae Br.-Bl. 1926 nom. conserv. propos.
* Lonicero-Rhamnion falacis P. Fukarek 1969
* Alnion viridis Schnyder 1930
* Salicion pentandrae Br.-Bl. 1967
* Salicion helveticae Theurillat et al. 1995
* Salicion silesiacae Rejmánek et al. 1971

F2.4 - Conifer scrub close to the tree limit

* Pinion mugo Pawlowski et al. 1928
* Pino mugo-Ericion Leibundgut 1948
* Epipactido atropurpureae-Pinion mugo Stanisci 1997
* Lonicero borbasianae-Pinion mugo Carni et Mucina 2012

F3 - Temperate and mediterranean-montane scrub

F3.1 - Temperate thickets and scrub

* Arctio-Sambucion nigrae Doing 1969
* Chelidonio-Acerion negundi L. Ishbirdin et A. Ishbirdin 1989
* Berberidion vulgaris Br.-Bl. ex Tx. 1952 nom. conserv.
* Carpino-Prunion spinosae Weber 1974
* Pruno spinosae-Rubion radulae Weber 1974

* Frangulo alni-Pyrion cordatae Herrera et al. 1991
* Tamo communis-Viburnion lantanae (Géhu et al. 1983) Mucina stat. nov. hoc loco
* Pruno tenellae-Syringion B. Jovanovic 1979
* Prunion fruticosae Tx. 1952
* Lamio purpureae-Acerion tatarici Fitsailo 2007
* Ribero alpini-Juniperion communis (Cutini et al. 2002) all. nov. hoc loco
* Carici-Juniperion communis Passarge 1978 nom. inval.
* Sambuco racemosae-Salicion capreae Tx. et Neumann ex Oberd. 1957
* Vaccinio-Juniperion communis Passarge 1968
* Cytision oromediterraneo-scoparii Rivas-Mart. et al. 2002
* Sarothamnion scoparii Oberd. 1957
* Lonicero-Rubion silvatici Tx. et Neumann ex Wittig 1977

F3.2 - Submediterranean deciduous thickets and brushes
* Berberidion vulgaris Br.-Bl. ex Tx. 1952 nom. conserv.
* Amelanchiero-Buxion O. de Bolòs et Romo in Romo 1989
* Tamo communis-Viburnion lantanae (Géhu et al. 1983) Mucina stat. nov. hoc loco
* Pruno spinosae-Rubion ulmifolii O. de Bolòs 1954
* Lonicero arboreae-Berberidion hispanicae O. de Bolòs 1954
* Cytision sessilifolii Biondi in Biondi et al. 1989
* Berberido aetnensis-Crataegion laciniatae Gianguzzi et al. 2011
* Berberido creticae-Prunion cocomiliae Bergmeier 1990
* Pruno tenellae-Syringion B. Jovanovic 1979
* Asparago verticillati-Crataegion tauricae Korzhenevsky et Klyukin 1990
* Rhamno-Paliurion Trinajstic (1978) 1996
* Eryngio campestris-Paliurion spinae-christi (Jovanovic 1985) Matevski et al. 2008
* Fraxino orni-Cotinion Soó 1960
* Pruno tenellae-Syringion (B. Jovanovic 1979) Carni et al. 2009
* Syringo-Carpinion orientalis Jakucs 1959
* Ulici europaei-Cytision striati Rivas-Mart. et al. 1991
* Genistion floridae Rivas-Mart. 1974
* Cytision multiflori Rivas-Mart. 1974
* Retamion monospermae Rivas-Mart et al. 2002
* Retamion sphaerocarpae Rivas-Mart. 1981
* Adenocarpion decorticantis (Rivas-Mart. et F. Valle ex F. Valle 1985) Rivas-Mart., Fernández-González et Loidi 1999
* Violo messanensis-Adenocarpion intermedii Mucina all. nov. hoc loco
* Erico scopariae-Cytision scoparii Mucina 2012

F4 - Temperate shrub heathland

F4.1 - Wet heaths
* Ericion tetralicis Schwickerath 1933
* Oxycocco-Ericion tetralicis Nordhagen ex Tx. 1937
* Daboecion cantabricae (Dupont ex Rivas-Mart. 1979) Rivas-Mart. et al. in Loidi et al.1997
* Genistion micrantho-anglicae Rivas-Mart. 1979
* Ulicion minoris Malcuit 1929

F4.2 - Dry heaths
* Daboecion cantabricae (Dupont ex Rivas-Mart. 1979) Rivas-Mart. et al. in Loidi et al.1997
* Ericion cinereae Böcher 1940
* Ericion umbellatae Br.-Bl. in Br.-Bl. et al. 1952
* Stauracanthion boivinii (Rivas-Mart. 1979) Rivas-Mart., Fernández-González et Loidi 1999
* Ulicion minoris Malcuit 1929
* Genisto pilosae-Vaccinion Br.-Bl. 1926
* Ericion arboreae (Rivas-Mart. ex Rivas-Mart. et al. 1986) Rivas-Mart. 1987

F4.3 - Macaronesian heaths
* Daboecion azoricae Lüpnitz 1975

* Myrico fayae-Ericion arboreae Oberd. 1965
* Violion cheiranthifoliae Voggenreiter ex Martín Osorio, Wildpret et Rivas-Mart. in Martín Osorio et al. 2007
* Plantaginion webbii Martín Osorio, Wildpret et Rivas-Mart. In Martín Osorio et al. 2007

F5 - Maquis, arborescent matorral and thermo-Mediterranean brushes

F5.1 - Arborescent matorral
* Juniperion turbinatae Rivas-Mart. 1975 corr. 1987
* Quercion calliprini Zohary ex Quézel et al. 1992
* Quercion alnifoliae Barbero & Quézel 1979
* Quercion ilicis Br.-Bl. ex Molinier 1934
* Querco rotundifoliae-Oleion sylvestris Barbero, Quézel et Rivas-Mart. in Rivas-Mart. et al. 1986
* Quercion broteroi Br.-Bl. et al. 1956 corr. Rivas-Mart. 1972
* Erico-Quercion ilicis S. Brullo et al. 1977
* Arbuto andrachnes-Quercion cocciferae Barbero et Quézel 1979
* Arbuto unedonis-Laurion nobilis Rivas-Mart., Fernández-González et Loidi 1999

F5.2 - Maquis
* Oleo-Ceratonion siliquae Br.-Bl. ex Guinochet et Drouineau 1944
* Ericion arboreae (Rivas-Mart. ex Rivas-Mart. et al. 1986) Rivas-Mart. 1987
* Asparago albi-Rhamnion oleoidis Rivas Goday ex Rivas-Mart. 1975
* Rhamno lycioidis-Quercion cocciferae Rivas Goday ex Rivas-Mart. 1975
* Periplocion angustifoliae Rivas-Mart. 1975
* Pistacio terebinthi-Rhamnion alaterni Barbero et Quézel ex Quézel et al. 1992,
* Ceratonio-Pistacion lentisci Zohary ex Zohary et Orshan 1959
* Quercion ilicis Br.-Bl. ex Molinier 1934
* Querco rotundifoliae-Oleion sylvestris Barbero, Quézel et Rivas-Mart. in Rivas-Mart. et al. 1986

F5.3 - Pseudomaquis
* Rhamno-Paliurion Trinajstic (1978) 1996
* Eryngio campestris-Paliurion spinae-christi (Jovanovic 1985) Matevski et al. 2008
* Junipero excelsae-Quercion pubescentis Jakucs 1961
* Fraxino orni-Cotinion Soó 1960
* Pruno tenellae-Syringion (B. Jovanovic 1979) Carni et al. 2009
* Syringo-Carpinion orientalis Jakucs 1959

F5.4 - [Spartium junceum] fields
* Oleo-Ceratonion siliquae Br.-Bl. ex Guinochet et Drouineau 1944

F5.5 - Thermo-Mediterranean scrub
* Ericion umbellatae Br.-Bl. in Br.-Bl. et al. 1952
* Stauracanthion boivinii (Rivas-Mart. 1979) Rivas-Mart., Fernández-González et Loidi 1999
* Eryngio trifidi-Ulicion erinacei Rothmaler 1943
* Rosmarinion officinalis Molinier 1934
* Cisto cretici-Genistion corsicae Arrigoni et Di Tommaso 1991
* Euphorbion pithyusae Biondi et Géhu in Géhu et Biondi 1994
* Helichrysion italici Biondi 2007
* Thymo moroderi-Sideritidion leucanthae O. de Bolòs 1957 corr. Alcaraz et al. 1989
* Anthyllido terniflorae-Salsolion papillosae Rivas Goday et Esteve 1968
* Sideritidion bourgaeanae Peinado et Martínez-Parras in Peinado et al. 1992
* Lavandulion lanatae (Martínez-Parras et al. 1984) Rivas-Mart. et al. 2002
* Staehelino-Ulicion baetici Rivas Goday et Rivas-Mart. 1969
* Retamion monospermae Rivas-Mart et al. 2002
* Retamion sphaerocarpae Rivas-Mart. 1981
* Telinion monspessulano-linifoliae Rivas-Mart. et al. 2002
* Genisto spartioidis-Phlomidion almeriensis Rivas Goday et Rivas-Mart. 1969
* Genisto scorpii-Retamion sphaerocarpae Rivas-Mart. et Costa in Rivas-Mart. et al. 2011
* Genistion specioso-equisetiformis Rivas-Mart. et F. Valle in Rivas-Mart. et al. 2011
* Ulici argentei-Cistion ladaniferi Br.-Bl. et al. 1965
* Cistion ladaniferi Br.-Bl. ex A. Bolós et O. Bolòs in A. Bolós 1950

* Calicotomo villosae-Genistion tyrrhenae Biondi 2000
* Teucrion mari (Gamisans et Muracciole 1984) Biondi et Mossa 1992
* Coremation albi Rothmaler 1943
* Oleo-Ceratonion siliquae Br.-Bl. ex Guinochet et Drouineau 1944
* Juniperion turbinatae Rivas-Mart. 1975 corr. 1987
* Asparago albi-Rhamnion oleoidis Rivas Goday ex Rivas-Mart. 1975
* Periplocion angustifoliae Rivas-Mart. 1975
* Pino acutisquamae-Juniperion phoeniceae A.V. Pérez et Cabezudo in A.V. Pérez et al. 1988 corr. Rivas-Mart. et al. 2002
* Quercion fruticosae Rothmaler 1954
* Rubo longifoliae-Coremation albi Rivas-Mart. in Rivas-Mart. et al. 1980
* Rhamno graeci-Juniperion lyciae Costa et al. 1984
* Ceratonio-Pistacion lentisci Zohary ex Zohary et Orshan 1959
* Nicotiano glaucae-Ricinion communis Rivas-Mart., Fernández-González et Loidi 1999

F6 - Garrigue

F6.1 - Western garrigues
* Lavandulo latifoliae-Genistion boissieri Rivas Goday et Rivas-Mart. 1969
* Eryngio trifidi-Ulicion erinacei Rothmaler 1943
* Sideritido incanae-Salvion lavandulifoliae (Rivas Goday et Rivas-Mart. 1969) Izco et Molina 1989
* Helianthemo italici-Aphyllanthion monspeliensis Díez et al. 1998
* Rosmarinion officinalis Molinier 1934
* Hypericion ericoidis Esteve ex Costa et Peris 1985
* Hypericion balearici O. de Bolòs et Molinier 1958
* Cisto cretici-Genistion corsicae Arrigoni et Di Tommaso 1991
* Euphorbion pithyusae Biondi et Géhu in Géhu et Biondi 1994
* Dactylo glomeratae ssp. hispanicae-Helichrysion stoechadis Géhu et Biondi in Géhu 1994
* Artemisio albae-Saturejion montanae Allegrezza et al. 1997
* Lavandulion lanatae (Martínez-Parras et al. 1984) Rivas-Mart. et al. 2002
* Staehelino-Ulicion baetici Rivas Goday et Rivas-Mart. 1969
* Cistion laurifolii Rivas Goday in Rivas Goday et al. 1956
* Ulici argentei-Cistion ladaniferi Br.-Bl. et al. 1965
* Cistion ladaniferi Br.-Bl. ex A. Bolós et O. Bolòs in A. Bolós 1950
* Calicotomo villosae-Genistion tyrrhenae Biondi 2000
* Teucrion mari (Gamisans et Muracciole 1984) Biondi et Mossa 1992
* Coremation albi Rothmaler 1943
* Cisto eriocephali-Ericion multiflorae Biondi 2000

F6.2 - Eastern garrigues
* Hyperico olympici-Cistion cretici (Oberd. 1954) R.Jahn et Bergmeier in Mucina et al. 2009
* Helichryso barrelieri-Phagnalion graeci (Barbéro et Quézel 1989) R.Jahn in Mucina et al. 2009
* Hyperico empetrifolii-Micromerion graecae Barbero et Quézel 1989
* Helichryso sanguinei-Origanion syriaci Barbero et Quézel 1989
* Micromerion Oberd. 1954
* Sarcopoterio spinosi-Genistion fasselatae Costa et al. 1984

F6.3 - Illyrian garrigues
* Cisto cretici-Ericion manipuliflorae Horvatic 1958
* Cisto eriocephali-Ericion multiflorae Biondi 2000

F6.4 - Black Sea garrigues
* Ptilostemonion echinocephali Korzhenevsky 1990
* Elytrigio nodosae-Rhoion coriariae Korzhenevsky et Ryff 2002
* Gypsophilo glomeratae-Cephalarion coriaceae Ryff in Golub et al. 2011
* Vicio hirsutae-Galion aparines Ryff ex Mucina 2012

F6.5 - Macaronesian garrigues

F6.6 - Supra-Mediterranean garrigues
* Lavandulo latifoliae-Genistion boissieri Rivas Goday et Rivas-Mart. 1969

* Sideritido incanae-Salvion lavandulifoliae (Rivas Goday et Rivas-Mart. 1969) Izco et Molina 1989
* Helianthemo italici-Aphyllanthion monspeliensis Díez et al. 1998
* Polygalo-Seslerion insularis Arrigoni ex Arrigoni et Di Tommaso 1986
* Artemisio albae-Saturejion montanae Allegrezza et al. 1997
* Armerio sardoae-Genistion salzmannii Arrigoni 1986
* Ononidion striatae Br.-Bl. et Susplugas 1937
* Lavandulo angustifoliae-Genistion cinereae Barbero et al. 1972
* Plantagini discoloris-Thymion mastigophori Molina et Izco 1989
* Seselio granatensis-Festucion hystricis Rivas-Mart. in Rivas-Mart. et al. 2011

F6.7 - Mediterranean gypsum scrubs
* Lepidion subulati Bellot et Rivas Goday in Rivas Goday et al. 1957
* Thymo-Teucrion verticillati Rivas Goday in Rivas Goday et al. 1957

F6.8 - Xero-halophile scrubs
* Salsolo vermiculatae-Peganion harmalae Br.-Bl. et O. de Bolòs 1954
* Haloxylo tamariscifolii-Atriplicion glaucae Rivas Goday et Rivas-Mart. ex Rigual 1972
* Salsolo oppositifoliae-Suaedion fruticosae Rigual 1972
* Lycio europaei-Ipomoeion purpureae O. de Bolòs ex Mucina hoc loco
* Artemision arborescentis Géhu et al. 1986
* Atriplici halimi-Suaedion verae Géhu et al. ex Bergmeier et Dimopoulos 2003
* Medicagini citrinae-Lavaterion arboreae O. de Bolòs et Vigo in O. de Bolòs et al. 1984
* Artemisio glutinosae-Santolinion rosmarinifoliae Costa 1975
* Santolinion pectinato-canescentis Peinado et Martínez-Parras 1984
* Chenoleion tomentosae Sunding 1972
* Artemisio thusculae-Rumicion lunariae Rivas-Mart. et al. 1993
* Launaeo arborescentis-Schizogynion sericeae Rivas-Mart. et al. 1993
* Argyranthemo suculenti-Calendulion maderensis Capelo et al. 2000
* Nicotiano glaucae-Ricinion communis Rivas-Mart., Fernández-González et Loidi 1999
* Artemision lerchianae Golub 1994
* Euphorbion seguieranae Golub 1994
* Tamariceto-Salsolion australis Golub 1994

F7 - Spiny Mediterranean heaths (phrygana, hedgehog-heaths and related coastal cliff vegetation)

F7.1 - West Mediterranean spiny heaths
* Rosmarinion officinalis Molinier 1934
* Hypericion balearici O. de Bolòs et Molinier 1958

F7.2 - Central Mediterranean spiny heaths
* Anthyllidion hermanniae Klein 1972

F7.3 - East Mediterranean phrygana
* Hyperico olympici-Cistion cretici (Oberd. 1954) R.Jahn et Bergmeier in Mucina et al. 2009
* Helichryso barrelieri-Phagnalion graeci (Barbéro et Quézel 1989) R.Jahn in Mucina et al. 2009
* Helichryso sanguinei-Origanion syriaci Barbero et Quézel 1989
* Micromerion Oberd. 1954
* Sarcopoterio spinosi-Genistion fasselatae Costa et al. 1984

F7.4 - Hedgehog-heaths
* Cytision oromediterranei Tx. in Tx. et Oberd. 1958 corr. Rivas-Mart. 1987
* Genisto versicoloris-Juniperion hemisphaericae Rivas-Mart. et J.A. Molina in Rivas-Mart., Fernández-González et Loidi 1999
* Pruno prostratae-Juniperion sabinae Rivas-Mart. et J.A. Molina in Rivas-Mart., Fernández-González et Loidi 1999
* Berberidion aetnensis S. Brullo et al. 2001
* Xeroacantho-Erinaceion (Quézel 1953) O. de Bolòs 1967
* Andryalion agardhii Rivas-Mart. ex Rivas Goday et Mayor 1966
* Genistion lobelii Molinier 1934
* Echinospartion horridi Rivas-Mart. et al. 1991
* Genistion occidentalis Rivas-Mart. in Rivas-Mart. et al. 1984
* Anthyllidion hermanniae Klein 1972

* Rumici-Astragalion siculi Poli 1965
* Cerastio-Astragalion nebrodensis Pignatti et Nimis ex S. Brullo 1984
* Armerion nebrodensis S. Brullo 1984
* Armerion aspomontanae S. Brullo et al. 2001
* Koelerio brutiae-Astragalion calabrici Giacomini et Gentile ex S. Brullo in S. Brullo et al. 2005
* Astragalo angustifolii-Seslerion coerulantis Quézel ex Quézel et al. 1992
* Eryngio multifidi-Bromion fibrosi Quézel ex Quézel et al. 1992
* Stipo pulcherrimae-Morinion persicae Quézel ex Quézel et al. 1992
* Astragalion cretici Bergmeier 2002
* Verbascion spinosi Zaffran ex Bergmeier 2002
* Colchico cretensis-Cirsion morinifolii Bergmeier 2002
* Hyperico stenobotryos-Alyssion troodi S. Brullo et al. 2005
* Spartocytision nubigeni Oberd. ex Esteve 1973

F8 - Thermo-Atlantic xerophytic scrub

F8.1 - Canary Island xerophytic scrub
* Chenoleion tomentosae Sunding 1972
* Artemisio thusculae-Rumicion lunariae Rivas-Mart. et al. 1993
* Launaeo arborescentis-Schizogynion sericeae Rivas-Mart. et al. 1993
* Nicotiano glaucae-Ricinion communis Rivas-Mart., Fernández-González et Loidi 1999
* Soncho acaulis-Sempervivion Sunding 1972
* Greenovion aureae Rivas-Mart. et al. 1993
* Aichryso laxi-Monanthion laxiflorae Santos et Reyes Betancort 2009
* Aeonio-Euphorbion canariensis Sunding 1972
* Euphorbion regijsjubo-lamarckii Rivas-Mart., Wildpret, O. Rodríguez et Del Arco in Rivas-Mart. et al. 2011
* Mayteno canariensis-Juniperion canariensis Santos et F. Galván ex Santos 1983 corr. Rivas-Mart. et al. 1993
* Retamion rhodorhizoidis Del Arco et al. 2009
* Cisto canariensis-Micromerion hyssopifoliae Pérez de Paz et al. 1990 corr. Rivas-Mart. in Rivas-Mart. 2011

F8.2 - Madeiran xerophytic scrub
* Argyranthemo suculenti-Calendulion maderensis Capelo et al. 2000
* Soncho acaulis-Sempervivion Sunding 1972
* Sinapidendro angustifolii-Aeonion glutinosi Capelo et al. 2000
* Aeonio-Euphorbion canariensis Sunding 1972
* Euphorbion regijsjubo-lamarckii Rivas-Mart., Wildpret, O. Rodríguez et Del Arco in Rivas-Mart. et al. 2011
* Oleo maderensis-Maytenion umbellatae Capelo et al. 2000
* Soncho ustulati-Artemision argenteae Capelo et al. 2000

F9 - Riverine and fen scrubs

F9.1 - Riverine scrub
* Salicion albae Soó 1951
* Salicion triandrae T. Müller et Görs 1958
* Rubo caesii-Amorphion fruticosae Shevchyk et Solomakha 1996
* Salicion eleagno-daphnoidis (Moor 1958) Grass 1993
* Salicion phylicifoliae Dierßen 1992
* Salicion salvifoliae Rivas-Mart. et al. 1984
* Salicion discolori-neotrichae Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart. et al. 2002
* Salicion pedicellatae Rivas-Mart. et al. 1984
* Salicion cantabricae Rivas-Mart., T.E. Díaz et Penas in Rivas-Mart. et al. 2011

F9.2 - [Salix] carr and fen scrub
* Salicion cinereae T. Müller et Görs ex Passarge 1961

F9.3 - Southern riparian galleries and thickets
* Arbuto unedonis-Laurion nobilis Rivas-Mart., Fernández-González et Loidi 1999
* Rubio periclymeni-Rubion ulmifolii Oberd. ex Rivas-Mart. et al. 1993
* Tamaricion africanae Br.-Bl. et O. de Bolòs 1958
* Tamaricion boveano-canariensis Izco et al. 1984

* Rubo ulmifolii-Nerion oleandri O. de Bolòs 1958
* Securinegion buxifoliae Rivas Goday ex Lopez Saenz et Velasco 1995
* Tamaricion parviflorae I. Kárpáti et V. Kárpáti 1961
* Rubo sancti-Nerion oleandri Brullo et al. 2004
* Artemisio scopariae-Tamaricion ramosissimae Simon et Dihoru 1963
* Agropyro fragilis-Tamaricion ramosissimae Golub et Kuzmina 1996
* Galio humifusi-Tamaricion ramosissimae Golub et Kuzmina 1996

FA - Hedgerows
FA.1 - Hedgerows of non-native species
FA.2 - Highly-managed hedgerows of native species
FA.3 - Species-rich hedgerows of native species
FA.4 - Species-poor hedgerows of native species

FB - Shrub plantations
FB.1 - Shrub plantations for whole-plant harvesting
FB.2 - Shrub plantations for leaf or branch harvest
FB.3 - Shrub plantations for ornamental purposes or for fruit, other than vineyards
FB.4 - Vineyards

G - Woodland, forest and other wooded land
G1 - Broadleaved deciduous woodland
G1.1 - Riparian and gallery woodland, with dominant [Alnus], [Betula], [Populus] or [Salix]
* Alnion incanae Pawlowski et al. 1928
* Alno incanae-Salicion pentandrae Kielland-Lund 1981
* Alno-Quercion roboris Horvat 1950
* Salicion albae Soó 1951

G1.2 - Mixed riparian floodplain and gallery woodland
* Alnion incanae Pawlowski et al. 1928
* Alno-Quercion roboris Horvat 1950
* Alnion glutinosae Malcuit 1929

G1.3 - Mediterranean riparian woodland
* Populion albae Br.-Bl. ex Tchou Yen-Tcheng 1948
* Osmundo-Alnion glutinosae (Br.-Bl. et al. 1956) Dierschke et Rivas-Mart. in Rivas-Mart. 1975
* Rhododendro pontici-Prunion lusitanicae A.V. Pérez, Galán et Cabezudo in A.V. Pérez et al. 1999
* Platanion orientalis I. Kárpáti et V. Kárpáti 1961
* Lauro-Fraxinion angustifoliae I. Kárpáti et Kárpáti 1961
* Salicion canariensis Rivas-Mart. et al. ex Rivas-Mart., Fernández González et Lodi 1999
* Salicion albae Soó 1951

G1.4 - Broadleaved swamp woodland not on acid peat
* Alnion glutinosae Malcuit 1929

G1.5 - Broadleaved swamp woodland on acid peat
* Sphagno-Betulion pubescentis Passarge 1968
* Pleurozio-Betulion pubescentis Passarge 1968
* Salici pentandrae-Betulion pubescentis Clausnitzer in Dengler et al. 2004
* Rhamno carthaticae-Betulion pubescentis Clausnitzer in Dengler et al. 2004

G1.6 - [Fagus] woodland
* Scillo lilio-hyacinthi-Fagion Br.-Bl. 1967
* Galio rotundifolii-Fagion Gamisans 1975
* Geranio nodosi-Fagion Gentile ex Feoli et Lagonegro 1982
* Geranio striati-Fagion Gentile 1970
* Doronico orientalis-Fagion moesiacae (Raus 1980) Dierschke 1997
* Symphyto cordati-Fagion (Vida 1963) Täuber 1982
* Dentario quinquefoliae-Fagion Didukh 1996
* Fagion sylvaticae Luquet 1926
* Sorbo-Fagion Passarge in Passarge et G. Hofmann 1968
* Lonicero alpigenae-Fagion (Borhidi ex Soó 1964) Dierschke 1997

* Aremonio-Fagion (Horvat 1938) Borhidi in Török et al. 1989
* Endymio non-scripti-Fagion Dierschke (1989) 1998
* Rhododendro pontici-Fagion orientalis Horvat, Glavac et Ellenberg 1974
* Vaccinio-Fagion orientalis Passarge 1981
* Carpino-Fagion orientalis Kavgaci et al. 2012
* Violo odoratae-Fagion orientalis Kavgaci et al. 2012
* Luzulo-Fagion sylvaticae Lohmeyer et Tx. in Tx. 1954
* Ilici-Fagion sylvaticae Br.-Bl. 1967

G1.7 - Thermophilous deciduous woodland
* Junipero excelsae-Quercion pubescentis Jakucs 1961
* Syringo-Carpinion orientalis Jakucs 1959
* Quercion pubescenti-sessiliflorae Br.-Bl. 1932
* Aceri tatarici-Quercion Zólyomi 1957
* Quercion petraeae Issler 1931
* Erythronio-Quercion petraeae Ubaldi et al. 1988
* Carpino orientalis-Quercion pubescentis Korzhenevsky et Shelyag-Sosonko 1983
* Elytrigio nodosae-Quercion pubescentis Didukh 1996
* Carpino betuli–Quercion petraeae Grebenshchikov et al. 1990
* Quercion confertae Horvat 1958
* Quercion petraeae-cerridis Lakušic et B. Jovanovic in B. Jovanovic et al. ex Carni et al. 2009
* Fraxino orni-Ostryion Tomažic 1940
* Crataego laevigati-Quercion cerridis Arrigoni 1997
* Pino calabricae-Quercion congestae S. Brullo et al. 1999
* Aceri granatensis-Quercion fagineae (Rivas Goday, Rigual et Rivas-Mart. in Rivas Goday et al. 1960) Rivas-Mart. 1987
* Quercion macrolepidis Zohary ex Di Pietro et Mucina in Mucina et al. in prep.
* Quercion pyrenaicae Rivas Goday ex Rivas.-Mart. 1964

G1.8 - Acidophilous [Quercus]-dominated woodland
* Pulmonario longifoliae-Quercion roboris Rivas-Mart. et Izco in Rivas-Mart. et al. 2002
* Quercion petraeae Issler 1931
* Convallario majalis-Quercion roboris Shevchyk et Solomakha in Shevchyk et al. 1996
* Erythronio-Quercion petraeae Ubaldi et al. 1988
* Hymenophyllo-Quercion petraeae Pallas 2000
* Molinio-Quercion roboris Scamoni et Passarge 1959
* Quercion roboris Malcuit 1929
* Quercion robori-pyrenaicae (Braun-Blanquet et al. in P. da Silva et al. 1950 corr. Br.-Bl. et al. 1956) Rivas-Martínez 1975
* Vaccinio myrtilli-Quercion petraeae Pallas 1996
* Agrostio capillaris-Quercion petraeae Scamoni et Passarge 1959
* Castaneo-Quercion petraeae Soó 1964
* Quercion pyrenaicae Rivas Goday ex Rivas.-Mart. 1964
* Pino-Quercion Medwecka-Kornaš et al. in Szafer 1959

G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
* Betulion tortuosae Mucina 2012
* Rhododendro caucasici-Betulion litwinowii Onipchenko 2002
* Veronico teucrii-Pinion sylvestris Ermakov et Solomeshch in Ermakov et et al. 2000
* Trollio europaei-Pinion sylvestris Fedorov ex Ermakov et al. 2000
* Sambuco racemosae-Salicion capreae Tx. et Neumann ex Oberd. 1957
* Corylo avellanae-Populion tremulae Br.-Bl. ex Jurko 1964 nom. ambig. propos.
* Betulion carpatico-pubescentis Rivas-Mart. et Costa in Rivas-Mart. et al. 2002
* Betulion fontquerio-celtibericae Rivas-Mart. et Costa in Rivas-Mart. et al. 2002
* Aceri obtusati-Populion tremulae Taffetani 2000
* Helleboro odori-Betulion tremulae Mucina et Dimopoulos all. nova hoc loco
* Ligustro vulgaris-Betulion pubescentis Ge´hu 2006

G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

* Carpinion betuli Issler 1931
* Pulmonario longifoliae-Quercion roboris Rivas-Mart. et Izco in Rivas-Mart. et al. 2002
* Physospermo verticillati-Quercion cerridis Biondi et al. 2008
* Erythronio-Carpinion (Horvat 1958) Marincek in Wallnöfer et al. 1993
* Corno-Quercion petraeae Korzhenevsky 1982
* Paeonio dauricae-Quercion petraeae Didukh 1996
* Querco roboris-Tilion cordatae Solomeshch et Laivinsh ex Bulokhov et Solomeshch 2003
* Scillo sibericae-Quercion roboris Onyshchenko 2009
* Lathyro-Quercion roboris Solomeshch et al. 1989 nom. inval.
* Aconito septentrionalis-Tilion cordatae Solomeshch et al. 1993 nom. inval.
* Crataego–Carpinion caucasicae Passarge 1981
* Astrantio–Carpinion caucasicae Passarge 1981
* Tilio platyphylli-Acerion pseudoplatani Klika 1955
* Polysticho setiferi-Fraxinion excelsioris Géhu ex Theurillat et Mucina in Mucina ate al. 2012
* Lauro nobilis-Tilion platyphylli Biondi et al. 2008
* Lathyro veneti-Taxion baccatae Carni et Mucina 2012
* Alnion incanae Pawlowski et al. 1928
* Alno-Quercion roboris Horvat 1950

G1.B - Non-riverine [Alnus] woodland
* Alnion incanae Pawlowski et al. 1928
* Alnion glutinosae Malcuit 1929

G1.C - Highly artificial broadleaved deciduous forestry plantations
* Balloto nigrae-Robinion Hadac et Sofron 1980
* Chelidonio-Robinion Hadac et Sofron 1980 nom. inval.
* Euphorbio cyparissiae-Robinion Vítková in Kolbek et al. 2003

G1.D - Fruit and nut tree orchards

G2 - Broadleaved evergreen woodland

G2.1 - Mediterranean evergreen [Quercus] woodland
* Quercion calliprini Zohary ex Quézel et al. 1992
* Quercion alnifoliae Barbero & Quézel 1979
* Quercion ilicis Br.-Bl. ex Molinier 1934
* Querco rotundifoliae-Oleion sylvestris Barbero, Quézel et Rivas-Mart. in Rivas-Mart. et al. 1986
* Quercion broteroi Br.-Bl. et al. 1956 corr. Rivas-Mart. 1972
* Erico-Quercion ilicis S. Brullo et al. 1977
* Arbuto andrachnes-Quercion cocciferae Barbero et Quézel 1979

G2.2 - Eurasian continental sclerophyllous woodland
* Arbuto andrachnes-Quercion cocciferae Barbero et Quézel 1979

G2.3 - Macaronesian [Laurus] woodland
* Ixantho viscosae-Laurion azoricae Oberd. ex Santos in Rivas-Mart. et al. 1977
* Sibthorpio peregrinae-Clethrion arboreae Capelo et al. 2000
* Visneo mocanerae-Apollonion barbujanae Rivas-Mart. in Capelo et al. 2000
* Dryopterido azoricae-Laurion azoricae Rivas-Mart. et al. 2002
* Myrico fayae-Pittosporion undulati Lüpnitz 1976

G2.4 - [Olea europaea] - [Ceratonia siliqua] woodland
* Oleo-Ceratonion siliquae Br.-Bl. ex Guinochet et Drouineau 1944
* Ceratonio-Pistacion lentisci Zohary ex Zohary et Orshan 1959

G2.5 - [Phoenix] groves
* Rubo sancti-Nerion oleandri Brullo et al. 2004
* Phoenicion canariensis Rivas-Mart. et Del Arco in Rivas-Mart. et al. 2011

G2.6 - [Ilex aquifolium] woods
* Fagion sylvaticae Luquet 1926
* Carpinion betuli Issler 1931
* Pulmonario longifoliae-Quercion roboris Rivas-Mart. et Izco in Rivas-Mart. et al. 2002
* Molinio-Quercion roboris Scamoni et Passarge 1959

* Quercion roboris Malcuit 1929
* Luzulo-Fagion sylvaticae Lohmeyer et Tx. in Tx. 1954
* Quercion ilicis Br.-Bl. ex Molinier 1934

G2.7 - Canary Island heath woodland
* Myrico fayae-Ericion arboreae Oberd. 1965
* Polysticho falcinelli-Ericion arboreae Rivas-Mart. et al. 2002
* Telino canariensis-Adenocarpion foliolosi Rivas-Mart. et al. 1993
* Bystropogono punctati-Telinion maderensis Capelo et al. 2000
* Euphorbion melliferae Capelo et al. 2003

G2.8 - Highly artificial broadleaved evergreen forestry plantations

G2.9 - Evergreen orchards and groves

G3 - Coniferous woodland

G3.1 - [Abies] and [Picea] woodland
* Piceion excelsae Pawlowski et al. 1928
* Abieti-Piceion (Br.-Bl. in Br.-Bl. et al. 1939) Soó 1964
* Chrysanthemo rotundifolii-Piceion (Krajina 1933) Brezina et Hadac in Hadac 1962
* Aconito rubicundi-Abietion sibiricae Anekhonov et Chytrý 1998
* Abieti-Calamagrostion arundinaceae Horvat 1962
* Geranio striati-Fagion Gentile 1970
* Doronico orientalis-Fagion moesiacae (Raus 1980) Dierschke 1997
* Symphyto cordati-Fagion (Vida 1963) Täuber 1982
* Fagion sylvaticae Luquet 1926
* Lonicero alpigenae-Fagion (Borhidi ex Soó 1964) Dierschke 1997
* Aremonio-Fagion (Horvat 1938) Borhidi in Török et al. 1989
* Abietion cephalonicae Horvat, Glavac et Ellenberg 1974
* Paeonio broteroi-Abietion pinsapo (Rivas-Mart. 1987) Rivas-Mart. et al. 2002
* Luzulo-Fagion sylvaticae Lohmeyer et Tx. in Tx. 1954

G3.2 - Alpine [Larix] - [Pinus cembra] woodland
* Pino-Ericion carneae Br.-Bl. in Br.-Bl. et al. 1939
* Piceion excelsae Pawlowski et al. 1928

G3.3 - [Pinus uncinata] woodland
* Seslerio caeruleae-Pinion uncinatae Vigo 1974

G3.4 - [Pinus sylvestris] woodland south of the taiga
* Pino-Ericion carneae Br.-Bl. in Br.-Bl. et al. 1939
* Pulsatillo slavicae-Pinion Fajmonová 1978
* Fraxino orni-Ericion Horvat 1959
* Carici humilis-Pinion kochianae Didukh 2001
* Libanoti intermediae-Pinion sylvestris Didukh 2003
* Festuco-Pinion sylvestris Passarge 1968
* Kolerio glaucae-Pinion sylvestris Ermakov 1999
* Pino sylvestris-Juniperion sabinae Rivas Goday in Rivas Goday et Borja 1961
* Junipero hemisphaericae-Pinion sylvestris Rivas-Mart. 1983
* Avenello ibericae-Pinion ibericae Rivas-Mart. et J.A. Molina in Rivas-Mart., Fernández-González et Loidi 1999
* Ononido rotundifoliae-Pinion sylvestris Br.-Bl. 1950
* Pinion (Libbert 1933) Oberd. 1957 nom. ambig. propos.
* Caragano fruticis-Pinion sylvestris Solomeshch et al. 2002
* Veronico teucrii-Pinion sylvestris Ermakov et Solomeshch in Ermakov et et al. 2000
* Trollio europaei-Pinion sylvestris Fedorov ex Ermakov et al. 2000
* Pino-Quercion Medwecka-Kornaš et al. in Szafer 1959

G3.5 - [Pinus nigra] woodland
* Pino-Ericion carneae Br.-Bl. in Br.-Bl. et al. 1939
* Fraxino orni-Pinion nigrae Em 1978
* Chamaecytiso hirsuti-Pinion pallasianae Barbero et Quézel ex Quézel 1992

* Carici humilis-Pinion kochianae Didukh 2001
* Berberidion aetnensis S. Brullo et al. 2001
* Berberido creticae-Juniperion foetidissimae S. Brullo et al. 2001
* Abietion cephalonicae Horvat, Glavac et Ellenberg 1974

G3.6 - Subalpine mediterranean [Pinus] woodland
* Pinion heldreichii Horvat 1946
* Pinion peucis Horvat 1950

G3.7 - Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])
* Oleo-Ceratonion siliquae Br.-Bl. ex Guinochet et Drouineau 1944
* Ceratonio-Pistacion lentisci Zohary ex Zohary et Orshan 1959
* Pinion pineae Feinbrun 1959
* Quercion ilicis Br.-Bl. ex Molinier 1934
* Alkanno baeoticae-Pinion halepensis Mucina et Dimopoulos in Mucina et al. 2009

G3.8 - Canary Island [Pinus canariensis] woodland
* Cisto symphyfolii-Pinion canariensis Rivas Goday et Esteve ex Esteve 1969

G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]
* Juniperion thuriferae Rivas-Mart. 1969
* Junipero hemisphaericae-Pinion sylvestris Rivas-Mart. 1983
* Juniperion excelso-foetidissimae Em ex Matevski et al. 2010
* Jasmino-Juniperion excelsae Didukh et al. ex Didukh 1996
* Berberido creticae-Juniperion foetidissimae S. Brullo et al. 2001
* Lathyro veneti-Taxion baccatae Carni et Mucina 2012
* Junipero excelsae-Quercion pubescentis Jakucs 1961
* Acero sempervirentis-Cupression sempervirentis Barbero & Quézel ex Quézel et al. 1992
* Mayteno canariensis-Juniperion canariensis Santos et F. Galván ex Santos 1983 corr. Rivas-Mart. et al. 1993
* Culcito macrocarpae-Juniperion brevifoliae Lüpnitz 1975
* Junioperion cedri Martín Osorio, Wildpret et Rivas-Mart. in Martín Osorio et al. 2007

G3.A - [Picea] taiga woodland
* Piceion excelsae Pawlowski et al. 1928
* Empetro-Piceion obovatae Morozova et al. 2008
* Aconito septentrionalis-Piceion obovatae Solomeshch et al. ex Martynenko et al. 2008

G3.B - [Pinus] taiga woodland
* Pinion (Libbert 1933) Oberd. 1957 nom. ambig. propos.
* Cladonio stellaris-Pinion sylvestris Kielland-Lund ex Ermakov et Morozova 2011

G3.C - [Larix] taiga woodland
* Cladonio stellaris-Pinion sylvestris Kielland-Lund ex Ermakov et Morozova 2011
* Empetro-Piceion obovatae Morozova et al. 2008
* Caragano fruticis-Pinion sylvestris Solomeshch et al. 2002
* Veronico teucrii-Pinion sylvestris Ermakov et Solomeshch in Ermakov et et al. 2000

G3.D - Boreal bog conifer woodland
* Sphagnion medii Kästner et Flössner 1933
* Empetro-Piceion obovatae Morozova et al. 2008
* Eriophoro-Pinion sylvestris Passarge 1968
* Vaccinio uliginosi-Pinion sylvestris Passarge 1968
* Eriophoro-Piceion abietis Passarge 1968
* Vaccinio uliginosi-Piceetalia abietis Passarge 1968

G3.E - Nemoral bog conifer woodland
* Sphagnion medii Kästner et Flössner 1933
* Eriophoro-Pinion sylvestris Passarge 1968
* Vaccinio uliginosi-Pinion sylvestris Passarge 1968
* Eriophoro-Piceion abietis Passarge 1968
* Vaccinio uliginosi-Piceetalia abietis Passarge 1968

G3.F - Highly artificial coniferous plantations

- G4 - Mixed deciduous and coniferous woodland
  - G4.1 - Mixed swamp woodland
  - G4.2 - Mixed taiga woodland with [Betula]
  - G4.3 - Mixed sub-taiga woodland with acidophilous [Quercus]
  - G4.4 - Mixed [Pinus sylvestris] - [Betula] woodland
  - G4.5 - Mixed [Pinus sylvestris] - [Fagus] woodland
  - G4.6 - Mixed [Abies] - [Picea] - [Fagus] woodland
  - G4.7 - Mixed [Pinus sylvestris] - acidophilous [Quercus] woodland
  - G4.8 - Mixed non-riverine deciduous and coniferous woodland
  - G4.9 - Mixed deciduous woodland with [Cupressaceae] or [Taxaceae]
  - G4.A - Mixed woodland with [Cupressaceae], [Taxaceae] and evergreen oak
  - G4.B - Mixed mediterranean [Pinus] - thermophilous [Quercus] woodland
  - G4.C - Mixed [Pinus sylvestris] - thermophilous [Quercus] woodland
  - G4.D - Mixed [Pinus nigra] - evergreen [Quercus] woodland
  - G4.E - Mixed mediterranean pine - evergreen oak woodland
  - G4.F - Mixed forestry plantations
- G5 - Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodland and coppice
  - G5.1 - Lines of trees
  - G5.2 - Small broadleaved deciduous anthropogenic woodlands
    - * Balloto nigrae-Robinion Hadac et Sofron 1980
    - * Chelidonio-Robinion Hadac et Sofron 1980 nom. inval.
    - * Euphorbio cyparissiae-Robinion Vítková in Kolbek et al. 2003
    - * Sambuco racemosae-Salicion capreae Tx. et Neumann ex Oberd. 1957
  - G5.3 - Small broadleaved evergreen anthropogenic woodlands
  - G5.4 - Small coniferous anthropogenic woodlands
  - G5.5 - Small mixed broadleaved and coniferous anthropogenic woodlands
  - G5.6 - Early-stage natural and semi-natural woodlands and regrowth
    - * Sambuco racemosae-Salicion capreae Tx. et Neumann ex Oberd. 1957
    - * Corylo avellanae-Populion tremulae Br.-Bl. ex Jurko 1964 nom. ambig. propos.
  - G5.7 - Coppice and early-stage plantations
  - G5.8 - Recently felled areas
    - * Sambuco racemosae-Salicion capreae Tx. et Neumann ex Oberd. 1957
    - * Dactylido-Aegopodion Passarge 1967 nom. conserv. propos.
    - * Atropion Tx. 1947 nom. ambig. propos.
    - * Linarion niveae Rivas-Mart. 1964
    - * Holco mollis-Pteridion aquilini Passarge (1994) 2002

H - Inland unvegetated or sparsely vegetated habitats
- H1 - Terrestrial underground caves, cave systems, passages and waterbodies
  - H1.1 - Cave entrances
  - H1.2 - Cave interiors
  - H1.3 - Dark underground passages
  - H1.4 - Lava tubes
  - H1.5 - Underground standing waterbodies
  - H1.6 - Underground running waterbodies
  - H1.7 - Disused underground mines and tunnels
- H2 - Screes
  - H2.1 - Cold siliceous screes
    - * Allosuro-Athyrion alpestris Nordhagen 1943
    - * Antitrichio-Rhodiolion roseae Hadac 1971
    - * Veronico-Poion glaucae Nordhagen 1943
    - * Sedo-Thymion De Molenaar 1976
  - H2.2 - Cold limestone screes
    - * Saxifragion praetermissae Rivas-Mart. 1977
    - * Saxifragion prenjae Lakušic 1970

* Bunion alpini Lakušic 1970
* Arenarion norvegicae Nordhagen 1935
* Drabion hoppeanae Zollitsch in Merxmüller et Zollitsch 1967
* Androsacion ciliatae Rivas-Mart. 1988

H2.3 - Temperate-montane acid siliceous screes
* Androsacion alpinae Br.-Bl. in Br.-Bl. et Jenny 1926
* Dryopteridion oreadis Rivas-Mart. 1977 corr. Rivas-Mart. et al. 1984
* Holcion caespitosi Quézel 1953
* Linario saxatilis-Senecionion carpetani Rivas-Mart. 1964
* Chaerophyllion humilis Onipchenko 2002
* Murbeckiellion huetii Onipchenko 2002

H2.4 - Temperate-montane calcareous and ultra-basic screes
* Thlaspion rotundifolii Jenny-Lips 1930
* Papaverion tatrici Pawlowski et al. 1928 corr. Valachovic 1995
* Papavero-Thymion pulcherrimi Pop 1968
* Iberidion spathulatae Br.-Bl. 1948
* Iberido apertae-Linarion propinquae Penas et al. ex Díaz González et Fernández Prieto 1994
* Saxifragion praetermissae Rivas-Mart. 1977
* Platycapno saxicolae-Iberidion granatensis Rivas Goday et Rivas-Mart. 1963
* Linario-Festucion dimorphae Avena et Bruno 1975
* Thlaspion stylosi Feoli-Chiapella et Feoli 1977
* Saxifragion prenjae Lakušic 1970
* Bunion alpini Lakušic 1970
* Veronico-Papaverion degenii Mucina et al. 1990
* Drabion hoppeanae Zollitsch in Merxmüller et Zollitsch 1967
* Androsacion ciliatae Rivas-Mart. 1988
* Petasition paradoxi Zollitsch ex Lippert 1966
* Arabidion alpinae Béguin in Richard 1972

H2.5 - Acid siliceous screes of warm exposures
* Sesamoidion suffruticosae Ortiz et Pulgar 2000
* Senecionion leucophylli Br.-Bl. 1948
* Dryopteridion oreadis Rivas-Mart. 1977 corr. Rivas-Mart. et al. 1984
* Holcion caespitosi Quézel 1953
* Linario saxatilis-Senecionion carpetani Rivas-Mart. 1964
* Galeopsion segetum Oberd. 1957
* Galeopsion pyneraicae Rivas-Mart. 1977

H2.6 - Calcareous and ultra-basic screes of warm exposures
* Andryalion ramosissimae Rivas Goday et Esteve 1972
* Melico minutae-Phagnalion intermedii Rivas Goday et Esteve 1972
* Thlaspion rotundifolii Jenny-Lips 1930
* Iberido apertae-Linarion propinquae Penas et al. ex Díaz González et Fernández Prieto 1994
* Platycapno saxicolae-Iberidion granatensis Rivas Goday et Rivas-Mart. 1963
* Pimpinello tragium-Gouffeion provincialis Br.-Bl. in Br.-Bl. et al. 1952
* Leontodontion hyoseroidis Duvigneaud et al. 1970
* Stipion calamagrostis Jenny-Lips ex Br.-Bl. 1948
* Silenion caesiae Quézel ex Quézel et al. 1992
* Silenion marginatae Lakušic 1968
* Peltarion alliaceae Horvatic in Domac 1957
* Campanulion hawkinsianae Quézel ex Quézel et al. 1992
* Ptilostemonion echinocephali Korzhenevsky 1990
* Elytrigio nodosae-Rhoion coriariae Korzhenevsky et Ryff 2002
* Gypsophilo glomeratae-Cephalarion coriaceae Ryff in Golub et al. 2011
* Vicio hirsutae-Galion aparines Ryff ex Mucina 2012
* Linarion purpureae S. Brullo 1984

* Arrhenatherion sardoi Gamisans 1989
* Ptilostemo casabonae-Euphorbion cupanii Angiolini et al. 2005

H3 - Inland cliffs, rock pavements and outcrops

H3.1 - Acid siliceous inland cliffs

* Saxifragion cotyledonis Nordhagen 1943
* Androsacion vandellii Br.-Bl. in Br.-Bl. et Jenny 1926 nom. corr.
* Saxifragion pedemontanae Barbero et Bono 1967
* Hieracion carpetani González-Albo 1941
* Cheilanthion hispanicae Rivas Goday 1956
* Saxifragion nevadensis Rivas Goday et Rivas-Mart. 1971
* Potentillion crassinerviae Gamisans 1976
* Saxifragion cymosae Lakušic 1970
* Silenion lerchenfeldianae Simon 1958
* Gypsophilion tenuifoliae Onipchenko 2002
* Asplenion septentrionalis Gams ex Oberd. 1938
* Asarinion procumbentis (Br.-Bl. in Meier et Br.-Bl. 1934) Br.-Bl. in Br.-Bl. et al. 1952
* Hypno-Polypodion vulgaris Mucina 1993
* Pohlio crudae-Asplenion septentrionalis S. Brullo et Siracusa in S. Brullo et al. 2003
* Thalictro foetidi-Asplenion Onipchenko et Gorbachevskaya in Onipchenko 2002
* Asplenion serpentini Br.-Bl. ex Eggler 1955
* Linarion caprariae Foggi et al. 2006
* Polygonion icarici Horvat in Horvat, Glavac et Ellenberg ex Bergmeier et al. 2011
* Rumici indurati-Dianthion lusitani Rivas-Mart., Izco et Costa ex et Rivas-Mart. et al. 1986
* Saxifragion continentalis Rivas-Mart. in Rivas-Mart. et al. 1986
* Sesamoidion suffruticosae Ortiz et Pulgar 2000
* Arenarion balearicae O. de Bolòs et Molinier 1969

H3.2 - Basic and ultra-basic inland cliffs

* Arenarion bertolonii Gamisans 1991
* Centaureo filiformis-Micromerion cordatae Arrigoni et Di Tommaso 1991
* Asplenion glandulosi Br.-Bl. in Meier et Br.-Bl. 1934
* Brassicion insularis Gamisans 1991
* Dianthion rupicolae S. Brullo et Marcenó 1979
* Brassico balearicae-Helichrysion rupestris O. de Bolòs et Molinier 1958
* Teucrion buxifolii Rivas Goday 1956
* Campanulion velutinae Martínez-Parras et Peinado Lorca 1990
* Cosentinio bivalentis-Lafuenteion rotundifoliae Asensi et al. 1990
* Asplenion serpentini Br.-Bl. ex Eggler 1955
* Drabo cuspidatae-Campanulion tauricae Ryff 2000
* Cheilanthion pulchellae Sáenz de Rivas et Rivas-Mart. 1979
* Phagnalo saxatilis-Cheilanthion maderensis Loisel 1970 corr. F.J. Pérez et al. 1989
* Petromarulo-Centaurion argenteae Horvat in Horvat et al. ex Bergmeier et al. 2011
* Astereion cretici Zaffran ex Bergmeier et al. 2011
* Capparo-Amaracion Horvat in Horvat, Glavac et Ellenberg ex Bergmeier et al. 2011
* Inulion heterolepidis Horvat in Horvat, Glavac et Ellenberg ex Bergmeier et al. 2011
* Campanulion versicoloris Quézel 1964
* Caro multiflori-Aurinion megalocarpae Terzi et D'Amico 2008
* Centaureo-Campanulion Horvatic 1934
* Centaureo-Portenschlagiellion Trinajstic ex Carni & Mucina 2012
* Asperulion garganicae Bianco et al. 1988
* Potentillion caulescentis Br.-Bl. In Br.-Bl. et Jenny 1926
* Phyteumato-Saxifragion petraeae Mucina in Mucina et al. in prep.
* Saxifragion lingulatae (Rioux et Quézel 1949) Quézel 1950
* Micromerion pulegii Boscaiu (1971) 1979
* Gypsophilion petraeae Borhidi et Pócs in Borhidi 1957

* Saxifragion mediae Br.-Bl. in Meier et Br.-Bl. 1934
* Sedo albi-Seslerion hispanicae Br.-Bl. 1966
* Asplenio celtiberici-Saxifragion cuneatae Rivas-Mart. in Loidi et Fernández Prieto 1986
* Jasionion foliosae O. de Bolòs 1957
* Saxifragion camposii Cuatrecasas ex Quézel 1953
* Saxifragion australis Biondi et Ballelli ex S. Brullo 1984
* Micromerion croaticae Horvat, Glavac et Ellenberg 1974
* Edraiantho graminifolii-Erysimion comati Mucina et al. 1990
* Violo biflorae-Cystopteridion alpinae Fernandez Casas 1970
* Edraianthion Lakušic 1968
* Galion degenii Quézel ex Quézel et al. 1992
* Ramondion nathaliae Horvat ex Simon 1958
* Saxifragion scardicae Dimopoulos et al. 1997
* Silenion auriculatae Quézel ex Quézel et al. 1992
* Arenarion creticae Dimopoulos et al. ex Bergmeier 2002
* Sarcocapnion enneaphyllae Fernandez Casas 1972
* Sarcocapnion pulcherrimae Fernandez Casas 1972 corr. Rivas-Mart. et al. 2002
* Valeriano longifoliae-Petrocoptidion Fernandez Casas 1972
* Petrocoptidion glaucifoliae (P. Fernández et al. 1983) Rivas-Mart., Cantó et Izco in Rivas-Mart. et al. 2002
* Calendulo lusitanicae-Antirrhinion linkiani Ladero et al. 1991
* Polypodion serrati Br.-Bl. in Br.-Bl. et al. 1952

H3.3 - Macaronesian inland cliffs
* Cheilanthion pulchellae Sáenz de Rivas et Rivas-Mart. 1979
* Stegnogrammo pozoi-Woodwardion radicantis J.A. Fernández Prieto et C. Aguiar all. nov.

H3.4 - Wet inland cliffs
* Polypodion serrati Br.-Bl. in Br.-Bl. et al. 1952
* Arenarion balearicae O. de Bolòs et Molinier 1969
* Hymenophyllion tunbrigensis Tx. in Tx. et Oberd. 1958
* Adiantion Br.-Bl. ex Horvatic 1934
* Pinguiculion longifoliae Fernandez Casas 1970

H3.5 - Almost bare rock pavements, including limestone pavements

H3.6 - Weathered rock and outcrop habitats
* Sedo-Scleranthion biennis Br.-Bl. 1955
* Sedion anglici Br.-Bl. in Br.-Bl. et Tx. 1952
* Sedion pyrenaici Tx. in Rivas-Mart. et al. 2011
* Sedo albi-Veronicion dillenii Korneck 1974
* Scabioso-Trifolion dalmatici Horvatic et N. Randelovic in N. Randelovic 1977
* Alysso alyssoidis-Sedion albi Oberd. et T. Müller in T. Müller 1961
* Tortello tortuosae-Sedion albi Hallberg ex Dengler et Löbel 2006
* Sedion micrantho-sediformis Rivas-Mart., P. Sánchez et Alcaraz ex P. Sánchez et Alcaraz 1993
* Aethionemion saxatilis Bergmeier et al. 2009

H4 - Snow or ice-dominated habitats

H4.1 - Snow packs

H4.2 - Ice caps and true glaciers

H4.3 - Rock glaciers and unvegetated ice-dominated moraines

H5 - Miscellaneous inland habitats with very sparse or no vegetation

H5.1 - Fjell fields and other freeze-thaw features with very sparse or no vegetation
* Cochleariopsion groenlandicae Hadac 1989
* Papaverion dahliani Hofmann 1968

H5.2 - Glacial moraines with very sparse or no vegetation

H5.3 - Sparsely- or un-vegetated habitats on mineral substrates not resulting from recent ice activity

H5.4 - Dry organic substrates with very sparse or no vegetation

H5.5 - Burnt areas with very sparse or no vegetation

H5.6 - Trampled areas

* Alchemillo-Ranunculion repentis Passarge 1979
* Poion supinae Rivas-Mart. et Géhu 1978
* Eragrostion cilianensis-minoris Tx. ex Oberd. 1954
* Eragrostio-Polygonion arenastri Couderc et Izco ex Carni et Mucina 1998
* Euphorbion prostratae Rivas-Mart. 1976
* Polycarpo-Eleusinion indicae Carni et Mucina 1998
* Polygono-Coronopodion Sissingh 1969
* Polycarpion tetraphylli Rivas-Mart. 1975
* Saginion procumbentis Tx. et Ohba in Géhu et al. 1972

H6 - Recent volcanic features

H6.1 - Active volcanic features

H6.2 - Inactive recent volcanic features

I - Regularly or recently cultivated agricultural, horticultural and domestic habitats

I1 - Arable land and market gardens

I1.1 - Intensive unmixed crops
* Spergulo arvensis-Erodion cicutariae J.Tx. in Passarge 1964
* Scleranthion annui (Kruseman et Vlieger 1939) Sissingh in Westhoff et al. 1946
* Oxalidion europeae Passarge 1978
* Anthemido ruthenicae-Sisymbrion orientalis Solomakha 1990
* Caucalidion von Rochow 1951
* Veronico agrestis-Euphorbion pepli Sissingh ex Passarge 1964
* Trifolio-Medicaginion sativae Balázs 1944
* Chenopodio albi-Descurainion sophiae Solomakha et al. in Solomakha 1997
* Erysimo repandi-Lycopsion orientalis Solomakha 1996
* Lactucion tataricae Rudakov in Mirkin et al. 1985
* Eragrostion cilianensis-minoris Tx. ex Oberd. 1954

I1.2 - Mixed crops of market gardens and horticulture
* Spergulo arvensis-Erodion cicutariae J.Tx. in Passarge 1964
* Scleranthion annui (Kruseman et Vlieger 1939) Sissingh in Westhoff et al. 1946
* Oxalidion europeae Passarge 1978
* Matricario chamomillae-Chenopodion albi Timár 1954
* Ecliption albae Lebrun 1947
* Eleusinion indicae Léonard 1954

I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
* Lolio remoti-Linion J.Tx. 1966
* Spergulo arvensis-Erodion cicutariae J.Tx. in Passarge 1964
* Scleranthion annui (Kruseman et Vlieger 1939) Sissingh in Westhoff et al. 1946
* Oxalidion europeae Passarge 1978
* Rumicion bucephalophori Nezadal 1989
* Anthemido ruthenicae-Sisymbrion orientalis Solomakha 1990
* Caucalidion von Rochow 1951
* Veronico agrestis-Euphorbion pepli Sissingh ex Passarge 1964
* Trifolio-Medicaginion sativae Balázs 1944
* Chenopodio albi-Descurainion sophiae Solomakha et al. in Solomakha 1997
* Erysimo repandi-Lycopsion orientalis Solomakha 1996
* Lactucion tataricae Rudakov in Mirkin et al. 1985
* Ridolfion segeti Nègre ex Rivas-Mart., Fernández-González et Loidi 1999
* Roemerion hybridae Rivas-Mart., Fernández-González et Loidi 1999
* Vicio narbonensis-Milion vernalis Ferro et Scammacca 1985
* Fumarion wirtgenii-agrariae S. Brullo in S. Brullo et Marcenó 1985
* Eragrostion cilianensis-minoris Tx. ex Oberd. 1954
* Cerintho majoris-Fedion cornucopiae Rivas-Mart. et Izco ex Peinado et al. 1986
* Fedio-Convolvulion cupaniani S. Brullo et Spampinato 1986
* Achilleion millefolii Abramova et Rudakov in Mirkin et al. 1985

- I1.4 - Inundated or inundatable croplands, including rice fields
  - * Oryzo sativae-Echinochloion oryzoidis O. de Bolòs et Masclans 1955
- I1.5 - Bare tilled, fallow or recently abandoned arable land
  - * Spergulo arvensis-Erodion cicutariae J.Tx. in Passarge 1964
  - * Fedio-Convolvulion cupaniani S. Brullo et Spampinato 1986
  - * Dauco-Melilotion Görs ex Rostanski et Gutte 1971
  - * Achilleion millefolii Abramova et Rudakov in Mirkin et al. 1985
- I2 - Cultivated areas of gardens and parks
  - I2.1 - Large-scale ornamental garden areas
  - I2.2 - Small-scale ornamental and domestic garden areas
  - I2.3 - Recently abandoned garden areas

J - Constructed, industrial and other artificial habitats

- J1 - Buildings of cities, towns and villages
  - J1.1 - Residential buildings of city and town centres
  - J1.2 - Residential buildings of villages and urban peripheries
  - J1.3 - Urban and suburban public buildings
  - J1.4 - Urban and suburban industrial and commercial sites still in active use
  - J1.5 - Disused constructions of cities, towns and villages
  - J1.6 - Urban and suburban construction and demolition sites
  - J1.7 - High density temporary residential units
- J2 - Low density buildings
  - J2.1 - Scattered residential buildings
  - J2.2 - Rural public buildings
  - J2.3 - Rural industrial and commercial sites still in active use
  - J2.4 - Agricultural constructions
  - J2.5 - Constructed boundaries
  - J2.6 - Disused rural constructions
  - J2.7 - Rural construction and demolition sites
- J3 - Extractive industrial sites
  - J3.1 - Active underground mines
  - J3.2 - Active opencast mineral extraction sites, including quarries
  - J3.3 - Recently abandoned above-ground spaces of extractive industrial sites
- J4 - Transport networks and other constructed hard-surfaced areas
  - J4.1 - Disused road, rail and other constructed hard-surfaced areas
  - J4.2 - Road networks
  - J4.3 - Rail networks
  - J4.4 - Airport runways and aprons
  - J4.5 - Hard-surfaced areas of ports
  - J4.6 - Pavements and recreation areas
  - J4.7 - Constructed parts of cemeteries
- J5 - Highly artificial man-made waters and associated structures
  - J5.1 - Highly artificial saline and brackish standing waters
  - J5.2 - Highly artificial saline and brackish running waters
  - J5.3 - Highly artificial non-saline standing waters
  - J5.4 - Highly artificial non-saline running waters
  - J5.5 - Highly artificial non-saline fountains and cascades
- J6 - Waste deposits
  - J6.1 - Waste resulting from building construction or demolition
  - J6.2 - Household waste and landfill sites
  - J6.3 - Non-agricultural organic waste
  - J6.4 - Agricultural and horticultural waste
  - J6.5 - Industrial waste

APPENDIX B: Crosswalk syntaxa to EUNIS (only those syntaxa are included having references to EUNIS-3 units)

Zosterion marinae Br.-Bl. et Tx. ex Pignatti 1953
* A2.6 - Littoral sediments dominated by aquatic angiosperms
Zosterion noltii Den Hartog in Mucina et al. in prep.
* A2.6 - Littoral sediments dominated by aquatic angiosperms
Posidonion oceanicae Br.-Bl. 1933
* A2.6 - Littoral sediments dominated by aquatic angiosperms
Cymodoceion nodosae Den Hartog 1976
* A2.6 - Littoral sediments dominated by aquatic angiosperms
Ruppion maritimae Br.-Bl. ex Westhoff in Bennema et al. 1943
* A2.6 - Littoral sediments dominated by aquatic angiosperms
* C1.5 - Permanent inland saline and brackish lakes, ponds and pools
* C1.6 - Temporary lakes, ponds and pools
Charion canescentis Krausch 1964
* A2.6 - Littoral sediments dominated by aquatic angiosperms
* C1.5 - Permanent inland saline and brackish lakes, ponds and pools
Spartinion glabrae Conard 1935
* A2.5 - Coastal saltmarshes and saline reedbeds
Thero-Salicornion Br.-Bl. 1933
* A2.5 - Coastal saltmarshes and saline reedbeds
Salicornion dolichostachyo-fragilis Géhu et Rivas-Mart. ex Géhu et Géhu-Franck 1984
* A2.5 - Coastal saltmarshes and saline reedbeds
Salicornion ramosissimae Tx. 1974
* A2.5 - Coastal saltmarshes and saline reedbeds
Salicornion prostratae Géhu 1992
* E6.2 - Continental inland salt steppes
Microcnemion coralloidis Rivas-Mart. et Gàhu in Rivas-Mart. 1984
* E6.2 - Continental inland salt steppes
Suaedion acuminatae Golub et Tsorbadze in Golub 1995 corr. Lysenko in Mucina et al. in prep.
* E6.2 - Continental inland salt steppes
Thero-Camphorosmion annuae Vicherek 1973
* E6.2 - Continental inland salt steppes
Camphorosmo songoricae-Suaedion corniculatae Freitag et al. 2001
* E6.2 - Continental inland salt steppes
Kalidion caspici Golub et al. 2001
* E6.2 - Continental inland salt steppes
Climacoptero crassae-Suaedion acuminatae Golub et Corbadze 1989 corr. Lysenko in Mucina et al. in prep.
* E6.2 - Continental inland salt steppes
Artemisio santonicae-Puccinellion fominii Shelyag-Sosonko et al. 1989
* E6.2 - Continental inland salt steppes
Camphorosmo-Agropyrion desertori Korzhenevsky et Klyukin 1991
* E6.2 - Continental inland salt steppes
Juncion maritimi Br.-Bl. ex Horvatic 1934
* A2.5 - Coastal saltmarshes and saline reedbeds
* D5.3 - Swamps and marshes dominated by [Juncus effusus] or other large [Juncus] spp.
Plantaginion crassifoliae Br.-Bl. in Br.-Bl. et al. 1952
* A2.5 - Coastal saltmarshes and saline reedbeds
Limonio ovalifolii-Frankenion laevis Arbesú et al. in Rivas-Mart. et al. 2002
* A2.5 - Coastal saltmarshes and saline reedbeds
Agropyro-Artemision coerulescentis Pignatti 1953

* A2.5 - Coastal saltmarshes and saline reedbeds

Scirpion maritimi Dahl et Hadac 1941

* A2.5 - Coastal saltmarshes and saline reedbeds
* C3.2 - Water-fringing reedbeds and tall helophytes other than canes
* D6.2 - Inland saline or brackish species-poor helophyte beds normally without free-standing water

Agropyrion pungentis Géhu 1968

* A2.5 - Coastal saltmarshes and saline reedbeds

Agrostio-Elytrigion athericae S. Brullo et Siracusa 2000

* A2.5 - Coastal saltmarshes and saline reedbeds

Festucion maritimae Christiansen 1927

* A2.5 - Coastal saltmarshes and saline reedbeds

Armerion maritimae Br.-Bl. et De Leeuw 1936

* A2.5 - Coastal saltmarshes and saline reedbeds

Puccinellion phryganodis Hadac 1946

* A2.5 - Coastal saltmarshes and saline reedbeds

Dupontion fischeri Hadac 1946

* A2.5 - Coastal saltmarshes and saline reedbeds

Saginion maritimae Westhoff et al. 1962

* A2.5 - Coastal saltmarshes and saline reedbeds
* B1.8 - Moist and wet dune slacks

Spergularion macrorhizae Gamisans 1990

* A2.5 - Coastal saltmarshes and saline reedbeds
* B1.8 - Moist and wet dune slacks

Lolio-Plantaginion commutatae Horvatic 1934

* A2.5 - Coastal saltmarshes and saline reedbeds
* B1.8 - Moist and wet dune slacks

Romuleo bulbocodii-Saginion (Wolff 1968) Mucina 2012

* A2.5 - Coastal saltmarshes and saline reedbeds
* B1.8 - Moist and wet dune slacks

Frankenion pulverulentae Rivas-Mart. ex Castroviejo et Porta 1976

* A2.5 - Coastal saltmarshes and saline reedbeds
* E6.1 - Mediterranean inland salt steppes

Gaudinio-Podospermion cani S. Brullo et Siracusa 2000

* E6.1 - Mediterranean inland salt steppes

Pholiuro-Spergularion Pignatti 1952

* A2.5 - Coastal saltmarshes and saline reedbeds

Mesembryanthemion nodiflori Géhu et al. 1990

* A2.5 - Coastal saltmarshes and saline reedbeds
* E6.1 - Mediterranean inland salt steppes

Salicornion fruticosae Br.-Bl. 1933

* A2.5 - Coastal saltmarshes and saline reedbeds

Arthrocnemion glauci Rivas-Mart. et Costa 1984

* A2.5 - Coastal saltmarshes and saline reedbeds

Suaedion brevifoliae Br.-Bl. et O. de Bolòs 1958

* A2.5 - Coastal saltmarshes and saline reedbeds

Lygeo-Lepidion cardaminis Rivas Goday et Rivas-Mart. ex Rivas-Mart. et Costa 1984

* D6.2 - Inland saline or brackish species-poor helophyte beds normally without free-standing water
* E6.1 - Mediterranean inland salt steppes

Lygeo sparti-Limonion furfuracei Rigual 1972

* D6.2 - Inland saline or brackish species-poor helophyte beds normally without free-standing water
* E6.1 - Mediterranean inland salt steppes

Limonion catalaunico-viciosoi Rivas-Mart. et Costa 1984

* D6.2 - Inland saline or brackish species-poor helophyte beds normally without free-standing water
* E6.1 - Mediterranean inland salt steppes

Limonion confusi (Br.-Bl. 1933) Rivas-Mart. et Costa 1984
* D6.2 - Inland saline or brackish species-poor helophyte beds normally without free-standing water
* E6.1 - Mediterranean inland salt steppes
Triglochino barrelieri-Limonion glomerati Biondi et al. 2001
* D6.2 - Inland saline or brackish species-poor helophyte beds normally without free-standing water
* E6.1 - Mediterranean inland salt steppes
Limoniastrion monopetali Pignatti 1952
* A2.5 - Coastal saltmarshes and saline reedbeds
Zygophyllion albi Géhu, Costa et Uslu 1990
* E2.5 - Meadows of the steppe zone
Festucion pseudovinae Soó 1933
* E6.2 - Continental inland salt steppes
Peucedano officinalis-Asterion sedifolii Borhidi 1996
* E6.2 - Continental inland salt steppes
Puccinellion limosae Soó 1933
* D6.1 - Inland saltmarshes
* E6.2 - Continental inland salt steppes
Puccinellion convolutae Micevski 1965
* D6.1 - Inland saltmarshes
Puccinellion lagascanae Rivas-Mart. in Rivas-Mart. et Costa 1976 corr. Alonso et De la Torre 2004
* D6.1 - Inland saltmarshes
Halo-Artemision Pignatti 1953
* E6.1 - Mediterranean inland salt steppes
Artemision maritimae Micevski 1970
* E6.2 - Continental inland salt steppes
Atraphaxo-Capparidion Korzhenevsky 1992
* E6.2 - Continental inland salt steppes
Plantagini salsae-Artemision santonici Lysenko & Mucina in Lysenko et al. 2011
* E6.2 - Continental inland salt steppes
Limonion sareptani Golub 1994
* E6.2 - Continental inland salt steppes
Limonion tomentelli Agafonov et Golub in Golub 1994
* E6.2 - Continental inland salt steppes
Puccinellion giganteae Dubyna et Neuhäuslová 2000
* A2.5 - Coastal saltmarshes and saline reedbeds
Festuco valesiacae-Limonion gmelinii Mirkin in Golub et Solomakha 1988
* E6.2 - Continental inland salt steppes
Diantho guttati-Million vernalis Umanets et Solomakha 1998
* E6.2 - Continental inland salt steppes
Alhagion pseudalhagi Golub et Czorbadze in Golub 1994
* E6.2 - Continental inland salt steppes
Artemisio pauciflorae-Camphorosmion monspeliacae Karpov 2001
* E6.2 - Continental inland salt steppes
Juncion gerardii Wendelberger 1943
* D6.1 - Inland saltmarshes
Halo-Trichophorion pumili Vicherek 1973
* D6.1 - Inland saltmarshes
Beckmannion eruciformis Soó 1933
* E6.2 - Continental inland salt steppes
Agrostio stoloniferae-Beckmannion eruciformis Mirkin in Barabash et al. 1989
* E6.2 - Continental inland salt steppes
Carici dilutae-Juncion gerardii Mucina et Lysenko in Mucina et al. in prep.
* E6.2 - Continental inland salt steppes
Cirsion esculenti Golub 1994

* E6.2 - Continental inland salt steppes

Glycyrrhizion echinatae Golub et Savelyeva in Golub 1995
* E2.2 - Low and medium altitude hay meadows
* E3.4 - Moist or wet eutrophic and mesotrophic grassland

Glycyrrhizion glabrae Golub et Mirkin in Golub 1995
* E2.2 - Low and medium altitude hay meadows
* E3.4 - Moist or wet eutrophic and mesotrophic grassland

Glycyrrhizion korshinskyi Lysenko 2010
* E2.2 - Low and medium altitude hay meadows
* E3.4 - Moist or wet eutrophic and mesotrophic grassland

Crithmo-Daucion halophili Rivas-Mart. et al. 1990
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Astragalion tragacanthae (Folch ex Rivas-Mart., Fernández-González et Loidi 1999) Rivas-Mart. et al. 2002
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Launaeion cervicornis (O. de Bolòs et Vigo ex Gil et Llorens 1995) Rivas-Mart., Fernández-González et Loidi 1999
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Crithmo-Staticion Molinier 1934
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Anthyllidion barbae-jovis S. Brullo et De Marco 1989
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Crucianellion rupestris S. Brullo et Furnari 1990
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Plantagini-Thymelaeion hirsutae Bartolo et S. Brullo in Bartolo et al. ex Mayer 1995
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Staticion dalmaticum Horvatic 1934
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Crithmo-Frankenion hirsutae Mayer 1995
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Kochio prostratae-Limonion meyeri Korzhenevsky 1987
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Crithmion maritimi Tx. et Oberd. 1958
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Silenion maritimae Malloch 1971
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Frankenio-Astydamion latifoliae Santos 1976
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Euphorbio azoricae-Festucion petraeae Lüpnitz 1976
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Helichrysion obconico-devium Rivas-Mart. et al. 2002
* B3.3 - Rock cliffs, ledges and shores, with angiosperms

Atriplicion littoralis Nordhagen 1940
* A2.5 - Coastal saltmarshes and saline reedbeds
* B1.1 - Sand beach driftlines
* B1.2 - Sand beaches above the driftline
* B2.1 - Shingle beach driftlines

Elymo littorei-Rumicion crispi (Nordhagen 1940) Isermann et Dengler in Isermann 2004
* B1.1 - Sand beach driftlines
* B2.1 - Shingle beach driftlines
* B2.3 - Upper shingle beaches with open vegetation

Cakilion edentulae Thannheiser 1981
* B1.1 - Sand beach driftlines
* B1.2 - Sand beaches above the driftline
* B2.1 - Shingle beach driftlines

Atriplicion nudicaulis Golub et al. 2003

* B1.1 - Sand beach driftlines
* B1.2 - Sand beaches above the driftline
* B1.3 - Shifting coastal dunes

Euphorbion peplidis Tx. ex Oberd. 1952
* B1.1 - Sand beach driftlines
* B1.2 - Sand beaches above the driftline

Cakilion euxinae Géhu et al. 1994
* B1.1 - Sand beach driftlines
* B1.2 - Sand beaches above the driftline

Salsolo kali-Honckenyion peploidis Tx. ex Tx. et Böckelmann 1957
* B1.1 - Sand beach driftlines
* B1.2 - Sand beaches above the driftline
* B2.3 - Upper shingle beaches with open vegetation

Ammophilion Br.-Bl. 1921
* B1.2 - Sand beaches above the driftline
* B1.3 - Shifting coastal dunes
* B1.9 - Machair

Elymion gigantei Morariu 1957
* B1.2 - Sand beaches above the driftline
* B1.3 - Shifting coastal dunes

Elymion arenarii Christiansen 1927
* B1.2 - Sand beaches above the driftline
* B1.3 - Shifting coastal dunes

Agropyro-Honckenyion peploidis Tx. in Br.-Bl. et Tx. 1952 nom. mut.
* B1.2 - Sand beaches above the driftline

Mertensio maritimae-Honckenyion diffusae Tx. et Géhu ex Géhu 1998
* B2.4 - Fixed shingle beaches, with herbaceous vegetation

Crucianellion maritimae Rivas Goday et Rivas-Mart. 1958
* B1.4 - Coastal stable dune grassland (grey dunes)
* B1.6 - Coastal dune scrub

Euphobio paraliae-Lotion glauci Jardim et al. 2003
* B1.4 - Coastal stable dune grassland (grey dunes)
* B1.6 - Coastal dune scrub

Helichrysion picardii (Rivas-Mart., Costa et Izco in Rivas-Mart. et al. 1990) Rivas-Mart., Fernández-González et Loidi 1999
* B1.4 - Coastal stable dune grassland (grey dunes)
* B1.6 - Coastal dune scrub

Sileno thymifoliae-Jurineion kilaeae Géhu et Uslu ex Mucina in Mucina et al. in prep.
* B1.4 - Coastal stable dune grassland (grey dunes)
* B1.6 - Coastal dune scrub

Cynodonto-Teucrion polii Korzhenevsky et Klyukin 1990
* B1.4 - Coastal stable dune grassland (grey dunes)
* B1.6 - Coastal dune scrub

Verbascion pinnatifidii Korzhenevsky et Klyukin 1990
* B1.4 - Coastal stable dune grassland (grey dunes)

Scabiosion ucranicae Sanda et al. 1980
* B1.4 - Coastal stable dune grassland (grey dunes)

Saxifragion cotyledonis Nordhagen 1943
* H3.1 - Acid siliceous inland cliffs

Androsacion vandellii Br.-Bl. in Br.-Bl. et Jenny 1926 nom. corr.
* H3.1 - Acid siliceous inland cliffs

Saxifragion pedemontanae Barbero et Bono 1967
* H3.1 - Acid siliceous inland cliffs

Hieracion carpetani González-Albo 1941

* H3.1 - Acid siliceous inland cliffs
Cheilanthion hispanicae Rivas Goday 1956
* H3.1 - Acid siliceous inland cliffs
Saxifragion nevadensis Rivas Goday et Rivas-Mart. 1971
* H3.1 - Acid siliceous inland cliffs
Potentillion crassinerviae Gamisans 1976
* H3.1 - Acid siliceous inland cliffs
Saxifragion cymosae Lakušic 1970
* H3.1 - Acid siliceous inland cliffs
Silenion lerchenfeldianae Simon 1958
* H3.1 - Acid siliceous inland cliffs
Gypsophilion tenuifoliae Onipchenko 2002
* H3.1 - Acid siliceous inland cliffs
Arenarion bertolonii Gamisans 1991
* H3.2 - Basic and ultra-basic inland cliffs
Centaureo filiformis-Micromerion cordatae Arrigoni et Di Tommaso 1991
* H3.2 - Basic and ultra-basic inland cliffs
Asplenion glandulosi Br.-Bl. in Meier et Br.-Bl. 1934
* H3.2 - Basic and ultra-basic inland cliffs
Brassicion insularis Gamisans 1991
* H3.2 - Basic and ultra-basic inland cliffs
Dianthion rupicolae S. Brullo et Marcenó 1979
* H3.2 - Basic and ultra-basic inland cliffs
Brassico balearicae-Helichrysion rupestris O. de Bolòs et Molinier 1958
* H3.2 - Basic and ultra-basic inland cliffs
Teucrion buxifolii Rivas Goday 1956
* H3.2 - Basic and ultra-basic inland cliffs
Campanulion velutinae Martínez-Parras et Peinado Lorca 1990
* H3.2 - Basic and ultra-basic inland cliffs
Cosentinio bivalentis-Lafuenteion rotundifoliae Asensi et al. 1990
* H3.2 - Basic and ultra-basic inland cliffs
Asplenion septentrionalis Gams ex Oberd. 1938
* H3.1 - Acid siliceous inland cliffs
Asarinion procumbentis (Br.-Bl. in Meier et Br.-Bl. 1934) Br.-Bl. in Br.-Bl. et al. 1952
* H3.1 - Acid siliceous inland cliffs
Hypno-Polypodion vulgaris Mucina 1993
* H3.1 - Acid siliceous inland cliffs
Pohlio crudae-Asplenion septentrionalis S. Brullo et Siracusa in S. Brullo et al. 2003
* H3.1 - Acid siliceous inland cliffs
Thalictro foetidi-Asplenion Onipchenko et Gorbachevskaya in Onipchenko 2002
* H3.1 - Acid siliceous inland cliffs
Asplenion marini Segal 1969
* B3.3 - Rock cliffs, ledges and shores, with angiosperms
Asplenion serpentini Br.-Bl. ex Eggler 1955
* H3.1 - Acid siliceous inland cliffs
* H3.2 - Basic and ultra-basic inland cliffs
Drabo cuspidatae-Campanulion tauricae Ryff 2000
* H3.2 - Basic and ultra-basic inland cliffs
Cheilanthion pulchellae Sáenz de Rivas et Rivas-Mart. 1979
* H3.2 - Basic and ultra-basic inland cliffs
* H3.3 - Macaronesian inland cliffs
Phagnalo saxatilis-Cheilanthion maderensis Loisel 1970 corr. F.J. Pérez et al. 1989
* H3.2 - Basic and ultra-basic inland cliffs
Linarion caprariae Foggi et al. 2006

* H3.1 - Acid siliceous inland cliffs
Petromarulo-Centaurion argenteae Horvat in Horvat et al. ex Bergmeier et al. 2011
* H3.2 - Basic and ultra-basic inland cliffs
Astereion cretici Zaffran ex Bergmeier et al. 2011
* H3.2 - Basic and ultra-basic inland cliffs
Capparo-Amaracion Horvat in Horvat, Glavac et Ellenberg ex Bergmeier et al. 2011
* H3.2 - Basic and ultra-basic inland cliffs
Inulion heterolepidis Horvat in Horvat, Glavac et Ellenberg ex Bergmeier et al. 2011
* H3.2 - Basic and ultra-basic inland cliffs
Polygonion icarici Horvat in Horvat, Glavac et Ellenberg ex Bergmeier et al. 2011
* H3.1 - Acid siliceous inland cliffs
Campanulion versicoloris Quézel 1964
* H3.2 - Basic and ultra-basic inland cliffs
Caro multiflori-Aurinion megalocarpae Terzi et D'Amico 2008
* H3.2 - Basic and ultra-basic inland cliffs
Centaureo-Campanulion Horvatic 1934
* H3.2 - Basic and ultra-basic inland cliffs
Centaureo-Portenschlagiellion Trinajstic ex Carni & Mucina 2012
* H3.2 - Basic and ultra-basic inland cliffs
Asperulion garganicae Bianco et al. 1988
* H3.2 - Basic and ultra-basic inland cliffs
Potentillion caulescentis Br.-Bl. In Br.-Bl. et Jenny 1926
* H3.2 - Basic and ultra-basic inland cliffs
Phyteumato-Saxifragion petraeae Mucina in Mucina et al. in prep.
* H3.2 - Basic and ultra-basic inland cliffs
Saxifragion lingulatae (Rioux et Quézel 1949) Quézel 1950
* H3.2 - Basic and ultra-basic inland cliffs
Micromerion pulegii Boscaiu (1971) 1979
* H3.2 - Basic and ultra-basic inland cliffs
Gypsophilion petraeae Borhidi et Pócs in Borhidi 1957
* H3.2 - Basic and ultra-basic inland cliffs
Saxifragion mediae Br.-Bl. in Meier et Br.-Bl. 1934
* H3.2 - Basic and ultra-basic inland cliffs
Sedo albi-Seslerion hispanicae Br.-Bl. 1966
* H3.2 - Basic and ultra-basic inland cliffs
Asplenio celtiberici-Saxifragion cuneatae Rivas-Mart. in Loidi et Fernández Prieto 1986
* H3.2 - Basic and ultra-basic inland cliffs
Jasionion foliosae O. de Bolòs 1957
* H3.2 - Basic and ultra-basic inland cliffs
Saxifragion camposii Cuatrecasas ex Quézel 1953
* H3.2 - Basic and ultra-basic inland cliffs
Saxifragion australis Biondi et Ballelli ex S. Brullo 1984
* H3.2 - Basic and ultra-basic inland cliffs
Micromerion croaticae Horvat, Glavac et Ellenberg 1974
* H3.2 - Basic and ultra-basic inland cliffs
Edraiantho graminifolii-Erysimion comati Mucina et al. 1990
* H3.2 - Basic and ultra-basic inland cliffs
Violo biflorae-Cystopteridion alpinae Fernandez Casas 1970
* H3.2 - Basic and ultra-basic inland cliffs
Edraianthion Lakušic 1968
* H3.2 - Basic and ultra-basic inland cliffs
Galion degenii Quézel ex Quézel et al. 1992
* H3.2 - Basic and ultra-basic inland cliffs
Ramondion nathaliae Horvat ex Simon 1958

* H3.2 - Basic and ultra-basic inland cliffs
Saxifragion scardicae Dimopoulos et al. 1997
* H3.2 - Basic and ultra-basic inland cliffs
Silenion auriculatae Quézel ex Quézel et al. 1992
* H3.2 - Basic and ultra-basic inland cliffs
Arenarion creticae Dimopoulos et al. ex Bergmeier 2002
* H3.2 - Basic and ultra-basic inland cliffs
Sarcocapnion enneaphyllae Fernandez Casas 1972
* H3.2 - Basic and ultra-basic inland cliffs
Sarcocapnion pulcherrimae Fernandez Casas 1972 corr. Rivas-Mart. et al. 2002
* H3.2 - Basic and ultra-basic inland cliffs
Valeriano longifoliae-Petrocoptidion Fernandez Casas 1972
* H3.2 - Basic and ultra-basic inland cliffs
Petrocoptidion glaucifoliae (P. Fernández et al. 1983) Rivas-Mart., Cantó et Izco in Rivas-Mart. et al. 2002
* H3.2 - Basic and ultra-basic inland cliffs
Parietario judaicae-Centranthion rubri Rivas-Mart. 1960
* E5.1 - Anthropogenic herb stands
Parietario judaicae-Hyoscyamion aurei S. Brullo et Guarino 1998
* E5.1 - Anthropogenic herb stands
Cymbalario muralis-Asplenion Segal 1969
* E5.1 - Anthropogenic herb stands
Andryalion ramosissimae Rivas Goday et Esteve 1972
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Melico minutae-Phagnalion intermedii Rivas Goday et Esteve 1972
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Rumici indurati-Dianthion lusitani Rivas-Mart., Izco et Costa ex et Rivas-Mart. et al. 1986
* H3.1 - Acid siliceous inland cliffs
Saxifragion continentalis Rivas-Mart. in Rivas-Mart. et al. 1986
* H3.1 - Acid siliceous inland cliffs
Sesamoidion suffruticosae Ortiz et Pulgar 2000
* H2.5 - Acid siliceous screes of warm exposures
* H3.1 - Acid siliceous inland cliffs
Calendulo lusitanicae-Antirrhinion linkiani Ladero et al. 1991
* H3.2 - Basic and ultra-basic inland cliffs
Festucion duriotaganae Capelo et al. 1998
* C3.6 - Unvegetated or sparsely vegetated shores with soft or mobile sediments
Polypodion serrati Br.-Bl. in Br.-Bl. et al. 1952
* H3.2 - Basic and ultra-basic inland cliffs
* H3.4 - Wet inland cliffs
Arenarion balearicae O. de Bolòs et Molinier 1969
* H3.1 - Acid siliceous inland cliffs
* H3.4 - Wet inland cliffs
Hymenophyllion tunbrigensis Tx. in Tx. et Oberd. 1958
* H3.4 - Wet inland cliffs
Stegnogrammo pozoi-Woodwardion radicantis J.A. Fernández Prieto et C. Aguiar all. nov.
* H3.3 - Macaronesian inland cliffs
Adiantion Br.-Bl. ex Horvatic 1934
* C2.1 - Springs, spring brooks and geysers
* H3.4 - Wet inland cliffs
Pinguiculion longifoliae Fernandez Casas 1970
* C2.1 - Springs, spring brooks and geysers
* H3.4 - Wet inland cliffs
Thlaspion rotundifolii Jenny-Lips 1930
* E1.B - Heavy-metal grassland

* H2.4 - Temperate-montane calcareous and ultra-basic screens
* H2.6 - Calcareous and ultra-basic screens of warm exposures

Papaverion tatrici Pawlowski et al. 1928 corr. Valachovic 1995
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Papavero-Thymion pulcherrimi Pop 1968
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Iberidion spathulatae Br.-Bl. 1948
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Iberido apertae-Linarion propinquae Penas et al. ex Díaz González et Fernández Prieto 1994
* H2.4 - Temperate-montane calcareous and ultra-basic screens
* H2.6 - Calcareous and ultra-basic screens of warm exposures

Saxifragion praetermissae Rivas-Mart. 1977
* H2.2 - Cold limestone screens
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Platycapno saxicolae-Iberidion granatensis Rivas Goday et Rivas-Mart. 1963
* H2.4 - Temperate-montane calcareous and ultra-basic screens
* H2.6 - Calcareous and ultra-basic screens of warm exposures

Linario-Festucion dimorphae Avena et Bruno 1975
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Thlaspion stylosi Feoli-Chiapella et Feoli 1977
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Saxifragion prenjae Lakušic 1970
* H2.2 - Cold limestone screens
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Bunion alpini Lakušic 1970
* H2.2 - Cold limestone screens
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Veronico-Papaverion degenii Mucina et al. 1990
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Arenarion norvegicae Nordhagen 1935
* H2.2 - Cold limestone screens

Drabion hoppeanae Zollitsch in Merxmüller et Zollitsch 1967
* H2.2 - Cold limestone screens
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Androsacion ciliatae Rivas-Mart. 1988
* H2.2 - Cold limestone screens
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Petasition paradoxi Zollitsch ex Lippert 1966
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Arabidion alpinae Béguin in Richard 1972
* H2.4 - Temperate-montane calcareous and ultra-basic screens

Pimpinello tragium-Gouffeion provincialis Br.-Bl. in Br.-Bl. et al. 1952
* H2.6 - Calcareous and ultra-basic screens of warm exposures

Leontodontion hyoseroidis Duvigneaud et al. 1970
* H2.6 - Calcareous and ultra-basic screens of warm exposures

Stipion calamagrostis Jenny-Lips ex Br.-Bl. 1948
* H2.6 - Calcareous and ultra-basic screens of warm exposures

Androsacion alpinae Br.-Bl. in Br.-Bl. et Jenny 1926
* H2.3 - Temperate-montane acid siliceous screens

Allosuro-Athyrion alpestris Nordhagen 1943
* E4.2 - Moss and lichen dominated mountain summits, ridges and exposed slopes
* H2.1 - Cold siliceous screens

Antitrichio-Rhodiolion roseae Hadac 1971
* H2.1 - Cold siliceous screens

Senecionion leucophylli Br.-Bl. 1948
* H2.5 - Acid siliceous screes of warm exposures
Dryopteridion oreadis Rivas-Mart. 1977 corr. Rivas-Mart. et al. 1984
* H2.3 - Temperate-montane acid siliceous screes
* H2.5 - Acid siliceous screes of warm exposures
Holcion caespitosi Quézel 1953
* H2.3 - Temperate-montane acid siliceous screes
* H2.5 - Acid siliceous screes of warm exposures
Linario saxatilis-Senecionion carpetani Rivas-Mart. 1964
* H2.3 - Temperate-montane acid siliceous screes
* H2.5 - Acid siliceous screes of warm exposures
Chaerophyllion humilis Onipchenko 2002
* H2.3 - Temperate-montane acid siliceous screes
Murbeckiellion huetii Onipchenko 2002
* H2.3 - Temperate-montane acid siliceous screes
Galeopsion segetum Oberd. 1957
* H2.5 - Acid siliceous screes of warm exposures
Galeopsion pyneraicae Rivas-Mart. 1977
* H2.5 - Acid siliceous screes of warm exposures
Salicion incanae Aichinger 1933
* C3.6 - Unvegetated or sparsely vegetated shores with soft or mobile sediments
Calamagrostion pseudophragmitis Rivas-Mart. et al. 1984
* C3.6 - Unvegetated or sparsely vegetated shores with soft or mobile sediments
Glaucion flavi Br.-Bl. ex Tchou 1948
* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
Scrophularion sciophilae O. de Bolòs 1957
* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
Thlaspion calaminariae Ernst 1965
* E1.B - Heavy-metal grassland
Armerion halleri Ernst 1965
* E1.B - Heavy-metal grassland
Silenion caesiae Quézel ex Quézel et al. 1992
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Silenion marginatae Lakušic 1968
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Peltarion alliaceae Horvatic in Domac 1957
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Campanulion hawkinsianae Quézel ex Quézel et al. 1992
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Ptilostemonion echinocephali Korzhenevsky 1990
* F6.4 - Black Sea garrigues
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Elytrigio nodosae-Rhoion coriariae Korzhenevsky et Ryff 2002
* F6.4 - Black Sea garrigues
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Gypsophilo glomeratae-Cephalarion coriaceae Ryff in Golub et al. 2011
* F6.4 - Black Sea garrigues
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Vicio hirsutae-Galion aparines Ryff ex Mucina 2012
* F6.4 - Black Sea garrigues
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Linarion purpureae S. Brullo 1984
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Arrhenatherion sardoi Gamisans 1989

* H2.6 - Calcareous and ultra-basic screes of warm exposures
Ptilostemo casabonae-Euphorbion cupanii Angiolini et al. 2005
* H2.6 - Calcareous and ultra-basic screes of warm exposures
Euphorbion rigidae S. Brullo et Spampinato 1990
* C3.6 - Unvegetated or sparsely vegetated shores with soft or mobile sediments
Lemnion minoris O. de Bolòs et Masclans 1955
* C1.2 - Permanent mesotrophic lakes, ponds and pools
* C1.3 - Permanent eutrophic lakes, ponds and pools
Utricularion vulgaris Passarge 1964
* C1.2 - Permanent mesotrophic lakes, ponds and pools
Hydrocharition morsus-ranae (Passarge 1964) Westhoff et Den Held 1969
* C1.2 - Permanent mesotrophic lakes, ponds and pools
* C1.3 - Permanent eutrophic lakes, ponds and pools
Potamogetonion Libbert 1931
* C1.2 - Permanent mesotrophic lakes, ponds and pools
* C1.3 - Permanent eutrophic lakes, ponds and pools
* C1.4 - Permanent dystrophic lakes, ponds and pools
* C2.3 - Permanent non-tidal, smooth-flowing watercourses
Nymphaeion albae Oberd. 1957
* C1.2 - Permanent mesotrophic lakes, ponds and pools
* C1.3 - Permanent eutrophic lakes, ponds and pools
* C1.4 - Permanent dystrophic lakes, ponds and pools
* C2.3 - Permanent non-tidal, smooth-flowing watercourses
Nelumboion nuciferae Losev et Golub in Golub et al. 1991
* C1.3 - Permanent eutrophic lakes, ponds and pools
Batrachion fluitantis Neuhäusl 1959
* C1.2 - Permanent mesotrophic lakes, ponds and pools
* C1.3 - Permanent eutrophic lakes, ponds and pools
* C2.2 - Permanent non-tidal, fast, turbulent watercourses
* C2.3 - Permanent non-tidal, smooth-flowing watercourses
Ranunculion aquatilis Passarge 1964
* C1.2 - Permanent mesotrophic lakes, ponds and pools
* C1.3 - Permanent eutrophic lakes, ponds and pools
* C1.5 - Permanent inland saline and brackish lakes, ponds and pools
* C1.6 - Temporary lakes, ponds and pools
* C2.3 - Permanent non-tidal, smooth-flowing watercourses
Caricion remotae Kästner 1941
* C2.1 - Springs, spring brooks and geysers
Cratoneuro filicini-Calthion laetae Hadac 1983
* C2.1 - Springs, spring brooks and geysers
Mniobryo-Epilobion hornemannii Nordhagen 1943
* C2.1 - Springs, spring brooks and geysers
Koenigio-Microjuncion Sörensen 1942
* C2.1 - Springs, spring brooks and geysers
Cardamino-Montion Br.-Bl. 1926
* C2.1 - Springs, spring brooks and geysers
Swertio perennis-Anisothecion palustris Hadac 1983
* C2.1 - Springs, spring brooks and geysers
Epilobio nutantis-Montion Zechmeister in Zechmeister et Mucina 1994
* C2.1 - Springs, spring brooks and geysers
Cratoneurion commutati Koch 1928
* C2.1 - Springs, spring brooks and geysers
Lycopo europaei-Cratoneurion commutati Hadac 1983
* C2.1 - Springs, spring brooks and geysers

Myosotidion stoloniferae Rivas-Mart. et al. 1984
* C2.1 - Springs, spring brooks and geysers
Ranunculion omiophyllo-hederacei Rivas-Mart. et al. 2002
* C2.1 - Springs, spring brooks and geysers
Pinguiculo balcanicae-Cardaminion acris Carni et Matevski 2010
* C2.1 - Springs, spring brooks and geysers
Subularion Hadac 1971
* C1.6 - Temporary lakes, ponds and pools
* C3.4 - Species-poor beds of low-growing water-fringing or amphibious vegetation
Rorippion islandicae Béguin & Theurillat nom. ined.
* C1.6 - Temporary lakes, ponds and pools
* C3.4 - Species-poor beds of low-growing water-fringing or amphibious vegetation
Deschampsion litoralis Oberd. et Dierßen in Dierßen 1975
* C1.6 - Temporary lakes, ponds and pools
* C3.4 - Species-poor beds of low-growing water-fringing or amphibious vegetation
Lobelion dortmannae Vanden Berghen 1964
* C1.6 - Temporary lakes, ponds and pools
* C3.4 - Species-poor beds of low-growing water-fringing or amphibious vegetation
Littorellion uniflorae Koch ex Tx. 1937
* C1.1 - Permanent oligotrophic lakes, ponds and pools
* C1.6 - Temporary lakes, ponds and pools
* C3.4 - Species-poor beds of low-growing water-fringing or amphibious vegetation
Eleocharition acicularis Pietsch ex Dierßen 1975
* C1.6 - Temporary lakes, ponds and pools
* C3.4 - Species-poor beds of low-growing water-fringing or amphibious vegetation
Hyperico elodis-Sparganion Br.-Bl. et Tx. ex Oberd. 1957
* B1.8 - Moist and wet dune slacks
* C1.1 - Permanent oligotrophic lakes, ponds and pools
* C1.2 - Permanent mesotrophic lakes, ponds and pools
* C1.6 - Temporary lakes, ponds and pools
* C3.4 - Species-poor beds of low-growing water-fringing or amphibious vegetation
Sphagno-Utricularion T. Müller et Görs 1960
* C1.1 - Permanent oligotrophic lakes, ponds and pools
* C1.4 - Permanent dystrophic lakes, ponds and pools
* D2.2 - Poor fens and soft-water spring mires
Isoetion Br.-Bl. 1935
* C1.6 - Temporary lakes, ponds and pools
Cicendion (Rivas Goday in Rivas Goday et Borja 1961) Br.-Bl. 1967
* C1.6 - Temporary lakes, ponds and pools
Lythrion tribracteati Rivas Goday et Rivas-Mart. ex Rivas Goday 1970
* C1.6 - Temporary lakes, ponds and pools
Preslion cervinae Br.-Bl. ex Moor 1936
* B1.8 - Moist and wet dune slacks
* C1.6 - Temporary lakes, ponds and pools
Agrostion salmanticae Rivas Goday 1958
* C1.6 - Temporary lakes, ponds and pools
Nanocyperion Koch 1926
* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
Elatino macropodae-Damasonion alismatis de Foucault 1988
* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
Eleocharition soloniensis Philippi 1968
* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
Cypero-Spergularion salinae Slavnic 1948
* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation

* E6.2 - Continental inland salt steppes

Verbenion supinae Slavnic 1951

* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation

Lepidion latifolii Golub et Mirkin 1986

* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
* E6.2 - Continental inland salt steppes

Heleochloion Br.-Bl. ex Rivas Goday 1956

* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
* E6.1 - Mediterranean inland salt steppes

Phragmition communis Koch 1926

* C3.2 - Water-fringing reedbeds and tall helophytes other than canes
* D5.1 - Reedbeds normally without free-standing water

Typhion laxmannii Losev et Golub in Golub et al. 1991

* C3.2 - Water-fringing reedbeds and tall helophytes other than canes
* D6.2 - Inland saline or brackish species-poor helophyte beds normally without free-standing water

Meliloto dentati-Bolboschoenion maritimi Hroudová et al. 2009

* D6.2 - Inland saline or brackish species-poor helophyte beds normally without free-standing water

Magno-Caricion elatae Koch 1926

* C3.2 - Water-fringing reedbeds and tall helophytes other than canes
* D5.2 - Beds of large sedges normally without free-standing water

Magno-Caricion gracilis Géhu 1961

* C3.2 - Water-fringing reedbeds and tall helophytes other than canes
* D5.2 - Beds of large sedges normally without free-standing water

Carici-Rumicion hydrolapathi Passarge 1964

* C3.1 - Species-rich helophyte beds
* C3.2 - Water-fringing reedbeds and tall helophytes other than canes
* D5.2 - Beds of large sedges normally without free-standing water

Glycerio-Sparganion Br.-Bl. et Sissingh in Boer 1942

* C2.5 - Temporary running waters
* C3.1 - Species-rich helophyte beds

Scrophulario umbrosae-Caricion paniculatae Koska in Dengler et al. 2004

* C3.2 - Water-fringing reedbeds and tall helophytes other than canes
* D5.2 - Beds of large sedges normally without free-standing water

Phalaridion arundinaceae Kopecký 1961

* C3.2 - Water-fringing reedbeds and tall helophytes other than canes
* D5.1 - Reedbeds normally without free-standing water

Caricion broterianae (Rivas-Mart. et al. 1986) J.A. Molina 1996

* D5.2 - Beds of large sedges normally without free-standing water

Caricion microcarpae Gamisans 1975

* D5.2 - Beds of large sedges normally without free-standing water

Deschampsion argenteae Capelo et al. 2000

* D5.2 - Beds of large sedges normally without free-standing water

Eleocharito palustris-Sagittarion sagittifoliae Passarge 1964

* C3.1 - Species-rich helophyte beds
* C3.2 - Water-fringing reedbeds and tall helophytes other than canes

Alopecuro-Glycerion spicatae S. Brullo et al. 1994

* C3.1 - Species-rich helophyte beds

Caricion atrofusco-saxatilis Nordhagen 1943

* D3.1 - Palsa mires
* D3.2 - Aapa mires
* D3.3 - Polygon mires
* D4.1 - Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks
* D4.2 - Basic mountain flushes and streamsides, with a rich arctic-montane flora

Caricion davallianae Klika 1934

* B1.8 - Moist and wet dune slacks
* D4.1 - Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks
* D4.2 - Basic mountain flushes and streamsides, with a rich arctic-montane flora

Caricion canescenti-fuscae Nordhagen ex Tx. 1937
* B1.8 - Moist and wet dune slacks
* D2.2 - Poor fens and soft-water spring mires
* D2.3 - Transition mires and quaking bogs
* D3.1 - Palsa mires
* D3.2 - Aapa mires
* D3.3 - Polygon mires
* E3.5 - Moist or wet oligotrophic grassland

Sphagno-Caricion canescentis Passarge (1964) 1978
* D2.3 - Transition mires and quaking bogs

Sphagno-Tomentypnion Dahl 1956
* D3.1 - Palsa mires
* D3.2 - Aapa mires
* D3.3 - Polygon mires
* D4.1 - Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks

Festucion frigidae Rivas-Mart. et al. 2002
* D2.2 - Poor fens and soft-water spring mires

Bellidio-Bellion nivalis Gamisans 1975
* D2.2 - Poor fens and soft-water spring mires

Caricion lasiocarpae Vanden Berghen in Lebrun et al. 1949
* D1.1 - Raised bogs
* D2.1 - Valley mires
* D2.2 - Poor fens and soft-water spring mires
* D2.3 - Transition mires and quaking bogs
* D3.1 - Palsa mires
* D3.2 - Aapa mires
* D3.3 - Polygon mires

Rhynchosporion albae Koch 1926 nom. ambig. propos.
* C1.4 - Permanent dystrophic lakes, ponds and pools
* D1.1 - Raised bogs
* D1.2 - Blanket bogs
* D2.1 - Valley mires
* D2.2 - Poor fens and soft-water spring mires
* D2.3 - Transition mires and quaking bogs
* D3.1 - Palsa mires
* D3.2 - Aapa mires
* D3.3 - Polygon mires

Ericion tetralicis Schwickerath 1933
* D1.1 - Raised bogs
* D1.2 - Blanket bogs
* D2.1 - Valley mires
* F4.1 - Wet heaths

Oxycocco-Ericion tetralicis Nordhagen ex Tx. 1937
* D1.1 - Raised bogs
* D1.2 - Blanket bogs
* D2.1 - Valley mires
* F4.1 - Wet heaths

Oxycocco microcarpi-Empetrion hermaphroditi Nordhagen ex Du Rietz 1954
* D1.1 - Raised bogs
* D3.1 - Palsa mires
* D3.2 - Aapa mires

* D3.3 - Polygon mires

Sphagnion medii Kästner et Flössner 1933
* D1.1 - Raised bogs
* D2.1 - Valley mires
* D3.2 - Aapa mires
* G3.D - Boreal bog conifer woodland
* G3.E - Nemoral bog conifer woodland

Adenostylion alliariae Br.-Bl. 1926 nom. conserv. propos.
* E5.5 - Subalpine moist or wet tall-herb and fern stands
* F2.3 - Subalpine deciduous scrub

Dryopterido-Athyrion distentifolii (Holub ex Sýkora et Štursa 1973) Jeník et al. 1980
* E5.5 - Subalpine moist or wet tall-herb and fern stands

Delphinion elati Hadac ex Hadac et al. 1969
* E5.5 - Subalpine moist or wet tall-herb and fern stands

Cirsion flavispinae Quézel 1953
* E5.5 - Subalpine moist or wet tall-herb and fern stands

Doronicion corsici Gamisans 1975
* E5.5 - Subalpine moist or wet tall-herb and fern stands

Cirsion appendiculati Horvat et al. 1937
* E5.5 - Subalpine moist or wet tall-herb and fern stands

Calamagrostion villosae Pawlowski et al. 1928
* E4.3 - Acid alpine and subalpine grassland

Trisetion fusci Krajina 1933
* E4.3 - Acid alpine and subalpine grassland

Calamagrostion arundinaceae (Luquet 1926) Oberd. 1957
* E4.3 - Acid alpine and subalpine grassland

Petasition officinalis Sillinger 1933
* E5.4 - Moist or wet tall-herb and fern fringes and meadows

Senecionion samniti Bonin 1978
* E5.4 - Moist or wet tall-herb and fern fringes and meadows

Rumicion alpini Rübel ex Scharfetter 1938
* E5.5 - Subalpine moist or wet tall-herb and fern stands

Mulgedion alpinI Nordhagen 1943
* E5.5 - Subalpine moist or wet tall-herb and fern stands

Polemonio acutiflori-Veratrion lobeliani Telyatnikov 2012
* E5.5 - Subalpine moist or wet tall-herb and fern stands

Triseto sibiricae-Aconition septentrionalis Ermakov et al. 2000
* E5.5 - Subalpine moist or wet tall-herb and fern stands

Salicion herbaceae Br.-Bl. in Br.-Bl. et Jenny 1926
* E4.1 - Vegetated snow-patch
* F2.1 - Subarctic and alpine dwarf willow scrub

Salici herbaceae-Caricion lachenalii Béguin et Theurillat 1982
* E4.1 - Vegetated snow-patch
* F2.1 - Subarctic and alpine dwarf willow scrub

Festucion picturatae Krajina 1933 corr. Dúbravcová 2007
* E4.1 - Vegetated snow-patch

Ranunculion crenati Lakušic 1966
* E4.1 - Vegetated snow-patch

Sedion candollei Rivas-Mart., Fernández González et Loidi in Rivas-Mart. et al. 2011
* E4.1 - Vegetated snow-patch

Hyalopoion ponticae Rabotnova et Onipchenko in Onipchenko 2002
* E4.1 - Vegetated snow-patch

Cassiopo-Salicion herbaceae Nordhagen 1943
* E4.1 - Vegetated snow-patch

Ranunculo-Oxyrion Nordhagen 1943
* E4.1 - Vegetated snow-patch
Arabidion caeruleae Br.-Bl. in Br.-Bl. et Jenny 1926
* E4.1 - Vegetated snow-patch
* F2.1 - Subarctic and alpine dwarf willow scrub
Seslerion albicantis Br.-Bl. in Br.-Bl. et Jenny 1926 corr. Oberd. 1983
* E4.4 - Calcareous alpine and subalpine grassland
Caricion austroalpinae Sutter 1962
* E4.4 - Calcareous alpine and subalpine grassland
Caricion ferrugineae Br.-Bl. 1931
* E4.4 - Calcareous alpine and subalpine grassland
Caricion firmae Gams 1936
* E4.4 - Calcareous alpine and subalpine grassland
Seslerio-Asterion alpini Hadac ex Hadac et al. 1969
* E4.4 - Calcareous alpine and subalpine grassland
Seslerion tatrae Pawlowski 1935 corr. Klika 1955
* E4.4 - Calcareous alpine and subalpine grassland
Festuco saxatilis-Seslerion bielzii (Pawlowski et Walas 1949) Coldea 1984
* E4.4 - Calcareous alpine and subalpine grassland
Laserpitio nestleri-Ranunculion thorae Vigo ex Molero 1981
* E4.4 - Calcareous alpine and subalpine grassland
Primulion intricatae Br.-Bl. ex Vigo 1972
* E4.4 - Calcareous alpine and subalpine grassland
Armerion cantabricae Rivas-Mart. et al. 1984
* E4.4 - Calcareous alpine and subalpine grassland
Seslerion tenuifoliae Horvat 1930
* E4.4 - Calcareous alpine and subalpine grassland
Seslerio juncifoliae-Caricion firmae Trinajstic 2005
* E4.4 - Calcareous alpine and subalpine grassland
Festucion pungentis Horvat 1930
* E4.4 - Calcareous alpine and subalpine grassland
Festuco-Knaution longifoliae Jovanovic-Dunjic 1955
* E4.4 - Calcareous alpine and subalpine grassland
Seslerion apenninae Bruno et Furnari 1966
* E4.4 - Calcareous alpine and subalpine grassland
Oxytropidion dinaricae Lakušic 1966
* E4.4 - Calcareous alpine and subalpine grassland
Anthyllido-Seslerion klasterskyi Simon 1958
* E4.4 - Calcareous alpine and subalpine grassland
Seslerio-Festucion xanthinae Horvat in Horvat, Glavac et Ellenberg 1974
* E4.4 - Calcareous alpine and subalpine grassland
Festucion xanthinae Lakušic et al. 1969
* E4.3 - Acid alpine and subalpine grassland
Seslerion nitidae Horvat 1936
* E4.4 - Calcareous alpine and subalpine grassland
Campanulion albanicae Lakušic 1966
* E4.3 - Acid alpine and subalpine grassland
Cochleariopsion groenlandicae Hadac 1989
* H5.1 - Fjell fields and other freeze-thaw features with very sparse or no vegetation
Papaverion dahliani Hofmann 1968
* H5.1 - Fjell fields and other freeze-thaw features with very sparse or no vegetation
Caricion nardinae Nordhagen 1936
* E4.4 - Calcareous alpine and subalpine grassland
* F2.2 - Evergreen alpine and subalpine heath and scrub

Dryadion integrifoliae Ohba ex Daniëls 1982
* F1.2 - Moss and lichen tundra
* F2.2 - Evergreen alpine and subalpine heath and scrub
Oxytropido-Elynion myosuroidis Br.-Bl. (1948) 1949
* E4.4 - Calcareous alpine and subalpine grassland
Festucion versicoloris Krajina 1933
* E4.3 - Acid alpine and subalpine grassland
* E4.4 - Calcareous alpine and subalpine grassland
Agrostion alpinae Jeník et al. 1980
* E4.3 - Acid alpine and subalpine grassland
* E4.4 - Calcareous alpine and subalpine grassland
Kobresion capilliformis Tsepkova 1987
* E4.3 - Acid alpine and subalpine grassland
* E4.4 - Calcareous alpine and subalpine grassland
Loiseleurio-Arctostaphylion Kalliola 1939
* F1.1 - Shrub tundra
* F1.2 - Moss and lichen tundra
* F2.2 - Evergreen alpine and subalpine heath and scrub
Phyllodoco-Vaccinion myrtilli Nordhagen 1943
* F1.1 - Shrub tundra
* F2.2 - Evergreen alpine and subalpine heath and scrub
Loiseleurio-Vaccinion Br.-Bl. in Br.-Bl. et Jenny 1926
* F2.2 - Evergreen alpine and subalpine heath and scrub
Rhododendro ferrugineae-Vaccinion Schnyder 1930
* F2.2 - Evergreen alpine and subalpine heath and scrub
Juniperion nanae Br.-Bl. in Br.-Bl. et al. 1939
* F2.2 - Evergreen alpine and subalpine heath and scrub
Bruckenthalion spiculifoliae Horvat 1949
* F2.2 - Evergreen alpine and subalpine heath and scrub
Rhododendrion caucasici Onipchenko 2002
* F2.2 - Evergreen alpine and subalpine heath and scrub
Salici kazbekensis–Empetrion nigrae Onipchenko 2002
* F2.2 - Evergreen alpine and subalpine heath and scrub
Aconito nasuti–Juniperion NANAE Onipchenko 2002
* F2.2 - Evergreen alpine and subalpine heath and scrub
Carici-Juncion trifidi Nordhagen 1943
* E4.2 - Moss and lichen dominated mountain summits, ridges and exposed slopes
* E4.3 - Acid alpine and subalpine grassland
Nardo-Caricion rigidae Nordhagen 1943
* E4.3 - Acid alpine and subalpine grassland
Anemonastro sibirici-Festucion ovinae Chytrý et al. 1993
* E4.3 - Acid alpine and subalpine grassland
Caricion curvulae Br.-Bl. 1925
* E4.3 - Acid alpine and subalpine grassland
Juncion trifidi Krajina 1933
* E4.3 - Acid alpine and subalpine grassland
Festucion supinae Br.-Bl. 1948
* E4.3 - Acid alpine and subalpine grassland
Festucion eskiae Br.-Bl. 1948
* E4.3 - Acid alpine and subalpine grassland
Anemonion speciosae Minaeva ex Onipchenko 2002
* E4.3 - Acid alpine and subalpine grassland
Nardion strictae Br.-Bl. 1926
* E4.3 - Acid alpine and subalpine grassland

Festucion variae Br.-Bl. 1925
* E4.3 - Acid alpine and subalpine grassland
Festucion spadiceae Nègre 1969
* E4.3 - Acid alpine and subalpine grassland
Festucion macratherae Avena et Bruno 1975 corr. Petriccione et Persia 1995
* E4.3 - Acid alpine and subalpine grassland
Potentillo montenegrinae-Festucion paniculatae Redžic ex Carni et Mucina 2012
* E4.3 - Acid alpine and subalpine grassland
Agrostion schraderanae Grabherr 1993
* E4.3 - Acid alpine and subalpine grassland
Festucion woronowii Tsepkova 1987
* E4.3 - Acid alpine and subalpine grassland
Campanulo herminii-Nardion strictae Rivas-Mart. 1964
* E1.8 - Closed Mediterranean dry acid and neutral grassland
* E4.3 - Acid alpine and subalpine grassland
Plantaginion thalackeri Quézel 1953
* E4.3 - Acid alpine and subalpine grassland
Sesamoido pygmaeae-Poion violaceae Gamisans 1975
* E4.3 - Acid alpine and subalpine grassland
Festuco-Poion violaceae Horvat 1936 nom. inval.
* E4.3 - Acid alpine and subalpine grassland
Seslerion comosae Horvat et al. 1937
* E4.3 - Acid alpine and subalpine grassland
Trifolion parnassii Quézel ex Quézel et al. 1992
* E4.3 - Acid alpine and subalpine grassland
Saxifrago tricuspidatae-Calamagrostion purpurascentis Cooper ex Drees et Daniëls 2009
* E4.3 - Acid alpine and subalpine grassland
Pino-Ericion carneae Br.-Bl. in Br.-Bl. et al. 1939
* G3.2 - Alpine [Larix] - [Pinus cembra] woodland
* G3.4 - [Pinus sylvestris] woodland south of the taiga
* G3.5 - [Pinus nigra] woodland
Pulsatillo slavicae-Pinion Fajmonová 1978
* G3.4 - [Pinus sylvestris] woodland south of the taiga
Fraxino orni-Pinion nigrae Em 1978
* G3.5 - [Pinus nigra] woodland
Fraxino orni-Ericion Horvat 1959
* G3.4 - [Pinus sylvestris] woodland south of the taiga
Pinion heldreichii Horvat 1946
* G3.6 - Subalpine mediterranean [Pinus] woodland
Chamaecytiso hirsuti-Pinion pallasianae Barbero et Quézel ex Quézel 1992
* G3.5 - [Pinus nigra] woodland
Carici humilis-Pinion kochianae Didukh 2001
* G3.4 - [Pinus sylvestris] woodland south of the taiga
* G3.5 - [Pinus nigra] woodland
Libanoti intermediae-Pinion sylvestris Didukh 2003
* G3.4 - [Pinus sylvestris] woodland south of the taiga
Ericion carneae Rübel ex Grabherr et al. 1993
* F2.2 - Evergreen alpine and subalpine heath and scrub
Festuco-Pinion sylvestris Passarge 1968
* G3.4 - [Pinus sylvestris] woodland south of the taiga
Kolerio glaucae-Pinion sylvestris Ermakov 1999
* G3.4 - [Pinus sylvestris] woodland south of the taiga
Pino sylvestris-Juniperion sabinae Rivas Goday in Rivas Goday et Borja 1961
* F2.2 - Evergreen alpine and subalpine heath and scrub

* G3.4 - [Pinus sylvestris] woodland south of the taiga

Juniperion thuriferae Rivas-Mart. 1969

* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

Junipero hemisphaericae-Pinion sylvestris Rivas-Mart. 1983

* G3.4 - [Pinus sylvestris] woodland south of the taiga
* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

Avenello ibericae-Pinion ibericae Rivas-Mart. et J.A. Molina in Rivas-Mart., Fernández-González et Loidi 1999

* G3.4 - [Pinus sylvestris] woodland south of the taiga

Ononido rotundifoliae-Pinion sylvestris Br.-Bl. 1950

* G3.4 - [Pinus sylvestris] woodland south of the taiga

Cytision oromediterranei Tx. in Tx. et Oberd. 1958 corr. Rivas-Mart. 1987

* F2.2 - Evergreen alpine and subalpine heath and scrub
* F7.4 - Hedgehog-heaths

Genisto versicoloris-Juniperion hemisphaericae Rivas-Mart. et J.A. Molina in Rivas-Mart., Fernández-González et Loidi 1999

* F2.2 - Evergreen alpine and subalpine heath and scrub
* F7.4 - Hedgehog-heaths

Pruno prostratae-Juniperion sabinae Rivas-Mart. et J.A. Molina in Rivas-Mart., Fernández-González et Loidi 1999

* F2.2 - Evergreen alpine and subalpine heath and scrub
* F7.4 - Hedgehog-heaths

Berberidion aetnensis S. Brullo et al. 2001

* F7.4 - Hedgehog-heaths
* G3.5 - [Pinus nigra] woodland

Juniperion excelso-foetidissimae Em ex Matevski et al. 2010

* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

Jasmino-Juniperion excelsae Didukh et al. ex Didukh 1996

* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

Berberido creticae-Juniperion foetidissimae S. Brullo et al. 2001

* G3.5 - [Pinus nigra] woodland
* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

Lonicero-Rhamnion falacis P. Fukarek 1969

* F2.3 - Subalpine deciduous scrub

Daphno-Genistion radiatae N. Randelovic et Rexhepi 1980

* F2.2 - Evergreen alpine and subalpine heath and scrub

Daphno oleoidis-Juniperion alpinae Stanisci 1997

* F2.2 - Evergreen alpine and subalpine heath and scrub

Piceion excelsae Pawlowski et al. 1928

* G3.1 - [Abies] and [Picea] woodland
* G3.2 - Alpine [Larix] - [Pinus cembra] woodland
* G3.A - [Picea] taiga woodland

Abieti-Piceion (Br.-Bl. in Br.-Bl. et al. 1939) Soó 1964

* G3.1 - [Abies] and [Picea] woodland

Chrysanthemo rotundifolii-Piceion (Krajina 1933) Brezina et Hadac in Hadac 1962

* G3.1 - [Abies] and [Picea] woodland

Aconito rubicundi-Abietion sibiricae Anekhonov et Chytrý 1998

* G3.1 - [Abies] and [Picea] woodland

Seslerio caeruleae-Pinion uncinatae Vigo 1974

* G3.3 - [Pinus uncinata] woodland

Abieti-Calamagrostion arundinaceae Horvat 1962

* G3.1 - [Abies] and [Picea] woodland

Pinion peucis Horvat 1950

* G3.6 - Subalpine mediterranean [Pinus] woodland

Betulion tortuosae Mucina 2012

* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]

Rhododendro caucasici-Betulion litwinowii Onipchenko 2002
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
Pinion (Libbert 1933) Oberd. 1957 nom. ambig. propos.
* B1.7 - Coastal dune woods
* G3.4 - [Pinus sylvestris] woodland south of the taiga
* G3.B - [Pinus] taiga woodland
Cladonio stellaris-Pinion sylvestris Kielland-Lund ex Ermakov et Morozova 2011
* G3.B - [Pinus] taiga woodland
* G3.C - [Larix] taiga woodland
Empetro-Piceion obovatae Morozova et al. 2008
* G3.A - [Picea] taiga woodland
* G3.C - [Larix] taiga woodland
* G3.D - Boreal bog conifer woodland
Caragano fruticis-Pinion sylvestris Solomeshch et al. 2002
* G3.4 - [Pinus sylvestris] woodland south of the taiga
* G3.C - [Larix] taiga woodland
Veronico teucrii-Pinion sylvestris Ermakov et Solomeshch in Ermakov et et al. 2000
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
* G3.4 - [Pinus sylvestris] woodland south of the taiga
* G3.C - [Larix] taiga woodland
Trollio europaei-Pinion sylvestris Fedorov ex Ermakov et al. 2000
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
* G3.4 - [Pinus sylvestris] woodland south of the taiga
Pinion mugo Pawlowski et al. 1928
* F2.4 - Conifer scrub close to the tree limit
Pino mugo-Ericion Leibundgut 1948
* F2.4 - Conifer scrub close to the tree limit
Epipactido atropurpureae-Pinion mugo Stanisci 1997
* F2.4 - Conifer scrub close to the tree limit
Lonicero borbasianae-Pinion mugo Carni et Mucina 2012
* F2.4 - Conifer scrub close to the tree limit
Alnion viridis Schnyder 1930
* F2.3 - Subalpine deciduous scrub
Salicion pentandrae Br.-Bl. 1967
* F2.3 - Subalpine deciduous scrub
Salicion helveticae Theurillat et al. 1995
* F2.3 - Subalpine deciduous scrub
Salicion silesiacae Rejmánek et al. 1971
* F2.3 - Subalpine deciduous scrub
Arrhenatherion elatioris Luquet 1926
* E2.2 - Low and medium altitude hay meadows
* E2.7 - Unmanaged mesic grassland
Cynosurion cristati Tx. 1947
* E2.1 - Permanent mesotrophic pastures and aftermath-grazed meadows
* E2.2 - Low and medium altitude hay meadows
* E2.6 - Agriculturally-improved, re-seeded and heavily fertilised grassland, including sports fields and grass lawns
Phyteumato-Trisetion (Hundt ex Passarge 1969) Ellmauer et Mucina 1993
* E2.3 - Mountain hay meadows
Festucion pratensis Sipailova et al. 1985
* E2.2 - Low and medium altitude hay meadows
Alchemillo-Ranunculion repentis Passarge 1979
* E2.8 - Trampled mesophilous grasslands with annuals
* H5.6 - Trampled areas

Triseto flavescentis-Polygonion bistortae Br.-Bl. et Tx. ex Marschall 1947
* E2.3 - Mountain hay meadows
* E4.5 - Alpine and subalpine enriched grassland
Pancicion serbicae Lakušic 1966
* E2.3 - Mountain hay meadows
* E4.5 - Alpine and subalpine enriched grassland
Poion alpinae Gams ex Oberd. 1950
* E4.5 - Alpine and subalpine enriched grassland
Poion supinae Rivas-Mart. et Géhu 1978
* E2.8 - Trampled mesophilous grasslands with annuals
* E4.5 - Alpine and subalpine enriched grassland
* H5.6 - Trampled areas
Polygonion krascheninnikovii Kashapov 1985
* E2.3 - Mountain hay meadows
Molinion caeruleae Koch 1926
* E2.1 - Permanent mesotrophic pastures and aftermath-grazed meadows
* E2.2 - Low and medium altitude hay meadows
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
* E3.5 - Moist or wet oligotrophic grassland
Calthion palustris Tx. 1937
* E2.2 - Low and medium altitude hay meadows
* E2.3 - Mountain hay meadows
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
Filipendulo-Petasition Br.-Bl. ex Duvigneaud 1949
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Deschampsion cespitosae Horvatic 1930
* E2.1 - Permanent mesotrophic pastures and aftermath-grazed meadows
* E2.2 - Low and medium altitude hay meadows
* E2.5 - Meadows of the steppe zone
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Conioselinion tatarici Golub et al. 2003
* E2.2 - Low and medium altitude hay meadows
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
Potentillion anserinae Tx. 1947
* B1.8 - Moist and wet dune slacks
* D5.3 - Swamps and marshes dominated by [Juncus effusus] or other large [Juncus] spp.
* E2.1 - Permanent mesotrophic pastures and aftermath-grazed meadows
* E2.6 - Agriculturally-improved, re-seeded and heavily fertilised grassland, including sports fields and grass lawns
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
Juncion inflexi Knapp 1971
* D5.3 - Swamps and marshes dominated by [Juncus effusus] or other large [Juncus] spp.
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
Oenanthion fistulosae de Foucault 2009
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
Althaeion officinalis Golub et Mirkin in Golub 1995
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Euphorbion palustris Ageleulov et Golub in Golub 1995
* E3.4 - Moist or wet eutrophic and mesotrophic grassland
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Lythro-Euphorbion Mirkin et Naumova 1986

    * E3.4 - Moist or wet eutrophic and mesotrophic grassland
    * E5.4 - Moist or wet tall-herb and fern fringes and meadows
Molinio-Hordeion secalini Horvatic 1934
    * E3.3 - Sub-mediterranean humid meadows
Trifolion resupinati Micevski 1957
    * E3.3 - Sub-mediterranean humid meadows
Trifolio-Ranunculion pedati Slavnic 1948
    * E3.3 - Sub-mediterranean humid meadows
Ranunculion velutini Pedrotti 1978
    * E3.3 - Sub-mediterranean humid meadows
Molinio-Holoschoenion Br.-Bl. ex Tchou 1948
    * C3.3 - Water-fringing beds of tall canes
    * E3.1 - Mediterranean tall humid grassland
Dactylorhizo-Juncion striati S. Brullo et Grillo 1978
    * E2.3 - Mountain hay meadows
Aphyllanthion Br.-Bl. et Pawlowski 1931 nom. ambig. propos.
    * E3.2 - Mediterranean short humid grassland
Gaudinio fragilis-Hordeion bulbosi Galán de Mera et al. 1997
    * E3.2 - Mediterranean short humid grassland
Sieglingion decumbentis Gamisans 1976
    * E3.1 - Mediterranean tall humid grassland
Trifolio fragiferi-Cynodontion Br.-Bl. et O. de Bolòs 1958
    * E3.2 - Mediterranean short humid grassland
Bromion erecti Koch 1926
    * E1.2 - Perennial calcareous grassland and basic steppes
Cirsio-Brachypodion pinnati Hadac et Klika in Klika et Hadac ex Klika 1951
    * E1.2 - Perennial calcareous grassland and basic steppes
Filipendulo vulgaris-Helictotrichion pratensis Dengler et Löbel in Dengler et al 2003
    * E1.2 - Perennial calcareous grassland and basic steppes
Gentianello amarellae-Helictotrichion pratensis Royer ex Dengler in Mucina et al. 2009
    * E1.2 - Perennial calcareous grassland and basic steppes
Potentillo splendentis-Brachypodion pinnati Br.-Bl. 1967
    * E1.2 - Perennial calcareous grassland and basic steppes
Xero-Bromion erecti Zoller 1954
    * E1.1 - Inland sand and rock with open vegetation
Festuco-Bromion Barbero et Loisel 1971
    * E1.1 - Inland sand and rock with open vegetation
Trifolion montani Naumova 1986
    * E2.5 - Meadows of the steppe zone
Artemision ponticae Golub et Savelyeva in Golub 1995
    * E2.5 - Meadows of the steppe zone
Seselion libanotis Ageleulov et Golub in Golub 1995
    * E2.5 - Meadows of the steppe zone
Agrostion vinealis Sipailova et al. 1985
    * E2.5 - Meadows of the steppe zone
Festucion sulcatae Soó 1930
    * E1.2 - Perennial calcareous grassland and basic steppes
Stipion lessingianae Soó 1947
    * E1.2 - Perennial calcareous grassland and basic steppes
Artemisio-Kochion Soó 1964
    * E1.2 - Perennial calcareous grassland and basic steppes
Stipo-Poion xerophilae Br.-Bl. et Tx. ex Br.-Bl. 1949
    * E1.2 - Perennial calcareous grassland and basic steppes
Pimpinello-Thymion zygoidi Dihoru et Donita 1970

* E1.2 - Perennial calcareous grassland and basic steppes
Bassio-Artemision austriacae Solomeshch in Mirkin et al. 1986
* E1.2 - Perennial calcareous grassland and basic steppes
Artemisio tauricae-Festucion Korzhenevsky et Klyukin 1991
* E1.2 - Perennial calcareous grassland and basic steppes
Centaureo carbonatae-Koelerion talievii Romashchenko et al. 1996
* E1.2 - Perennial calcareous grassland and basic steppes
Agropyrion pectinati Golub et Uzhametskaya 1991
* E1.2 - Perennial calcareous grassland and basic steppes
Caricion stenophyllae Golub et Savelyeva 1991
* E1.2 - Perennial calcareous grassland and basic steppes
Helictotricho desertori-Stipion rubentis Toman 1969
* E1.2 - Perennial calcareous grassland and basic steppes
Centaurion sumensis Golub et Uzhametskaya 1992
* E1.2 - Perennial calcareous grassland and basic steppes
Tanaceto achilleifolii-Stipion lessingianae Royer ex Lysenko et Mucina 2013
* E1.2 - Perennial calcareous grassland and basic steppes
Stipion korshinskyi Toman 1969
* E1.2 - Perennial calcareous grassland and basic steppes
Alysso-Festucion pallentis Moravec in Holub et al. 1967
* E1.1 - Inland sand and rock with open vegetation
Asplenio septentrionali-Festucion pallentis Zólyomi 1936 corr. 1966
* E1.1 - Inland sand and rock with open vegetation
Avenulo adsurgentis-Festucion pallentis Mucina in Mucina et Kolbek 1993
* E1.1 - Inland sand and rock with open vegetation
Bromo pannonici-Festucion pallentis Zólyomi 1966 nom. conserv. propos.
* E1.1 - Inland sand and rock with open vegetation
Helianthemo cani-Festucion pallentis Kolbek in Moravec et al. 1983
* E1.1 - Inland sand and rock with open vegetation
Chrysopogono-Festucion dalmaticae Borhidi 1996
* E1.1 - Inland sand and rock with open vegetation
Galio campanulatae-Poion versicoloris Kukovitsa et al. 1994 nom. inval.
* E1.1 - Inland sand and rock with open vegetation
Diantho lumnitzeri-Seslerion (Soó 1971) Chytrý et Mucina in Mucina et Kolbek 1993
* E1.1 - Inland sand and rock with open vegetation
* E1.2 - Perennial calcareous grassland and basic steppes
Seslerion rigidae Zólyomi 1936
* E1.1 - Inland sand and rock with open vegetation
* E1.2 - Perennial calcareous grassland and basic steppes
Saturejo-Thymion Micevski 1971
* E1.2 - Perennial calcareous grassland and basic steppes
Saturejion montanae Horvat in Horvat, Glavac et Ellenberg 1974
* E1.2 - Perennial calcareous grassland and basic steppes
Armerio-Potentillion Micevski 1978
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland
Chrysopogono-Danthonion Kojic 1957
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland
Polygonion albanicae Ritter-Studnicka 1970
* E1.1 - Inland sand and rock with open vegetation
Centaureo-Bromion fibrosi Blecic et al. 1969
* E1.1 - Inland sand and rock with open vegetation
Alyssion heldreichii Bergmeier et al. 2009
* E1.1 - Inland sand and rock with open vegetation
Artemisio hololeucae-Hyssopion cretacei Romashchenko et al. 1996

* E1.1 - Inland sand and rock with open vegetation

Euphorbio cretophilae-Thymion cretacei Didukh 1989

* E1.1 - Inland sand and rock with open vegetation

Adonido vernalis-Stipion tirsae Didukh 1983 nom. inval.

* E1.2 - Perennial calcareous grassland and basic steppes

Carici humilis-Androsacion tauricae Didukh 1983 nom. inval.

* E1.2 - Perennial calcareous grassland and basic steppes

Veronico multifidae-Stipion ponticae Didukh 1983 nom. inval.

* E1.2 - Perennial calcareous grassland and basic steppes

Brachypodion phoenicoidis Br.-Bl. ex Molinier 1934

* E1.2 - Perennial calcareous grassland and basic steppes

Artemisio albae-Dichanthion ischaemi X. Font ex Rivas-Mart. et M.L. López in Rivas-Mart. et al. 2002

* E1.7 - Closed non-Mediterranean dry acid and neutral grassland

Diplachnion serotinae Br.-Bl. 1961

* E1.7 - Closed non-Mediterranean dry acid and neutral grassland

Chrysopogono-Saturejion subspicatae Horvat et Horvatic 1934

* E1.2 - Perennial calcareous grassland and basic steppes

Scorzonerion villosae Horvatic 1963

* E1.7 - Closed non-Mediterranean dry acid and neutral grassland

Alyssion bertolonii E. Pignatti et Pignatti 1977

* E1.1 - Inland sand and rock with open vegetation

Cytiso spinescentis-Bromion erecti Bonin 1978

* E1.2 - Perennial calcareous grassland and basic steppes
* E1.5 - Mediterranean-montane grassland

Hippocrepido glaucae-Stipion austroitalicae Forte et Terzi in Forte et al. 2005

* E1.2 - Perennial calcareous grassland and basic steppes

Brachypodion genuensis (Biondi et al. 1995) Di Pietro et al. 2012

* E1.2 - Perennial calcareous grassland and basic steppes

Aconogonion alpini Yamalov et Mikrin 2010

* E1.1 - Inland sand and rock with open vegetation
* E1.2 - Perennial calcareous grassland and basic steppes

Corynephorion canescentis Klika 1931

* B1.4 - Coastal stable dune grassland (grey dunes)
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland

Euphorbio portlandicae-Helichrysion stoechadis Géhu et Tx. ex Sissingh 1974

* B1.4 - Coastal stable dune grassland (grey dunes)

Koelerion arenariae Tx. 1937 corr. Gutermann et Mucina 1993

* B1.4 - Coastal stable dune grassland (grey dunes)
* B1.9 - Machair

Hyperico perforati-Scleranthion perennis Moravec 1967

* E1.1 - Inland sand and rock with open vegetation
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland

Armerion elongatae Pötsch 1962

* B1.9 - Machair
* E1.1 - Inland sand and rock with open vegetation
* E1.7 - Closed non-Mediterranean dry acid and neutral grassland
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland
* E1.B - Heavy-metal grassland

Sedo-Cerastion arvensis Sissingh et Tideman 1960

* E1.1 - Inland sand and rock with open vegetation
* E1.7 - Closed non-Mediterranean dry acid and neutral grassland
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland

Armerion junceae Br.-Bl. In Br.-Bl. et al. 1952

* E1.7 - Closed non-Mediterranean dry acid and neutral grassland

* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland
Diantho pinifolii-Jasionion heldreichii Bergmeier et al. 2009
* E1.7 - Closed non-Mediterranean dry acid and neutral grassland
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland
Koelerion glaucae Volk 1931
* E1.1 - Inland sand and rock with open vegetation
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland
Sileno conicae-Cerastion semidecandri Korneck 1974
* E1.1 - Inland sand and rock with open vegetation
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland
Bassio laniflorae-Bromion tectorum Borhidi 1996 nom. conserv. propos.
* E1.1 - Inland sand and rock with open vegetation
Diantho catalaunici-Scrophularion humifusae Baudiere et Simonneau 1974
* B1.4 - Coastal stable dune grassland (grey dunes)
Festucion vaginatae Soó 1929
* E1.1 - Inland sand and rock with open vegetation
Festucion beckeri Vicherek 1972
* E1.1 - Inland sand and rock with open vegetation
Veronico-Poion glaucae Nordhagen 1943
* H2.1 - Cold siliceous screes
Sedo-Thymion De Molenaar 1976
* H2.1 - Cold siliceous screes
Sedo-Scleranthion biennis Br.-Bl. 1955
* E1.1 - Inland sand and rock with open vegetation
* H3.6 - Weathered rock and outcrop habitats
Sedion anglici Br.-Bl. in Br.-Bl. et Tx. 1952
* E1.1 - Inland sand and rock with open vegetation
* H3.6 - Weathered rock and outcrop habitats
Sedion pyrenaici Tx. in Rivas-Mart. et al. 2011
* E1.1 - Inland sand and rock with open vegetation
* H3.6 - Weathered rock and outcrop habitats
Sedo albi-Veronicion dillenii Korneck 1974
* E1.1 - Inland sand and rock with open vegetation
* H3.6 - Weathered rock and outcrop habitats
Scabioso-Trifolion dalmatici Horvatic et N. Randelovic in N. Randelovic 1977
* E1.1 - Inland sand and rock with open vegetation
* H3.6 - Weathered rock and outcrop habitats
Thero-Airion Tx. ex Oberd. 1957
* B1.4 - Coastal stable dune grassland (grey dunes)
* B1.9 - Machair
* E1.1 - Inland sand and rock with open vegetation
* E1.9 - Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland
Alysso alyssoidis-Sedion albi Oberd. et T. Müller in T. Müller 1961
* E1.1 - Inland sand and rock with open vegetation
* H3.6 - Weathered rock and outcrop habitats
Tortello tortuosae-Sedion albi Hallberg ex Dengler et Löbel 2006
* E1.1 - Inland sand and rock with open vegetation
* H3.6 - Weathered rock and outcrop habitats
Sedion micrantho-sediformis Rivas-Mart., P. Sánchez et Alcaraz ex P. Sánchez et Alcaraz 1993
* E1.1 - Inland sand and rock with open vegetation
* H3.6 - Weathered rock and outcrop habitats
Aethionemion saxatilis Bergmeier et al. 2009
* E1.1 - Inland sand and rock with open vegetation
* H3.6 - Weathered rock and outcrop habitats

Potentillo-Polygonion vivipari Nordhagen ex Dierßen 1992
* E4.3 - Acid alpine and subalpine grassland
Equiseto-Galion borealis Tx. in Tx. et Böttcher 1969
* E4.3 - Acid alpine and subalpine grassland
Violion caninae Schwickerath 1944
* B1.4 - Coastal stable dune grassland (grey dunes)
* B1.9 - Machair
* E1.7 - Closed non-Mediterranean dry acid and neutral grassland
* E5.3 - [Pteridium aquilinum] fields
Galio saxatilis-Festucion vivipareae de Foucault 1994
* E3.5 - Moist or wet oligotrophic grassland
Agrostion curtisii de Foucault 1986
* E1.7 - Closed non-Mediterranean dry acid and neutral grassland
Nardo-Juncion squarrosi (Oberd. 1957) Passarge 1964
* E3.5 - Moist or wet oligotrophic grassland
Nardo-Agrostion tenuis Sillinger 1933
* E4.3 - Acid alpine and subalpine grassland
Campanulo herminii-Nardion Rivas-Mart. 1964
* E3.5 - Moist or wet oligotrophic grassland
Ranunculo pollinensis-Nardion strictae Bonin 1972
* E4.3 - Acid alpine and subalpine grassland
Achilleo-Arnicion Horvat et Pawlowski in Horvat 1960
* E4.3 - Acid alpine and subalpine grassland
Potentillo ternatae-Nardion Simon 1958
* E4.3 - Acid alpine and subalpine grassland
Daboecion cantabricae (Dupont ex Rivas-Mart. 1979) Rivas-Mart. et al. in Loidi et al.1997
* F4.1 - Wet heaths
* F4.2 - Dry heaths
Ericion cinereae Böcher 1940
* B1.5 - Coastal dune heaths
* F4.2 - Dry heaths
Ericion umbellatae Br.-Bl. in Br.-Bl. et al. 1952
* B1.5 - Coastal dune heaths
* F4.2 - Dry heaths
* F5.5 - Thermo-Mediterranean scrub
Genistion micrantho-anglicae Rivas-Mart. 1979
* F4.1 - Wet heaths
Stauracanthion boivinii (Rivas-Mart. 1979) Rivas-Mart., Fernández-González et Loidi 1999
* F4.2 - Dry heaths
* F5.5 - Thermo-Mediterranean scrub
Ulicion minoris Malcuit 1929
* B1.5 - Coastal dune heaths
* F4.1 - Wet heaths
* F4.2 - Dry heaths
Daboecion azoricae Lüpnitz 1975
* F4.3 - Macaronesian heaths
Cisto salviifoliae-Ericion cineraeae Géhu in Bardat et al. 2004
* E4.2 - Moss and lichen dominated mountain summits, ridges and exposed slopes
Genisto pilosae-Vaccinion Br.-Bl. 1926
* B1.5 - Coastal dune heaths
* F2.2 - Evergreen alpine and subalpine heath and scrub
* F4.2 - Dry heaths
Empetrion nigri Schubert ex Westhoff et Den Held 1969
* B1.5 - Coastal dune heaths

Trifolion medii T. Müller 1962
* E5.2 - Thermophile woodland fringes
Knaution dipsacifoliae Julve ex Dengler et Boch 2008
* E5.2 - Thermophile woodland fringes
Geranion sanguinei Tx. in T. Müller 1962
* E5.2 - Thermophile woodland fringes
Galio litoralis-Geranion sanguinei Géhu et Géhu-Franck in de Foucault et al. 1983
* E5.2 - Thermophile woodland fringes
Stachyo lusitanicae-Cheirolophion sempervirentis (Capelo 1996) Capelo stat. nov. hoc loco
* E5.2 - Thermophile woodland fringes
Dictamno albi-Ferulagion galbaniferae (van Gils et al. 1975) de Foucault et al. ex Carni et Dengler in Mucina et al. 2009
* E5.2 - Thermophile woodland fringes
Lathyro laxiflori-Trifolion velenovskyi (Carni et al. 2000) Carni 2005
* E5.2 - Thermophile woodland fringes
Melampyrion pratensis Passarge 1979
* E5.2 - Thermophile woodland fringes
Violo rivinianae-Stellarion holosteae Passarge 1994
* E5.2 - Thermophile woodland fringes
Poion nemoralis Dengler et al. 2006
* E5.2 - Thermophile woodland fringes
Teucrion scorodoniae de Foucault et al. 1983
* E5.2 - Thermophile woodland fringes
Linarion triornithophorae Rivas-Mart. et al. 1984
* E5.2 - Thermophile woodland fringes
Origanion virentis Rivas-Mart. et O. de Bolòs in Rivas-Mart. et al. 1984
* E5.2 - Thermophile woodland fringes
Ranunculo cortusifolii-Geranion canariensis Rivas-Mart. et al. 1993
* E5.2 - Thermophile woodland fringes
Arctio-Sambucion nigrae Doing 1969
* F3.1 - Temperate thickets and scrub
Balloto nigrae-Robinion Hadac et Sofron 1980
* G1.C - Highly artificial broadleaved deciduous forestry plantations
* G5.2 - Small broadleaved deciduous anthropogenic woodlands
Chelidonio-Acerion negundi L. Ishbirdin et A. Ishbirdin 1989
* F3.1 - Temperate thickets and scrub
Chelidonio-Robinion Hadac et Sofron 1980 nom. inval.
* G1.C - Highly artificial broadleaved deciduous forestry plantations
* G5.2 - Small broadleaved deciduous anthropogenic woodlands
Euphorbio cyparissiae-Robinion Vítková in Kolbek et al. 2003
* G1.C - Highly artificial broadleaved deciduous forestry plantations
* G5.2 - Small broadleaved deciduous anthropogenic woodlands
Berberidion vulgaris Br.-Bl. ex Tx. 1952 nom. conserv.
* B1.6 - Coastal dune scrub
* F3.1 - Temperate thickets and scrub
* F3.2 - Submediterranean deciduous thickets and brushes
Amelanchiero-Buxion O. de Bolòs et Romo in Romo 1989
* F3.2 - Submediterranean deciduous thickets and brushes
Carpino-Prunion spinosae Weber 1974
* F3.1 - Temperate thickets and scrub
Pruno spinosae-Rubion radulae Weber 1974
* B1.6 - Coastal dune scrub
* F3.1 - Temperate thickets and scrub
Frangulo alni-Pyrion cordatae Herrera et al. 1991

* F3.1 - Temperate thickets and scrub

Tamo communis-Viburnion lantanae (Géhu et al. 1983) Mucina stat. nov. hoc loco
* F3.1 - Temperate thickets and scrub
* F3.2 - Submediterranean deciduous thickets and brushes

Pruno spinosae-Rubion ulmifolii O. de Bolòs 1954
* B1.6 - Coastal dune scrub
* F3.2 - Submediterranean deciduous thickets and brushes

Lonicero arboreae-Berberidion hispanicae O. de Bolòs 1954
* F3.2 - Submediterranean deciduous thickets and brushes

Cytision sessilifolii Biondi in Biondi et al. 1989
* F3.2 - Submediterranean deciduous thickets and brushes

Berberido aetnensis-Crataegion laciniatae Gianguzzi et al. 2011
* F3.2 - Submediterranean deciduous thickets and brushes

Berberido creticae-Prunion cocomiliae Bergmeier 1990
* F3.2 - Submediterranean deciduous thickets and brushes

Pruno tenellae-Syringion B. Jovanovic 1979
* F3.1 - Temperate thickets and scrub
* F3.2 - Submediterranean deciduous thickets and brushes

Asparago verticillati-Crataegion tauricae Korzhenevsky et Klyukin 1990
* F3.2 - Submediterranean deciduous thickets and brushes

Prunion fruticosae Tx. 1952
* F3.1 - Temperate thickets and scrub

Lamio purpureae-Acerion tatarici Fitsailo 2007
* F3.1 - Temperate thickets and scrub

Ribero alpini-Juniperion communis (Cutini et al. 2002) all. nov. hoc loco
* F3.1 - Temperate thickets and scrub

Carici-Juniperion communis Passarge 1978 nom. inval.
* F3.1 - Temperate thickets and scrub

Holoschoeno australis-Salicion arenariae Neto et al. 2004
* B1.6 - Coastal dune scrub

Ligustro-Hippophaeion Géhu et Géhu-Franck 1983
* B1.6 - Coastal dune scrub

Salicion arenariae Tx. ex Passarge in Scamoni 1963
* B1.6 - Coastal dune scrub

Sambuco racemosae-Salicion capreae Tx. et Neumann ex Oberd. 1957
* F3.1 - Temperate thickets and scrub
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
* G5.2 - Small broadleaved deciduous anthropogenic woodlands
* G5.6 - Early-stage natural and semi-natural woodlands and regrowth
* G5.8 - Recently felled areas

Corylo avellanae-Populion tremulae Br.-Bl. ex Jurko 1964 nom. ambig. propos.
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
* G5.6 - Early-stage natural and semi-natural woodlands and regrowth

Vaccinio-Juniperion communis Passarge 1968
* F3.1 - Temperate thickets and scrub

Scillo lilio-hyacinthi-Fagion Br.-Bl. 1967
* G1.6 - [Fagus] woodland

Galio rotundifolii-Fagion Gamisans 1975
* G1.6 - [Fagus] woodland

Geranio nodosi-Fagion Gentile ex Feoli et Lagonegro 1982
* G1.6 - [Fagus] woodland

Geranio striati-Fagion Gentile 1970
* G1.6 - [Fagus] woodland
* G3.1 - [Abies] and [Picea] woodland

Doronico orientalis-Fagion moesiacae (Raus 1980) Dierschke 1997
* G1.6 - [Fagus] woodland
* G3.1 - [Abies] and [Picea] woodland
Symphyto cordati-Fagion (Vida 1963) Täuber 1982
* G1.6 - [Fagus] woodland
* G3.1 - [Abies] and [Picea] woodland
Dentario quinquefoliae-Fagion Didukh 1996
* G1.6 - [Fagus] woodland
Fagion sylvaticae Luquet 1926
* G1.6 - [Fagus] woodland
* G2.6 - [Ilex aquifolium] woods
* G3.1 - [Abies] and [Picea] woodland
Sorbo-Fagion Passarge in Passarge et G. Hofmann 1968
* G1.6 - [Fagus] woodland
Lonicero alpigenae-Fagion (Borhidi ex Soó 1964) Dierschke 1997
* G1.6 - [Fagus] woodland
* G3.1 - [Abies] and [Picea] woodland
Aremonio-Fagion (Horvat 1938) Borhidi in Török et al. 1989
* G1.6 - [Fagus] woodland
* G3.1 - [Abies] and [Picea] woodland
Endymio non-scripti-Fagion Dierschke (1989) 1998
* G1.6 - [Fagus] woodland
Carpinion betuli Issler 1931
* B1.7 - Coastal dune woods
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
* G2.6 - [Ilex aquifolium] woods
Pulmonario longifoliae-Quercion roboris Rivas-Mart. et Izco in Rivas-Mart. et al. 2002
* G1.8 - Acidophilous [Quercus]-dominated woodland
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
* G2.6 - [Ilex aquifolium] woods
Physospermo verticillati-Quercion cerridis Biondi et al. 2008
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Erythronio-Carpinion (Horvat 1958) Marincek in Wallnöfer et al. 1993
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Corno-Quercion petraeae Korzhenevsky 1982
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Paeonio dauricae-Quercion petraeae Didukh 1996
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Querco roboris-Tilion cordatae Solomeshch et Laivinsh ex Bulokhov et Solomeshch 2003
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Scillo sibericae-Quercion roboris Onyshchenko 2009
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Lathyro-Quercion roboris Solomeshch et al. 1989 nom. inval.
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Aconito septentrionalis-Tilion cordatae Solomeshch et al. 1993 nom. inval.
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Crataego–Carpinion caucasicae Passarge 1981
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Astrantio–Carpinion caucasicae Passarge 1981
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Tilio platyphylli-Acerion pseudoplatani Klika 1955
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Polysticho setiferi-Fraxinion excelsioris Géhu ex Theurillat et Mucina in Mucina ate al. 2012
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

Lauro nobilis-Tilion platyphylli Biondi et al. 2008
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Lathyro veneti-Taxion baccatae Carni et Mucina 2012
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]
Rhododendro pontici-Fagion orientalis Horvat, Glavac et Ellenberg 1974
* G1.6 - [Fagus] woodland
Vaccinio-Fagion orientalis Passarge 1981
* G1.6 - [Fagus] woodland
Carpino-Fagion orientalis Kavgaci et al. 2012
* G1.6 - [Fagus] woodland
Violo odoratae-Fagion orientalis Kavgaci et al. 2012
* G1.6 - [Fagus] woodland
Betulion carpatico-pubescentis Rivas-Mart. et Costa in Rivas-Mart. et al. 2002
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
Betulion fontquerio-celtibericae Rivas-Mart. et Costa in Rivas-Mart. et al. 2002
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
Aceri obtusati-Populion tremulae Taffetani 2000
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
Helleboro odori-Betulion tremulae Mucina et Dimopoulos all. nova hoc loco
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
Ligustro vulgaris-Betulion pubescentis Ge´hu 2006
* G1.9 - Non-riverine woodland with [Betula], [Populus tremula] or [Sorbus aucuparia]
Aconito septentrionalis-Piceion obovatae Solomeshch et al. ex Martynenko et al. 2008
* G3.A - [Picea] taiga woodland
Rhamno-Paliurion Trinajstic (1978) 1996
* F3.2 - Submediterranean deciduous thickets and brushes
* F5.3 - Pseudomaquis
Eryngio campestris-Paliurion spinae-christi (Jovanovic 1985) Matevski et al. 2008
* F3.2 - Submediterranean deciduous thickets and brushes
* F5.3 - Pseudomaquis
Junipero excelsae-Quercion pubescentis Jakucs 1961
* F5.3 - Pseudomaquis
* G1.7 - Thermophilous deciduous woodland
* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]
Fraxino orni-Cotinion Soó 1960
* F3.2 - Submediterranean deciduous thickets and brushes
* F5.3 - Pseudomaquis
Pruno tenellae-Syringion (B. Jovanovic 1979) Carni et al. 2009
* F3.2 - Submediterranean deciduous thickets and brushes
* F5.3 - Pseudomaquis
Syringo-Carpinion orientalis Jakucs 1959
* F3.2 - Submediterranean deciduous thickets and brushes
* F5.3 - Pseudomaquis
* G1.7 - Thermophilous deciduous woodland
Quercion pubescenti-sessiliflorae Br.-Bl. 1932
* G1.7 - Thermophilous deciduous woodland
Aceri tatarici-Quercion Zólyomi 1957
* G1.7 - Thermophilous deciduous woodland
Quercion petraeae Issler 1931
* G1.7 - Thermophilous deciduous woodland
* G1.8 - Acidophilous [Quercus]-dominated woodland
Convallario majalis-Quercion roboris Shevchyk et Solomakha in Shevchyk et al. 1996
* G1.8 - Acidophilous [Quercus]-dominated woodland

Erythronio-Quercion petraeae Ubaldi et al. 1988
* G1.7 - Thermophilous deciduous woodland
* G1.8 - Acidophilous [Quercus]-dominated woodland

Carpino orientalis-Quercion pubescentis Korzhenevsky et Shelyag-Sosonko 1983
* G1.7 - Thermophilous deciduous woodland

Elytrigio nodosae-Quercion pubescentis Didukh 1996
* G1.7 - Thermophilous deciduous woodland

Carpino betuli–Quercion petraeae Grebenshchikov et al. 1990
* G1.7 - Thermophilous deciduous woodland

Quercion confertae Horvat 1958
* G1.7 - Thermophilous deciduous woodland

Quercion petraeae-cerridis Lakušic et B. Jovanovic in B. Jovanovic et al. ex Carni et al. 2009
* G1.7 - Thermophilous deciduous woodland

Fraxino orni-Ostryion Tomažic 1940
* G1.7 - Thermophilous deciduous woodland

Crataego laevigati-Quercion cerridis Arrigoni 1997
* G1.7 - Thermophilous deciduous woodland

Pino calabricae-Quercion congestae S. Brullo et al. 1999
* G1.7 - Thermophilous deciduous woodland

Aceri granatensis-Quercion fagineae (Rivas Goday, Rigual et Rivas-Mart. in Rivas Goday et al. 1960) Rivas-Mart. 1987
* G1.7 - Thermophilous deciduous woodland

Abietion cephalonicae Horvat, Glavac et Ellenberg 1974
* G3.1 - [Abies] and [Picea] woodland
* G3.5 - [Pinus nigra] woodland

Paeonio broteroi-Abietion pinsapo (Rivas-Mart. 1987) Rivas-Mart. et al. 2002
* G3.1 - [Abies] and [Picea] woodland

Quercion macrolepidis Zohary ex Di Pietro et Mucina in Mucina et al. in prep.
* G1.7 - Thermophilous deciduous woodland

Hymenophyllo-Quercion petraeae Pallas 2000
* G1.8 - Acidophilous [Quercus]-dominated woodland

Molinio-Quercion roboris Scamoni et Passarge 1959
* G1.8 - Acidophilous [Quercus]-dominated woodland
* G2.6 - [Ilex aquifolium] woods

Quercion roboris Malcuit 1929
* B1.7 - Coastal dune woods
* G1.8 - Acidophilous [Quercus]-dominated woodland
* G2.6 - [Ilex aquifolium] woods

Quercion robori-pyrenaicae (Braun-Blanquet et al. in P. da Silva et al. 1950 corr. Br.-Bl. et al. 1956) Rivas-Martínez 1975
* G1.8 - Acidophilous [Quercus]-dominated woodland

Vaccinio myrtilli-Quercion petraeae Pallas 1996
* G1.8 - Acidophilous [Quercus]-dominated woodland

Agrostio capillaris-Quercion petraeae Scamoni et Passarge 1959
* G1.8 - Acidophilous [Quercus]-dominated woodland

Castaneo-Quercion petraeae Soó 1964
* G1.8 - Acidophilous [Quercus]-dominated woodland

Quercion pyrenaicae Rivas Goday ex Rivas.-Mart. 1964
* G1.7 - Thermophilous deciduous woodland
* G1.8 - Acidophilous [Quercus]-dominated woodland

Pino-Quercion Medwecka-Kornaš et al. in Szafer 1959
* G1.8 - Acidophilous [Quercus]-dominated woodland
* G3.4 - [Pinus sylvestris] woodland south of the taiga

Luzulo-Fagion sylvaticae Lohmeyer et Tx. in Tx. 1954
* G1.6 - [Fagus] woodland

* G2.6 - [Ilex aquifolium] woods
* G3.1 - [Abies] and [Picea] woodland

Ilici-Fagion sylvaticae Br.-Bl. 1967
* G1.6 - [Fagus] woodland

Lavandulo latifoliae-Genistion boissieri Rivas Goday et Rivas-Mart. 1969
* F6.1 - Western garrigues
* F6.6 - Supra-Mediterranean garrigues

Eryngio trifidi-Ulicion erinacei Rothmaler 1943
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues

Sideritido incanae-Salvion lavandulifoliae (Rivas Goday et Rivas-Mart. 1969) Izco et Molina 1989
* F6.1 - Western garrigues
* F6.6 - Supra-Mediterranean garrigues

Helianthemo italici-Aphyllanthion monspeliensis Díez et al. 1998
* F6.1 - Western garrigues
* F6.6 - Supra-Mediterranean garrigues

Rosmarinion officinalis Molinier 1934
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues
* F7.1 - West Mediterranean spiny heaths

Hypericion ericoidis Esteve ex Costa et Peris 1985
* F6.1 - Western garrigues

Hypericion balearici O. de Bolòs et Molinier 1958
* F6.1 - Western garrigues
* F7.1 - West Mediterranean spiny heaths

Cisto cretici-Genistion corsicae Arrigoni et Di Tommaso 1991
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues

Euphorbion pithyusae Biondi et Géhu in Géhu et Biondi 1994
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues

Polygalo-Seslerion insularis Arrigoni ex Arrigoni et Di Tommaso 1986
* F6.6 - Supra-Mediterranean garrigues

Dactylo glomeratae ssp. hispanicae-Helichrysion stoechadis Géhu et Biondi in Géhu 1994
* F6.1 - Western garrigues

Helichrysion italici Biondi 2007
* F5.5 - Thermo-Mediterranean scrub

Artemisio albae-Saturejion montanae Allegrezza et al. 1997
* F6.1 - Western garrigues
* F6.6 - Supra-Mediterranean garrigues

Xeroacantho-Erinaceion (Quézel 1953) O. de Bolòs 1967
* F7.4 - Hedgehog-heaths

Lepidion subulati Bellot et Rivas Goday in Rivas Goday et al. 1957
* F6.7 - Mediterranean gypsum scrubs

Thymo-Teucrion verticillati Rivas Goday in Rivas Goday et al. 1957
* F6.7 - Mediterranean gypsum scrubs

Thymo moroderi-Sideritidion leucanthae O. de Bolòs 1957 corr. Alcaraz et al. 1989
* F5.5 - Thermo-Mediterranean scrub

Anthyllido terniflorae-Salsolion papillosae Rivas Goday et Esteve 1968
* F5.5 - Thermo-Mediterranean scrub

Sideritidion bourgaeanae Peinado et Martínez-Parras in Peinado et al. 1992
* F5.5 - Thermo-Mediterranean scrub

Andryalion agardhii Rivas-Mart. ex Rivas Goday et Mayor 1966
* F7.4 - Hedgehog-heaths

Lavandulion lanatae (Martínez-Parras et al. 1984) Rivas-Mart. et al. 2002
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues
Staehelino-Ulicion baetici Rivas Goday et Rivas-Mart. 1969
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues
Cytision oromediterraneo-scoparii Rivas-Mart. et al. 2002
* F3.1 - Temperate thickets and scrub
Ulici europaei-Cytision striati Rivas-Mart. et al. 1991
* F3.2 - Submediterranean deciduous thickets and brushes
Genistion floridae Rivas-Mart. 1974
* F3.2 - Submediterranean deciduous thickets and brushes
Cytision multiflori Rivas-Mart. 1974
* F3.2 - Submediterranean deciduous thickets and brushes
Retamion monospermae Rivas-Mart et al. 2002
* F3.2 - Submediterranean deciduous thickets and brushes
* F5.5 - Thermo-Mediterranean scrub
Retamion sphaerocarpae Rivas-Mart. 1981
* F3.2 - Submediterranean deciduous thickets and brushes
* F5.5 - Thermo-Mediterranean scrub
Adenocarpion decorticantis (Rivas-Mart. et F. Valle ex F. Valle 1985) Rivas-Mart., Fernández-González et Loidi 1999
* F3.2 - Submediterranean deciduous thickets and brushes
Violo messanensis-Adenocarpion intermedii Mucina all. nov. hoc loco
* F3.2 - Submediterranean deciduous thickets and brushes
Telinion monspessulano-linifoliae Rivas-Mart. et al. 2002
* F5.5 - Thermo-Mediterranean scrub
Genisto spartioidis-Phlomidion almeriensis Rivas Goday et Rivas-Mart. 1969
* F5.5 - Thermo-Mediterranean scrub
Genisto scorpii-Retamion sphaerocarpae Rivas-Mart. et Costa in Rivas-Mart. et al. 2011
* F5.5 - Thermo-Mediterranean scrub
Genistion specioso-equisetiformis Rivas-Mart. et F. Valle in Rivas-Mart. et al. 2011
* F5.5 - Thermo-Mediterranean scrub
Sarothamnion scoparii Oberd. 1957
* F3.1 - Temperate thickets and scrub
Erico scopariae-Cytision scoparii Mucina 2012
* F3.2 - Submediterranean deciduous thickets and brushes
Cistion laurifolii Rivas Goday in Rivas Goday et al. 1956
* F6.1 - Western garrigues
Ulici argentei-Cistion ladaniferi Br.-Bl. et al. 1965
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues
Cistion ladaniferi Br.-Bl. ex A. Bolós et O. Bolòs in A. Bolós 1950
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues
Calicotomo villosae-Genistion tyrrhenae Biondi 2000
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues
Teucrion mari (Gamisans et Muracciole 1984) Biondi et Mossa 1992
* F5.5 - Thermo-Mediterranean scrub
* F6.1 - Western garrigues
Armerio sardoae-Genistion salzmannii Arrigoni 1986
* F6.6 - Supra-Mediterranean garrigues
Coremation albi Rothmaler 1943
* F5.5 - Thermo-Mediterranean scrub

* F6.1 - Western garrigues

Cisto cretici-Ericion manipuliflorae Horvatic 1958
* F6.3 - Illyrian garrigues

Cisto eriocephali-Ericion multiflorae Biondi 2000
* F6.1 - Western garrigues
* F6.3 - Illyrian garrigues

Hyperico olympici-Cistion cretici (Oberd. 1954) R.Jahn et Bergmeier in Mucina et al. 2009
* F6.2 - Eastern garrigues
* F7.3 - East Mediterranean phrygana

Helichryso barrelieri-Phagnalion graeci (Barbéro et Quézel 1989) R.Jahn in Mucina et al. 2009
* F6.2 - Eastern garrigues
* F7.3 - East Mediterranean phrygana

Hyperico empetrifolii-Micromerion graecae Barbero et Quézel 1989
* F6.2 - Eastern garrigues

Helichryso sanguinei-Origanion syriaci Barbero et Quézel 1989
* F6.2 - Eastern garrigues
* F7.3 - East Mediterranean phrygana

Micromerion Oberd. 1954
* F6.2 - Eastern garrigues
* F7.3 - East Mediterranean phrygana

Sarcopoterio spinosi-Genistion fasselatae Costa et al. 1984
* F6.2 - Eastern garrigues
* F7.3 - East Mediterranean phrygana

Oleo-Ceratonion siliquae Br.-Bl. ex Guinochet et Drouineau 1944
* B1.6 - Coastal dune scrub
* F5.2 - Maquis
* F5.4 - [Spartium junceum] fields
* F5.5 - Thermo-Mediterranean scrub
* G2.4 - [Olea europaea] - [Ceratonia siliqua] woodland
* G3.7 - Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])

Ericion arboreae (Rivas-Mart. ex Rivas-Mart. et al. 1986) Rivas-Mart. 1987
* F4.2 - Dry heaths
* F5.2 - Maquis

Juniperion turbinatae Rivas-Mart. 1975 corr. 1987
* B1.6 - Coastal dune scrub
* F5.1 - Arborescent matorral
* F5.5 - Thermo-Mediterranean scrub

Asparago albi-Rhamnion oleoidis Rivas Goday ex Rivas-Mart. 1975
* F5.2 - Maquis
* F5.5 - Thermo-Mediterranean scrub

Rhamno lycioidis-Quercion cocciferae Rivas Goday ex Rivas-Mart. 1975
* F5.2 - Maquis

Periplocion angustifoliae Rivas-Mart. 1975
* F5.2 - Maquis
* F5.5 - Thermo-Mediterranean scrub

Pino acutisquamae-Juniperion phoeniceae A.V. Pérez et Cabezudo in A.V. Pérez et al. 1988 corr. Rivas-Mart. et al. 2002
* F5.5 - Thermo-Mediterranean scrub

Quercion fruticosae Rothmaler 1954
* B1.6 - Coastal dune scrub
* F5.5 - Thermo-Mediterranean scrub

Rubo longifoliae-Coremation albi Rivas-Mart. in Rivas-Mart. et al. 1980
* B1.6 - Coastal dune scrub
* F5.5 - Thermo-Mediterranean scrub

Rhamno graeci-Juniperion lyciae Costa et al. 1984
* B1.6 - Coastal dune scrub
* F5.5 - Thermo-Mediterranean scrub
Pistacio terebinthi-Rhamnion alaterni Barbero et Quézel ex Quézel et al. 1992,
* F5.2 - Maquis
Quercion calliprini Zohary ex Quézel et al. 1992
* F5.1 - Arborescent matorral
* G2.1 - Mediterranean evergreen [Quercus] woodland
Ceratonio-Pistacion lentisci Zohary ex Zohary et Orshan 1959
* F5.2 - Maquis
* F5.5 - Thermo-Mediterranean scrub
* G2.4 - [Olea europaea] - [Ceratonia siliqua] woodland
* G3.7 - Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])
Acero sempervirentis-Cupression sempervirentis Barbero & Quézel ex Quézel et al. 1992
* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]
Quercion alnifoliae Barbero & Quézel 1979
* F5.1 - Arborescent matorral
* G2.1 - Mediterranean evergreen [Quercus] woodland
Pinion pineae Feinbrun 1959
* G3.7 - Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])
Quercion ilicis Br.-Bl. ex Molinier 1934
* B1.7 - Coastal dune woods
* F5.1 - Arborescent matorral
* F5.2 - Maquis
* G2.1 - Mediterranean evergreen [Quercus] woodland
* G2.6 - [Ilex aquifolium] woods
* G3.7 - Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])
Querco rotundifoliae-Oleion sylvestris Barbero, Quézel et Rivas-Mart. in Rivas-Mart. et al. 1986
* F5.1 - Arborescent matorral
* F5.2 - Maquis
* G2.1 - Mediterranean evergreen [Quercus] woodland
Quercion broteroi Br.-Bl. et al. 1956 corr. Rivas-Mart. 1972
* F5.1 - Arborescent matorral
* G2.1 - Mediterranean evergreen [Quercus] woodland
Erico-Quercion ilicis S. Brullo et al. 1977
* F5.1 - Arborescent matorral
* G2.1 - Mediterranean evergreen [Quercus] woodland
Arbuto andrachnes-Quercion cocciferae Barbero et Quézel 1979
* F5.1 - Arborescent matorral
* G2.1 - Mediterranean evergreen [Quercus] woodland
* G2.2 - Eurasian continental sclerophyllous woodland
Alkanno baeoticae-Pinion halepensis Mucina et Dimopoulos in Mucina et al. 2009
* G3.7 - Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])
Arbuto unedonis-Laurion nobilis Rivas-Mart., Fernández-González et Loidi 1999
* F5.1 - Arborescent matorral
* F9.3 - Southern riparian galleries and thickets
Ornithopo pinnati Gaudinion coarctatae Aguiar, J.A. Fernández Prieto et E. Dias 2006 nom. inval.
* E1.A - Open Mediterranean dry acid and neutral grassland
Helianthemion guttati Br.-Bl. in Br.-Bl. et al. 1940
* B1.4 - Coastal stable dune grassland (grey dunes)
* E1.A - Open Mediterranean dry acid and neutral grassland
Crassulo tillaeae-Sedion caespitosi de Foucault 1999
* E1.A - Open Mediterranean dry acid and neutral grassland
Molinerion laevis Br.-Bl. et al. 1952

* E1.A - Open Mediterranean dry acid and neutral grassland
Sedion pedicellato-andegavensis Rivas-Mart. et al. 1986
* E1.A - Open Mediterranean dry acid and neutral grassland
Trifolion cherleri Micevski 1972
* E1.A - Open Mediterranean dry acid and neutral grassland
Sclerantho-Myositidion incrassatae S. Brullo et al. 2001
* E1.A - Open Mediterranean dry acid and neutral grassland
Thymion micans J.C. Costa et al. 2005 nom. inval.
* E1.A - Open Mediterranean dry acid and neutral grassland
Alkanno-Maresion nanae Rivas Goday ex Rivas Goday et Rivas-Mart. 1963 corr. Díez Garretas et al. 2001
* B1.4 - Coastal stable dune grassland (grey dunes)
Anthyllido hamosae-Malcolmion lacerae Rivas Goday 1958
* B1.4 - Coastal stable dune grassland (grey dunes)
* E1.A - Open Mediterranean dry acid and neutral grassland
Corynephoro articulati-Malcolmion patulae Rivas Goday 1958
* E1.A - Open Mediterranean dry acid and neutral grassland
Cutandio maritimae-Vulpion membranaceae de Foucault et Géhu in de Foucault 1999
* B1.4 - Coastal stable dune grassland (grey dunes)
Laguro-Vulpion fasciculatae Géhu et Biondi 1994
* B1.4 - Coastal stable dune grassland (grey dunes)
Linarion pedunculatae Díez Garretas et al. in Díez Garretas 1984
* B1.4 - Coastal stable dune grassland (grey dunes)
Medicagini-Triplachnion nitentis Mayer 1995
* B1.2 - Sand beaches above the driftline
Ononidion tournefortii Géhu et al. 1996
* B1.4 - Coastal stable dune grassland (grey dunes)
Psammo-Vulpion Pignatti 1953
* B1.4 - Coastal stable dune grassland (grey dunes)
Vulpio-Lotion Horvatic 1963
* E1.A - Open Mediterranean dry acid and neutral grassland
Brachypodion distachyi Rivas-Mart. 1978
* E1.3 - Mediterranean xeric grassland
Diantho humilis-Velezion rigidae Korzhenevsky 1990
* E1.3 - Mediterranean xeric grassland
Hypochoeridion achyrophori Biondi et Guerra 2008
* E1.3 - Mediterranean xeric grassland
Omphalodion commutatae Rivas-Mart. et al. ex Izco 1976 corr. Pérez Raya et al. 1991
* E1.3 - Mediterranean xeric grassland
Sedo-Ctenopsion gypsophilae Rivas Goday et Rivas-Mart. ex Izco 1974
* E1.3 - Mediterranean xeric grassland
Stipion retortae Br.-Bl. et O. de Bolòs ex O. de Bolòs 1957
* E1.3 - Mediterranean xeric grassland
Vulpion ligusticae Aubert et Loisel 1971
* E1.3 - Mediterranean xeric grassland
Xeranthemion annui Oberd. 1954
* E1.3 - Mediterranean xeric grassland
Vulpio ciliatae-Crepidion neglectae Poldini 1989
* E1.3 - Mediterranean xeric grassland
Asterisco-Velezion rigidae (Rivas Goday 1964) S. Brullo 1985
* E1.3 - Mediterranean xeric grassland
Dauco-Catananchion luteae S. Brullo 1985
* E1.3 - Mediterranean xeric grassland
Plantagini-Catapodion marini S. Brullo 1985
* E1.3 - Mediterranean xeric grassland

Onobrychido-Ptilostemion stellati S. Brullo et al. 2001
* E1.3 - Mediterranean xeric grassland
Trifolio subterranei-Periballion minutae Rivas Goday 1964
* E1.3 - Mediterranean xeric grassland
* E1.A - Open Mediterranean dry acid and neutral grassland
Plantaginion serrariae Galán de Mera et al. 2000
* E1.3 - Mediterranean xeric grassland
Poo bulbosae-Astragalion sesamei Rivas Goday et Ladero 1970
* E1.3 - Mediterranean xeric grassland
Serapion Aubert et Loisel 1971
* E1.3 - Mediterranean xeric grassland
* E1.A - Open Mediterranean dry acid and neutral grassland
Plantaginion cupanii S. Brullo et Grillo 1978
* E1.3 - Mediterranean xeric grassland
Romulion Oberd. 1954
* E1.3 - Mediterranean xeric grassland
* E1.A - Open Mediterranean dry acid and neutral grassland
Thero-Brachypodion retusi Br.-Bl. 1925
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Triseto velutini-Brachypodion boissieri Rivas-Mart. et al. 2002
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Festucion scariosae Martínez-Parras et al. 1984
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Stipion parviflorae De la Torre et al. 1996
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Leontodono tuberosi-Bellion sylvestris Biondi et al. 2001
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Reichardio maritimae-Dactylidion hispanicae Biondi et al. 2001
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Cymbopogono hirti-Brachypodion ramosi Horvatic 1963
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Hyparrhenion hirtae Br.-Bl. et al. 1956
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Agropyro pectinati-Lygeion sparti Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart., Fernández-González et Loidi 1999
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Moricandio-Lygeion sparti S. Brullo et al. 1990
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Polygonion tenoreani S. Brullo et al. 1990
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Stipion tenacissimae Rivas-Mart. 1984
* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes
Scorzonero creticae-Lygeion sparti S. Brullo et al. 2002

* E1.3 - Mediterranean xeric grassland
* E1.4 - Mediterranean tall-grass and [Artemisia] steppes

Agrostion castellanae Rivas Goday ex Rivas-Mart. et al. 1980
* E1.8 - Closed Mediterranean dry acid and neutral grassland
* E2.4 - Iberian summer pastures (vallicares)

Festucion merinoi Rivas-Mart. et Sánchez-Mata in Rivas-Mart. et al. 1986 corr. Rivas-Mart. et Sánchez-Mata in Rivas-Mart. et al. 2002
* E1.8 - Closed Mediterranean dry acid and neutral grassland
* E2.4 - Iberian summer pastures (vallicares)

Agrostio castellanae-Stipion giganteae Rivas Goday ex Rivas-Mart. et Fernández González 1991
* E1.8 - Closed Mediterranean dry acid and neutral grassland

Deschampsio maderensis-Parafestucion albidae Capelo et al. 2000
* E1.8 - Closed Mediterranean dry acid and neutral grassland

Festucion francoi Lüpnitz 1976 corr. J.A. Fernández Prieto et C. Aguiar hoc loco
* E1.A - Open Mediterranean dry acid and neutral grassland

Tolpido succulentae-Agrostion congestiflorae Aguiar, J.A. Fernández Prieto et E. Dias 2006 nom. inval.
* E1.A - Open Mediterranean dry acid and neutral grassland

Salsolo vermiculatae-Peganion harmalae Br.-Bl. et O. de Bolòs 1954
* F6.8 - Xero-halophile scrubs

Haloxylo tamariscifolii-Atriplicion glaucae Rivas Goday et Rivas-Mart. ex Rigual 1972
* F6.8 - Xero-halophile scrubs

Salsolo oppositifoliae-Suaedion fruticosae Rigual 1972
* F6.8 - Xero-halophile scrubs

Lycio europaei-Ipomoeion purpureae O. de Bolòs ex Mucina hoc loco
* F6.8 - Xero-halophile scrubs

Artemision arborescentis Géhu et al. 1986
* F6.8 - Xero-halophile scrubs

Atriplici halimi-Suaedion verae Géhu et al. ex Bergmeier et Dimopoulos 2003
* F6.8 - Xero-halophile scrubs

Medicagini citrinae-Lavaterion arboreae O. de Bolòs et Vigo in O. de Bolòs et al. 1984
* F6.8 - Xero-halophile scrubs

Artemisio glutinosae-Santolinion rosmarinifoliae Costa 1975
* F6.8 - Xero-halophile scrubs

Santolinion pectinato-canescentis Peinado et Martínez-Parras 1984
* F6.8 - Xero-halophile scrubs

Chenoleion tomentosae Sunding 1972
* F6.8 - Xero-halophile scrubs
* F8.1 - Canary Island xerophytic scrub

Artemisio thusculae-Rumicion lunariae Rivas-Mart. et al. 1993
* F6.8 - Xero-halophile scrubs
* F8.1 - Canary Island xerophytic scrub

Launaeo arborescentis-Schizogynion sericeae Rivas-Mart. et al. 1993
* F6.8 - Xero-halophile scrubs
* F8.1 - Canary Island xerophytic scrub

Argyranthemo suculenti-Calendulion maderensis Capelo et al. 2000
* F6.8 - Xero-halophile scrubs
* F8.2 - Madeiran xerophytic scrub

Nicotiano glaucae-Ricinion communis Rivas-Mart., Fernández-González et Loidi 1999
* F5.5 - Thermo-Mediterranean scrub
* F6.8 - Xero-halophile scrubs
* F8.1 - Canary Island xerophytic scrub

Teesdaliopsio confertae-Luzulion caespitosae Rivas-Mart. 1987
* E1.5 - Mediterranean-montane grassland

Jasionion carpetanae González-Albo 1941

* E1.5 - Mediterranean-montane grassland
Ptilotrichion purpurei Quézel 1953
* E1.5 - Mediterranean-montane grassland
Hieracio castellani-Plantaginion radicatae Rivas-Mart. et Cantó 1987
* E1.5 - Mediterranean-montane grassland
* E1.A - Open Mediterranean dry acid and neutral grassland
Armerion eriophyllae Pinto da Silva 1970
* E1.5 - Mediterranean-montane grassland
* E1.A - Open Mediterranean dry acid and neutral grassland
Thymion serpylloidis Rivas Goday et Rivas-Mart. in Rivas-Mart. 1965
* E1.5 - Mediterranean-montane grassland
* E1.A - Open Mediterranean dry acid and neutral grassland
Ononidion striatae Br.-Bl. et Susplugas 1937
* E1.5 - Mediterranean-montane grassland
* E4.4 - Calcareous alpine and subalpine grassland
* F6.6 - Supra-Mediterranean garrigues
Ononidion cristatae Royer 1991
* E1.5 - Mediterranean-montane grassland
* E4.4 - Calcareous alpine and subalpine grassland
Festucion scopariae Br.-Bl. 1948
* E1.5 - Mediterranean-montane grassland
* E4.4 - Calcareous alpine and subalpine grassland
Genistion lobelii Molinier 1934
* E1.5 - Mediterranean-montane grassland
* F7.4 - Hedgehog-heaths
Echinospartion horridi Rivas-Mart. et al. 1991
* F7.4 - Hedgehog-heaths
Genistion occidentalis Rivas-Mart. in Rivas-Mart. et al. 1984
* F7.4 - Hedgehog-heaths
Lavandulo angustifoliae-Genistion cinereae Barbero et al. 1972
* F6.6 - Supra-Mediterranean garrigues
Avenion sempervirentis Barbero 1968
* E1.5 - Mediterranean-montane grassland
* E4.4 - Calcareous alpine and subalpine grassland
Festucion burnatii Rivas Goday et Rivas-Mart. ex Mayor et al. 1973
* E1.5 - Mediterranean-montane grassland
* E4.4 - Calcareous alpine and subalpine grassland
Minuartio-Poion ligulatae O. de Bolòs 1962
* E1.5 - Mediterranean-montane grassland
Plantagini discoloris-Thymion mastigophori Molina et Izco 1989
* E1.5 - Mediterranean-montane grassland
* F6.6 - Supra-Mediterranean garrigues
Seselio granatensis-Festucion hystricis Rivas-Mart. in Rivas-Mart. et al. 2011
* F6.6 - Supra-Mediterranean garrigues
Anthyllidion hermanniae Klein 1972
* F7.2 - Central Mediterranean spiny heaths
* F7.4 - Hedgehog-heaths
Plantaginion insularis Klein 1972
* E1.5 - Mediterranean-montane grassland
Rumici-Astragalion siculi Poli 1965
* F7.4 - Hedgehog-heaths
Cerastio-Astragalion nebrodensis Pignatti et Nimis ex S. Brullo 1984
* F7.4 - Hedgehog-heaths
Armerion nebrodensis S. Brullo 1984

* F7.4 - Hedgehog-heaths
Armerion aspomontanae S. Brullo et al. 2001
* F7.4 - Hedgehog-heaths
Koelerio brutiae-Astragalion calabrici Giacomini et Gentile ex S. Brullo in S. Brullo et al. 2005
* F7.4 - Hedgehog-heaths
Astragalo angustifolii-Seslerion coerulantis Quézel ex Quézel et al. 1992
* F7.4 - Hedgehog-heaths
Eryngio multifidi-Bromion fibrosi Quézel ex Quézel et al. 1992
* F7.4 - Hedgehog-heaths
Stipo pulcherrimae-Morinion persicae Quézel ex Quézel et al. 1992
* F7.4 - Hedgehog-heaths
Astragalion cretici Bergmeier 2002
* F7.4 - Hedgehog-heaths
Verbascion spinosi Zaffran ex Bergmeier 2002
* F7.4 - Hedgehog-heaths
Colchico cretensis-Cirsion morinifolii Bergmeier 2002
* F7.4 - Hedgehog-heaths
Hyperico stenobotryos-Alyssion troodi S. Brullo et al. 2005
* F7.4 - Hedgehog-heaths
Artemision lerchianae Golub 1994
* F6.8 - Xero-halophile scrubs
Euphorbion seguieranae Golub 1994
* F6.8 - Xero-halophile scrubs
Tamariceto-Salsolion australis Golub 1994
* F6.8 - Xero-halophile scrubs
Lolio remoti-Linion J.Tx. 1966
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Spergulo arvensis-Erodion cicutariae J.Tx. in Passarge 1964
* I1.1 - Intensive unmixed crops
* I1.2 - Mixed crops of market gardens and horticulture
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
* I1.5 - Bare tilled, fallow or recently abandoned arable land
Scleranthion annui (Kruseman et Vlieger 1939) Sissingh in Westhoff et al. 1946
* I1.1 - Intensive unmixed crops
* I1.2 - Mixed crops of market gardens and horticulture
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Oxalidion europeae Passarge 1978
* I1.1 - Intensive unmixed crops
* I1.2 - Mixed crops of market gardens and horticulture
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Rumicion bucephalophori Nezadal 1989
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Anthemido ruthenicae-Sisymbrion orientalis Solomakha 1990
* I1.1 - Intensive unmixed crops
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Caucalidion von Rochow 1951
* I1.1 - Intensive unmixed crops
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Veronico agrestis-Euphorbion pepli Sissingh ex Passarge 1964
* I1.1 - Intensive unmixed crops
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Trifolio-Medicaginion sativae Balázs 1944
* I1.1 - Intensive unmixed crops
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods

Chenopodio albi-Descurainion sophiae Solomakha et al. in Solomakha 1997
* I1.1 - Intensive unmixed crops
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Erysimo repandi-Lycopsion orientalis Solomakha 1996
* I1.1 - Intensive unmixed crops
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Lactucion tataricae Rudakov in Mirkin et al. 1985
* I1.1 - Intensive unmixed crops
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Ridolfion segeti Nègre ex Rivas-Mart., Fernández-González et Loidi 1999
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Roemerion hybridae Rivas-Mart., Fernández-González et Loidi 1999
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Vicio narbonensis-Milion vernalis Ferro et Scammacca 1985
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Fumarion wirtgenii-agrariae S. Brullo in S. Brullo et Marcenó 1985
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Chenopodion muralis Br.-Bl. in Br.-Bl. et al. 1936
* E5.1 - Anthropogenic herb stands
Mesembryanthemion crystallini Rivas-Martínez et al. 1993
* E5.1 - Anthropogenic herb stands
Eragrostion cilianensis-minoris Tx. ex Oberd. 1954
* E1.E - Trampled xeric grasslands with annuals
* E5.1 - Anthropogenic herb stands
* H5.6 - Trampled areas
* I1.1 - Intensive unmixed crops
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Chenopodion botryos S. Brullo et Marcenó 1980
* E5.1 - Anthropogenic herb stands
Diplotaxidion erucoidis Br.-Bl. in Br.-Bl. et al. 1936
* E5.1 - Anthropogenic herb stands
Eragrostio-Polygonion arenastri Couderc et Izco ex Carni et Mucina 1998
* E1.E - Trampled xeric grasslands with annuals
* H5.6 - Trampled areas
Euphorbion prostratae Rivas-Mart. 1976
* E1.E - Trampled xeric grasslands with annuals
* H5.6 - Trampled areas
Matricario chamomillae-Chenopodion albi Timár 1954
* E5.1 - Anthropogenic herb stands
* I1.2 - Mixed crops of market gardens and horticulture
Polycarpo-Eleusinion indicae Carni et Mucina 1998
* E1.E - Trampled xeric grasslands with annuals
* H5.6 - Trampled areas
Salsolion ruthenicae Philippi 1971
* E5.1 - Anthropogenic herb stands
Atriplicion Passarge 1978
* E5.1 - Anthropogenic herb stands
Malvion neglectae (Gutte 1972) Hejný 1978
* E5.1 - Anthropogenic herb stands
Sisymbrion officinalis Tx. et al. ex von Rochow 1951
* E5.1 - Anthropogenic herb stands
Alysso granatensis-Brassicion barrelieri Rivas-Mart. et Izco 1977
* E1.6 - Subnitrophilous annual grassland
Resedo lanceolatae-Moricandion Fernandez Casas et M.E. Sánchez 1972

* E1.6 - Subnitrophilous annual grassland
Cerintho majoris-Fedion cornucopiae Rivas-Mart. et Izco ex Peinado et al. 1986
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
Echio plantaginei-Galactition tomentosae O. de Bolòs et Molinier 1969
* E5.1 - Anthropogenic herb stands
Fedio-Convolvulion cupaniani S. Brullo et Spampinato 1986
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
* I1.5 - Bare tilled, fallow or recently abandoned arable land
Hordeion murini Br.-Bl. in Br.-Bl. et al. 1936
* E5.1 - Anthropogenic herb stands
Laguro ovati-Bromion rigidi Géhu et Géhu-Franck 1985
* E1.6 - Subnitrophilous annual grassland
Linario polygalifoliae-Vulpion alopecuroidis Br.-Bl. et al. in Br.-Bl. et al. 1972
* E1.6 - Subnitrophilous annual grassland
Taeniathero-Aegilopion geniculatae Rivas-Mart. et Izco 1977
* E1.6 - Subnitrophilous annual grassland
Allion triquetri O. de Bolòs 1967
* E5.1 - Anthropogenic herb stands
Cardaminion graecae Biondi et al. 2004 nom. inval.
* E5.1 - Anthropogenic herb stands
Euphorbio taurinensis-Geranion lucidi Matevski et Carni in Mucina et al. 2009
* E5.1 - Anthropogenic herb stands
Geranio purpurei-Torilidion Lohmeyer et Trautmann 1970
* E5.1 - Anthropogenic herb stands
Geranio pusilli-Anthriscion caucalidis Rivas-Mart. 1978
* E5.1 - Anthropogenic herb stands
Parietarion lusitanico-mauritanicae Rivas-Mart. et al. 2002
* E5.1 - Anthropogenic herb stands
Valantio-Galion muralis S. Brullo in S. Brullo et Marcenó 1985
* E5.1 - Anthropogenic herb stands
Veronico-Urticion urentis S. Brullo in S. Brullo et Marcenó 1985
* E5.1 - Anthropogenic herb stands
Polygono-Coronopodion Sissingh 1969
* E1.E - Trampled xeric grasslands with annuals
* H5.6 - Trampled areas
Polycarpion tetraphylli Rivas-Mart. 1975
* E1.E - Trampled xeric grasslands with annuals
* H5.6 - Trampled areas
Saginion procumbentis Tx. et Ohba in Géhu et al. 1972
* E2.8 - Trampled mesophilous grasslands with annuals
* H5.6 - Trampled areas
Onopordion acanthii Br.-Bl. et al. 1936
* E5.1 - Anthropogenic herb stands
Dauco-Melilotion Görs ex Rostanski et Gutte 1971
* E5.1 - Anthropogenic herb stands
* I1.5 - Bare tilled, fallow or recently abandoned arable land
Cirsion richterano-chodati (Rivas-Mart. in Rivas-Mart. et al. 1984) Rivas-Mart. et al. 1991
* E5.1 - Anthropogenic herb stands
Carduo carpetani-Cirsion odontolepidis Rivas-Mart. et al. 1986
* E5.1 - Anthropogenic herb stands
Erysimo wittmannii-Hackelion Bernátová 1986
* E1.6 - Subnitrophilous annual grassland
Convolvulo-Agropyrion Görs 1966
* E5.1 - Anthropogenic herb stands

Artemisio absinthii-Agropyrion intermedii T. Müller et Görs 1969
* E5.1 - Anthropogenic herb stands
Artemisio marschalliani-Elytrigion intermedii Korotchenko et Didukh 1997
* E5.1 - Anthropogenic herb stands
Achilleion millefolii Abramova et Rudakov in Mirkin et al. 1985
* I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods
* I1.5 - Bare tilled, fallow or recently abandoned arable land
Silybo mariani-Urticion piluliferae Sissingh ex Br.-Bl. et O. de Bolòs 1958
* E5.1 - Anthropogenic herb stands
Onopordion castellani Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart. et al. 2002
* E5.1 - Anthropogenic herb stands
Onopordion illyrici Oberd. 1954
* E5.1 - Anthropogenic herb stands
Scolymion hispanici Morariu 1967
* E5.1 - Anthropogenic herb stands
Inulo viscosae-Agropyrion repentis Biondi et Allegrezza 1996
* E5.1 - Anthropogenic herb stands
Bromo madritensis-Oryzopsion miliaceae O. de Bolòs 1970
* E5.1 - Anthropogenic herb stands
Hyperico perforati-Ferulion communis Vicente Orellana et Galán de Mera 2008
* E5.1 - Anthropogenic herb stands
Arction lappae Tx. 1937
* E5.1 - Anthropogenic herb stands
Senecionion fluviatilis Tx. ex Moor 1958
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Archangelicion litoralis Tx. ex Scamoni et Passarge 1963
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Nardosmion laevigatae Klotz et Köck 1986
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Cynancho-Convolvulion sepium Rivas Goday et Rivas-Mart. ex Rivas-Mart. 1977
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Dorycnion recti Géhu et Biondi 1989
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Ipomoeo acuminatae-Ageratinion adenophorae Espírito-Santo et al. 2004
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Dactylido-Aegopodion Passarge 1967 nom. conserv. propos.
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
* G5.8 - Recently felled areas
Impatienti noli-tangere-Stachyion sylvaticae Görs ex Mucina 1993
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Aegopodion podagrariae Tx. 1967
* E2.7 - Unmanaged mesic grassland
* E5.1 - Anthropogenic herb stands
* E5.4 - Moist or wet tall-herb and fern fringes and meadows
Parietarion officinalis Boscaiu et al. 1964
* E5.1 - Anthropogenic herb stands
Balloto-Conion maculati S. Brullo et Marcenó 1985
* E5.1 - Anthropogenic herb stands
Anthriscion nemorosae S. Brullo in S. Brullo et Marcenó 1985
* E5.1 - Anthropogenic herb stands
Atropion Tx. 1947 nom. ambig. propos.
* G5.8 - Recently felled areas
Linarion niveae Rivas-Mart. 1964
* G5.8 - Recently felled areas

Holco mollis-Pteridion aquilini Passarge (1994) 2002
* E5.3 - [Pteridium aquilinum] fields
* G5.8 - Recently felled areas
Bidention tripartitae Nordhagen 1940
* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
Chenopodion rubri (Tx. in Poli et J. Tx. 1960) Hilbig et Jage 1972
* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
Paspalo-Agrostidion semiverticillati Br.-Bl. in Br.-Bl. et al. 1952
* C2.5 - Temporary running waters
* C3.5 - Periodically inundated shores with pioneer and ephemeral vegetation
Oryzo sativae-Echinochloion oryzoidis O. de Bolòs et Masclans 1955
* I1.4 - Inundated or inundatable croplands, including rice fields
Ecliption albae Lebrun 1947
* E5.1 - Anthropogenic herb stands
* I1.2 - Mixed crops of market gardens and horticulture
Eleusinion indicae Léonard 1954
* E5.1 - Anthropogenic herb stands
* I1.2 - Mixed crops of market gardens and horticulture
Populion albae Br.-Bl. ex Tchou Yen-Tcheng 1948
* G1.3 - Mediterranean riparian woodland
Osmundo-Alnion glutinosae (Br.-Bl. et al. 1956) Dierschke et Rivas-Mart. in Rivas-Mart. 1975
* G1.3 - Mediterranean riparian woodland
Rhododendro pontici-Prunion lusitanicae A.V. Pérez, Galán et Cabezudo in A.V. Pérez et al. 1999
* G1.3 - Mediterranean riparian woodland
Platanion orientalis I. Kárpáti et V. Kárpáti 1961
* G1.3 - Mediterranean riparian woodland
Lauro-Fraxinion angustifoliae I. Kárpáti et Kárpáti 1961
* G1.3 - Mediterranean riparian woodland
Salicion canariensis Rivas-Mart. et al. ex Rivas-Mart., Fernández González et Lodi 1999
* G1.3 - Mediterranean riparian woodland
Rubio periclymeni-Rubion ulmifolii Oberd. ex Rivas-Mart. et al. 1993
* F9.3 - Southern riparian galleries and thickets
Alnion incanae Pawlowski et al. 1928
* B1.7 - Coastal dune woods
* G1.1 - Riparian and gallery woodland, with dominant [Alnus], [Betula], [Populus] or [Salix]
* G1.2 - Mixed riparian floodplain and gallery woodland
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
* G1.B - Non-riverine [Alnus] woodland
Alno incanae-Salicion pentandrae Kielland-Lund 1981
* G1.1 - Riparian and gallery woodland, with dominant [Alnus], [Betula], [Populus] or [Salix]
Alno-Quercion roboris Horvat 1950
* G1.1 - Riparian and gallery woodland, with dominant [Alnus], [Betula], [Populus] or [Salix]
* G1.2 - Mixed riparian floodplain and gallery woodland
* G1.A - Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
Salicion albae Soó 1951
* F9.1 - Riverine scrub
* G1.1 - Riparian and gallery woodland, with dominant [Alnus], [Betula], [Populus] or [Salix]
* G1.3 - Mediterranean riparian woodland
Salicion triandrae T. Müller et Görs 1958
* F9.1 - Riverine scrub
Rubo caesii-Amorphion fruticosae Shevchyk et Solomakha 1996
* F9.1 - Riverine scrub
Salicion eleagno-daphnoidis (Moor 1958) Grass 1993
* F9.1 - Riverine scrub

Salicion phylicifoliae Dierßen 1992
* F9.1 - Riverine scrub
Salicion salvifoliae Rivas-Mart. et al. 1984
* F9.1 - Riverine scrub
Salicion discolori-neotrichae Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart. et al. 2002
* F9.1 - Riverine scrub
Salicion pedicellatae Rivas-Mart. et al. 1984
* F9.1 - Riverine scrub
Salicion cantabricae Rivas-Mart., T.E. Díaz et Penas in Rivas-Mart. et al. 2011
* F9.1 - Riverine scrub
Lonicero-Rubion silvatici Tx. et Neumann ex Wittig 1977
* E5.3 - [Pteridium aquilinum] fields
* F3.1 - Temperate thickets and scrub
Alnion glutinosae Malcuit 1929
* G1.2 - Mixed riparian floodplain and gallery woodland
* G1.4 - Broadleaved swamp woodland not on acid peat
* G1.B - Non-riverine [Alnus] woodland
Salicion cinereae T. Müller et Görs ex Passarge 1961
* F9.2 - [Salix] carr and fen scrub
Tamaricion africanae Br.-Bl. et O. de Bolòs 1958
* F9.3 - Southern riparian galleries and thickets
Tamaricion boveano-canariensis Izco et al. 1984
* F9.3 - Southern riparian galleries and thickets
Imperato cylindricae-Saccharion ravennae Br.-Bl. et O. de Bolòs 1958
* C3.3 - Water-fringing beds of tall canes
Rubo ulmifolii-Nerion oleandri O. de Bolòs 1958
* F9.3 - Southern riparian galleries and thickets
Securinegion buxifoliae Rivas Goday ex Lopez Saenz et Velasco 1995
* F9.3 - Southern riparian galleries and thickets
Tamaricion parviflorae I. Kárpáti et V. Kárpáti 1961
* F9.3 - Southern riparian galleries and thickets
Rubo sancti-Nerion oleandri Brullo et al. 2004
* F9.3 - Southern riparian galleries and thickets
* G2.5 - [Phoenix] groves
Artemisio scopariae-Tamaricion ramosissimae Simon et Dihoru 1963
* F9.3 - Southern riparian galleries and thickets
Agropyro fragilis-Tamaricion ramosissimae Golub et Kuzmina 1996
* F9.3 - Southern riparian galleries and thickets
Galio humifusi-Tamaricion ramosissimae Golub et Kuzmina 1996
* F9.3 - Southern riparian galleries and thickets
Traganion moquinii Sunding 1972
* B1.6 - Coastal dune scrub
Polycarpaeo niveae-Euphorbion paraliae Rivas-Martínez et Wildpret in Rivas-Mart. et al. 2002
* B1.6 - Coastal dune scrub
Soncho acaulis-Sempervivion Sunding 1972
* F8.1 - Canary Island xerophytic scrub
* F8.2 - Madeiran xerophytic scrub
Greenovion aureae Rivas-Mart. et al. 1993
* F8.1 - Canary Island xerophytic scrub
Sinapidendro angustifolii-Aeonion glutinosi Capelo et al. 2000
* F8.2 - Madeiran xerophytic scrub
Aichryso laxi-Monanthion laxiflorae Santos et Reyes Betancort 2009
* F8.1 - Canary Island xerophytic scrub
Aeonio-Euphorbion canariensis Sunding 1972

* F8.1 - Canary Island xerophytic scrub
* F8.2 - Madeiran xerophytic scrub

Euphorbion regijsjubo-lamarckii Rivas-Mart., Wildpret, O. Rodríguez et Del Arco in Rivas-Mart. et al. 2011
* F8.1 - Canary Island xerophytic scrub
* F8.2 - Madeiran xerophytic scrub

Mayteno canariensis-Juniperion canariensis Santos et F. Galván ex Santos 1983 corr. Rivas-Mart. et al. 1993
* F8.1 - Canary Island xerophytic scrub
* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

Retamion rhodorhizoidis Del Arco et al. 2009
* F8.1 - Canary Island xerophytic scrub

Phoenicion canariensis Rivas-Mart. et Del Arco in Rivas-Mart. et al. 2011
* G2.5 - [Phoenix] groves

Oleo maderensis-Maytenion umbellatae Capelo et al. 2000
* F8.2 - Madeiran xerophytic scrub

Cisto canariensis-Micromerion hyssopifoliae Pérez de Paz et al. 1990 corr. Rivas-Mart. in Rivas-Mart. 2011
* F8.1 - Canary Island xerophytic scrub

Soncho ustulati-Artemision argenteae Capelo et al. 2000
* F8.2 - Madeiran xerophytic scrub

Myrico fayae-Ericion arboreae Oberd. 1965
* F4.3 - Macaronesian heaths
* G2.7 - Canary Island heath woodland

Polysticho falcinelli-Ericion arboreae Rivas-Mart. et al. 2002
* G2.7 - Canary Island heath woodland

Telino canariensis-Adenocarpion foliolosi Rivas-Mart. et al. 1993
* G2.7 - Canary Island heath woodland

Bystropogono punctati-Telinion maderensis Capelo et al. 2000
* G2.7 - Canary Island heath woodland

Euphorbion melliferae Capelo et al. 2003
* G2.7 - Canary Island heath woodland

Ixantho viscosae-Laurion azoricae Oberd. ex Santos in Rivas-Mart. et al. 1977
* G2.3 - Macaronesian [Laurus] woodland

Sibthorpio peregrinae-Clethrion arboreae Capelo et al. 2000
* G2.3 - Macaronesian [Laurus] woodland

Visneo mocanerae-Apollonion barbujanae Rivas-Mart. in Capelo et al. 2000
* G2.3 - Macaronesian [Laurus] woodland

Culcito macrocarpae-Juniperion brevifoliae Lüpnitz 1975
* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

Dryopterido azoricae-Laurion azoricae Rivas-Mart. et al. 2002
* G2.3 - Macaronesian [Laurus] woodland

Myrico fayae-Pittosporion undulati Lüpnitz 1976
* G2.3 - Macaronesian [Laurus] woodland

Cisto symphyfolii-Pinion canariensis Rivas Goday et Esteve ex Esteve 1969
* G3.8 - Canary Island [Pinus canariensis] woodland

Junioperion cedri Martín Osorio, Wildpret et Rivas-Mart. in Martín Osorio et al. 2007
* G3.9 - Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

Spartocytision nubigeni Oberd. ex Esteve 1973
* F7.4 - Hedgehog-heaths

Violion cheiranthifoliae Voggenreiter ex Martín Osorio, Wildpret et Rivas-Mart. in Martín Osorio et al. 2007
* F4.3 - Macaronesian heaths

Plantaginion webbii Martín Osorio, Wildpret et Rivas-Mart. In Martín Osorio et al. 2007
* F4.3 - Macaronesian heaths

Eriophoro-Pinion sylvestris Passarge 1968
* G3.D - Boreal bog conifer woodland
* G3.E - Nemoral bog conifer woodland

Vaccinio uliginosi-Pinion sylvestris Passarge 1968
* G3.D - Boreal bog conifer woodland
* G3.E - Nemoral bog conifer woodland

Eriophoro-Piceion abietis Passarge 1968
* G3.D - Boreal bog conifer woodland
* G3.E - Nemoral bog conifer woodland

Vaccinio uliginosi-Piceetalia abietis Passarge 1968
* G3.D - Boreal bog conifer woodland
* G3.E - Nemoral bog conifer woodland

Sphagno-Betulion pubescentis Passarge 1968
* G1.5 - Broadleaved swamp woodland on acid peat

Pleurozio-Betulion pubescentis Passarge 1968
* G1.5 - Broadleaved swamp woodland on acid peat

Salici pentandrae-Betulion pubescentis Clausnitzer in Dengler et al. 2004
* G1.5 - Broadleaved swamp woodland on acid peat

Rhamno carthaticae-Betulion pubescentis Clausnitzer in Dengler et al. 2004
* G1.5 - Broadleaved swamp woodland on acid peat

Charion fragilis Krausch 1964
* C1.1 - Permanent oligotrophic lakes, ponds and pools
* C1.2 - Permanent mesotrophic lakes, ponds and pools
* C1.6 - Temporary lakes, ponds and pools

Nitellion flexilis Krause 1969
* C1.1 - Permanent oligotrophic lakes, ponds and pools
* C1.2 - Permanent mesotrophic lakes, ponds and pools