The diversity of European vegetation

An overview of phytosociological alliances and their relationships to EUNIS habitats

J.S. Rodwell
J.H.J. Schaminée
L. Mucina
S. Pignatti
J. Dring
D. Moss

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3 The overview
1 Preface

1.1 Policy background

The policy of the Dutch government on international nature conservation supports the objectives of the Convention on Biological Diversity (CBD), which are: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the use of genetic resources. A specific goal of the convention, relevant to the topic of this book, is the development of a coherent system of protected areas (article 8, CBD).

The Dutch contribution to international nature conservation is described in the Programme for International Nature Conservation, which is contained in the national policy document on nature, forest and landscape in the 21st century: ‘Nature for People, People for Nature’. One of the important policy issues is to support activities to ensure that a Pan-European Ecological Network will be realised by 2020. Recently, in the Dutch government policy document ‘Nationaal Milieubeleidsplan 4’ (National Policy Document on the Environment, number 4, 2001), the ideas about the needs and future functions of ecological networks have been taken further. In this document the Dutch government expresses support for the realisation of a global ecological network as an appropriate means for the long-term protection of threatened species and habitats.

The Dutch contribution to international nature conservation is diverse:

- On a bilateral base, the Dutch government supports nature management in nations by so-called MOU's (Memoranda of Understanding), agreements between a nation and the Dutch government on a specific nature conservation issue.
- The Dutch government has ratified and supports active international agreements and EU laws on nature conservation, as for example the Bern convention, the Birds Directive and the Habitat Directive and their instruments such as the Natura 2000 ecological network and the Emerald ecological network, for example by participation in such international fora as the Committee of Experts of the Pan European Ecological Network of PEBLDS and by the exchange of expertise with accession countries.
- The Dutch government is stimulating nature conservation in Central- and East Europe in an active way, by the PIN-MATRA instrument and by the EECONET Fund: a system of grants for organisations, working in the field of nature conservation.
Finally, the Dutch government supports the development and the exchange of ideas on nature-conservation issues, especially if these are related to international nature conservation topics as indicated above. Projects such as a Europe-wide inventory of Important Bird Areas, Important Butterfly Areas and other Important Species Areas by appropriate co-operating international organisations, as well as projects for the development of inventories of Target-species for the Pan European Ecological Network, and projects aiming at the development of an indicative map of PEEN in Central- and Eastern Europe, have been funded. Also, organisations with a co-ordinating and/or stimulating role like the European Centre for Nature Conservation, and other organisations, are actively supported.

1.2 A unifying classification system for important habitats in Europe

This book fits very well among the above mentioned aims and projects which the Dutch government seeks to support. It can be seen as an interface between the EUNIS habitat classification developed by the European Environment Agency's European Topic Centre on Nature Protection and Biodiversity (as a monitoring tool) and the international scientific ecological research (as a tool for improving nature management), by providing full crosswalks from higher – phytosociological – vegetation units to the EUNIS habitat classification. Furthermore, it provides the basis for connecting the habitat types of Annex I of the Habitats Directive (as being a legal tool), via a crosswalk with the EUNIS habitat classification, with the phytosociological classification system.

The publication will aid communication between a wide and diverse group of professionals involved with specific tasks like the implementation and monitoring of the Habitats Directive, or the Bern Convention (especially the realisation of the Natura 2000 and the Emerald ecological network) and the development of PEEN, but also professionals involved with scientific research in order to support the identification and management of core-areas, and professionals involved with everyday management of core-areas. Overall, the book delivers essential scientific information for the following activities:

- It supports the systematic identification throughout Europe of ecologically coherent core-areas, in full accordance with Annex I of the Habitats Directive, the EUNIS habitat classification and the Guidelines of PEEN;
- It provides a scientific framework for the description of important ecological characteristics of identified core-areas like the
vegetation-types occurring there, but also for other characteristics such as soil-type, water-type, the ecological buffering needed, and active/passive management;
- It provides a scientific framework for the identification of the relations between the target species of Annex II and IV, and other target species, with the ecological characteristics of the core-areas in which these species occur;
- It provides a means for coherent management of core-areas, of particular importance in the case of trans-boundary core-areas;
- It provides a means for unified monitoring of core-areas;
- It enables and stimulates coherent scientific research, supporting both the establishment of ecological networks and the management of core-areas.

1.3 Related projects and further research in this field

This enterprise is part of a wider set of research projects and products, all aiming at support for European nature conservation and especially for the realisation of the Pan-European Ecological Network.

In 2000, a totally revised and updated inventory of Important Bird Areas in Europe appeared, co-funded by the Dutch Ministry of ANF. At this moment, two new projects, aiming at the identification of the important species-areas in Europe, are being carried out: the identification of Prime Butterfly Areas in Europe, due to appear in spring 2002, and Prime Herpetofaunal Areas in Europe, due to appear in 2004. In preparation is a similar project for the identification of Important Plant Areas in Europe, by Plantlife International/Planta Europa Network, co-funded by the Dutch Ministry of ANF. All these projects are carried out through international co-operation. A CD-Rom is in preparation, containing all the target-species of the Pan-European Ecological Network. This CD-Rom will include information on the legal status of species, the conservation status of species, indications on their distribution in Europe, the habitat preferences and suggestions for nature management. The higher syntaxonomical levels and their cross-walks to the EUNIS habitat classification as described in this book will help with the identification of the ecological demands of target-species and target-habitats.

As regards the coherence of ecological networks and the degree of connectivity needed for the conservation of target-species, a lot of research is necessary: research on scientific theories and their application on (meta-)populations, but also research on the actual presence of migrational- and other types of corridors in Europe, the habitats that are used, the interdistance and the number and size of stepping stones.
Identified Important Species Areas can play a key role in the identification of core-areas for ecological networks. The same is true of target-species, once they are identified. In 1995, a project identified core-areas for the Pan European Ecological Network in Western Europe. In the period 1999-2001 a parallel project was carried out, aimed at producing an indicative map of PEEN, identifying core-areas, corridors, buffer zones and zones for nature development in Central and Eastern Europe. All these materials can be brought together in a future indicative and inspirational map of PEEN, covering the whole of Europe.

Pan-European nature conservation efforts are aiming for the coherent and integrated protection and adequate management of target species and target habitats within a Pan European Ecological Network. On a wider scale, these projects may have a broad spin-off: first, adequate identification, legal protection and adequate management of core-areas covering not only target habitats but also covering a reasonable and representative number of target-species. A second hoped-for benefit is a more unified management of a coherent European system of nature reserves, especially of transborder areas and corridors.

A third spin-off could be intensified collaboration between parties, whether NGO or governmental, new initiatives and suggestions for legislation, both national and international, and integrated research on trans-bordering nature conservation issues.

Finally, farmers, foresters, land-owners can play an important role in the future management of the bufferzones, corridors and core-areas of the Pan-European Ecological Network. Research on the possibilities of integration of agricultural land-use within and around the ecological network will provide valuable benefits. In this way, the acceptance of ecological networks will be favoured.

All these activities are actively supported and communicated by flyers, booklets, reports and CD-Roms. Bilateral communication and presentations at meetings are used to exchange the insights developed in these projects. Interactive websites are developed, maintained and supported with this aim. Special efforts are focused on co-operation and network-building: this being an efficient and important means for the exchange of ideas and for the achievement progress in the field of nature-conservation.

Drs. A.J.F.M. van Opstal, Senior Policy Advisor Ecosystems and the Environment

National Reference Centre for Agriculture, Nature and Fisheries
2 Introduction

2.1 The phytosociological background

Phytosociology is the science which attempts to describe the diversity of plant communities. From the start, in the early decades of the last century, phytosociologists have tried to apply a standardised approach to the tasks of sampling and characterising vegetation types (Braun-Blanquet 1928, Tüxen 1937) and to use a formal framework for naming and organising them within a syntaxonomic hierarchy of associations, alliances, orders and classes (Barkman et al. 1986, Mucina & Theurillat 1999). However, over the decades since then, an enormous phytosociological literature has accumulated with diverse proposals for classifying many kinds of vegetation throughout western Europe and beyond. Such endeavours have been uncoordinated and proposals for structuring the syntaxonomic hierarchy have often been contentious, from the level of the association right up to classes. Moreover, only occasionally has there been a more fundamental discussion of the theoretical basis of the whole enterprise of phytosociological classification (Pignatti et al. 1995, Mucina 1997a, 1997b).

Surveys of particular countries or parts of countries have brought a measure of regional stability to the classification of vegetation types in Europe, especially during the last decade. These projects have varied greatly in their scope and detail. Some publications are simply checklists of associations, others are more ambitious, though the formalities of describing the vegetation types - their species composition, relationships to habitat factors, distribution and so on - often differ. Also, some schemes of classification are supported by actual samples of vegetation (relevés), others by synoptic tables listing the frequencies of plant species; yet others have neither of these.

Nonetheless, surveys of some kind have now been published for Albania (Hoda et al. 2001), Austria (Mucina et al. 1993), Belgium (Lebrun et al. 1949), Bulgaria (Apostolova & Slavova 1997), the Czech Republic (Moravec et al. 1995; Moravec 1998-2000), France (Géhu 1998b; Julve 1993), Germany (Oberdorfer 1977-1992; Pott 1995, Schubert et al. 1995; Passarge 1996-1999; Dierschke et al. 1996-1999), Greece (Dimopoulos et al. 1995), Hungary (Borhidi 1996), Ireland (White & Doyle 1982), Italy (Biondi et al. 1997), Latvia (Pakalne et al. 1996), Lithuania (Baleviciene 1991; Baleviciene et al. 1998), The Netherlands (Schaminée et al. 1995-1999), Norway (Fremstad 1997), Poland (Matuszkiewicz 1984), Roumania (Coldea 1991: Coldea et al. 1997; Donita et al. 1992), Spain, Portugal, the
Balearic and Canary Islands (Rivas-Martinez et al. 1998, 2001), Slovakia (Valachovic et al. 1995; Jarolimek et al. 1997), the UK (Rodwell 1991-2000) and the former Yugoslavia (Jovanovic et al. 1986). More widely, there are important overviews of a huge extent of territory beyond the narrower limits of Europe, in the Ukraine (Solomakha et al. 1995) and Russia (Korotkov et al. 1991; Solomeshch et al. 1997). Some masterly accounts of vegetation in south-east Europe (Horvat et al. 1974), central Europe (Ellenberg 1986) and the north (Dierßen 1996) have also amply demonstrated the benefits of a phytosociological framework for understanding the ecology of vegetation types across whole regions. Figure 1 shows an overview of the present extent of phytosociological knowledge across Europe.

2.2 The European Vegetation Survey initiative

In an attempt to develop a more coherent picture of vegetation across the whole of Europe and to foster a new spirit of collaboration among phytosociologists, the European Vegetation Survey (EVS), a Working Group of the International Association for Vegetation Science, has – since 1992 – convened annual workshops in Italy (Pignatti 1990; Mucina et al. 1993b; Rodwell et al. 1995). Besides providing formal support for national programmes of survey, the EVS has devoted particular meetings to understanding the syntaxonomy and ecology of some major vegetation types across Europe - beechwoods in 1998, high mountain vegetation in 1999, dry grasslands in 2000 and halophytic vegetation in 2001. Transnational overviews originating from these workshops have included studies of meadows in north-west Europe (Zuidhoff et al. 1995), beechwoods across Europe (Dierschke 1997), scree vegetation in European mountains (Valachovic et al. 1997), coastal vegetation of the Holarctic (Géhu 1998a), the fern vegetation of the Mediterranean (Deil 1998), wall and rock crevice vegetation across Europe (Brullo & Guarini 1998) and the hemi-boreal forests of Siberia (Ermakov et al. 2000).

In parallel with these activities, the EVS has also developed an overview of vegetation types of Europe (including Macaronesia and the European parts of the former USSR) down to the level of alliances. The scheme uses a framework of classes already proposed by Mucina (1997a) and it has been produced top-down by integrating groups of orders and alliances contributed by EVS members with an expert knowledge of certain regions of Europe and/or particular groups of vegetation types. The overall hierarchic scheme is summarised in Figure 2. Each syntaxon has been given a brief vernacular description in English. Although these are not systematic in their content, they summarise within the limits of a line or
two, the key geographical, climatic, edaphic and biotic relationships of each syntaxon.

Mucina (1997a) acknowledged that, even at the broad level of classes, his own proposals would not find universal acceptance. The more finely divided scheme which we publish here will no doubt also attract criticism. We are very aware of the weaknesses of the classification and take full responsibility ourselves for what needs to be thought of as an important first step in cataloguing the biodiversity of Europe’s vegetation.

2.3 Relationships between plant communities & threatened habitats

One key application of an overview of European vegetation types is that it can provide a sound scientific basis for international initiatives in nature protection. Over much of western Europe, the pace in this process has been set by the European Union Habitats Directive. However, the uncertain definition of the Priority Habitats which are the focus of protection (CEC 1994) has made it very difficult for Member States to interpret their meaning in their own territories. The CORINE Biotopes Classification (Anonymous 1991; Devillers et al. 1991), which provides the original framework for defining these habitats, has now been developed further into the Palaearctic Habitats Classifications (Devillers & Devillers-Terschuren 1996) under the patronage of the Council of Europe. However, the definition of the vegetation types characteristic of each habitat is not necessarily any clearer there, nor more faithfully anchored in the scientific literature where its meaning might be pursued. With the appearance of the European Union Nature Information System (EUNIS) Habitat Classification (Davies & Moss 1999), there has come a fresh opportunity to provide a sound scientific cross reference to phytosociological definitions of vegetation types. With funding from the European Topic Centre on Nature Protection & Biodiversity, under contract to the European Environment Agency, the EVS team has therefore developed a cross-walk between the EUNIS Habitat Classification and phytosociological alliances (Rodwell et al. 1998). This cross-walk is included in this publication. An overview of European habitat classification schemes and their relationships is given in Figure 3.

A further cross-walk between EUNIS and Annex 1 of the Habitats Directive has also been prepared, by Moss & Davies (1999). Since Annex 1 is not a habitat classification, but a list of habitat types requiring protection through the European legislation, there is not a one-to-one correspondence between EUNIS habitat types at level 3 of the hierarchy and Annex 1, as shown in this cross-walk. For example, EUNIS E1.2 Perennial calcareous
The classification of semi-natural grasslands and basic steppes includes Annex I habitats. Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia), Sub-pannonic steppic grasslands, Pannonic loess steppic grasslands, Pannonic sand steppes, and 620 Nordic alvar and precambrian calcareous flatrocks. Conversely, Annex I habitat 9010 (Western Taïga) includes elements of EUNIS habitats G1.9 Non-riverine woodland with Betula, Populus tremula, Sorbus aucuparia or Corylus avellana, G1.9 Non-riverine Alnus woodland, G3.A Pinus taiga woodland, and G3.B Pinus taiga woodland. As an illustration of these kinds of relationships, a small part of the EUNIS – Annex 1 cross-walk is presented in Figure 4. It is therefore not a simple matter to join the two cross-walks so as to link syntaxa to Annex 1. However, by taking both cross-walks further down the EUNIS hierarchy, this should be possible in future.

2.4 Benefits for sustaining biodiversity

Three particular benefits of using this classification and the crosswalk can now be seen, linking research and policy.

First, because we know more about the extent and distribution of the vegetation types defined by phytosociology, we can map the occurrence of Annex 1 Priority Habitats to ensure that they will be adequately protected within the Natura 2000 network and PEEN. For example, the Tilio-Acerion is an alliance (L59B18 in the classification) of sub-montane maple and lime woods of humid ravines from among the mixed broadleaf woodlands of more fertile soils in the order Fagetalia and Class Querco-Fagetea. It typically has a diverse canopy of trees and a rich ground flora of herbs, ferns and bryophytes dependent on nutrient-rich moist soils. It is equivalent to a variety of EUNIS Habitats and is an Annex 1 Priority. Figure 5 shows the distribution of the woodland associations which make up the Tilio-Acerion in the Czech Republic (Chytry et al. 2001).

Second, because phytosociology defines vegetation types on the basis of sound scientific data on species composition and structure, we can better understand what is meant by the ‘optimal condition’ of the Annex 1 Priority Habitats which EU Member States have a legal obligation to maintain. Now it will be easier to monitor the condition of these habitats in the Natura 2000 network and respond if changes in habitat quality fall below acceptable levels.

The third kind of application is about sustainability. Because phytosociology provides a framework within which we can learn more
about those climatic, soil and biotic factors which different vegetation types depend on, it enables us to understand which environmental conditions must be met to ensure the survival of vulnerable Annex I habitats.

For example, the Triseto-Polygonion is an alliance (G26I03 in the classification) within the anthropogenic grasslands of the order Arrhenatheretalia and the class Molinio-Arrhenatheretea. It includes meadows of well-drained and relatively fertile soils in the montane regions of central and northern Europe. The distinctive mixtures of grasses and colourful tall herbs which characterise these swards are partly a reflection of a harsh montane climate with its short growing season and winter snowfalls that protect against frost-damage; and partly of the only moderate fertility of the soils, enriched just with natural manures from the grazing sheep and cattle and not by chemical fertilisers. Under regimes of traditional farming, the grasslands are grazed only in spring and autumn but, in the moist montane climate of early summer, the herbage can grow up to yield a substantial hay crop. We know therefore that to sustain these grasslands, which are equivalent to the EUNIS habitat *E2.3 Mountain hay meadows* and whose UK representatives are protected as an Annex I Priority Habitat, this distinctive combination of natural and management conditions must be met.

### 2.5 Next steps

Now, the EVS initiative is entering an important new phase by making this overview of European vegetation the basis of an expert system (SynBioSys Europe) which will show the relationships between plant species, vegetation types and landscapes across the Continent. SynBioSys Europe will build on experience gained over the past decade at Alterra in Wageningen (Hennekens et al. 2000) and use a team of national representatives to accumulate data on the species composition, habitat relationships, distribution and value of plant communities. The expert system will make use of the widely excepted database management system for vegetation data TURBOVEG (Hennekens & Schaminée 2001). A first example of how distribution patterns can be shown was presented during the 4th International Workshop of the European Vegetation Survey in 1995, dealing with the Cynosurion cristati (G-26B02 in the overview), that includes grasslands on mesotrophic, moist but generally freelydraining soils, mainly grazed by cattle (Zuidhoff et al. 1995). The distribution of this alliance (Figure 6) was based on original relevés, taken from TURBOVEG databases.
The expert system will connect with the recently-published European map of potential vegetation (Bohn et al. 2000) and elaborate on recent studies on species distribution in Europe (e.g. Van Opstal et al. 2000). A network of distributed databases will then be at the service of participating countries, working together to ensure the sustainability of the living fabric of Europe.

2.6 Acknowledgements

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2.6 References


The overview

Key to the Overview

In the following Overview, the names of the FORMATIONS are shown in large bold capitals, the names of the phytosociological CLASSES as small bold capitals, the names of the ORDERS as capitals and the names of the Alliances in bold. Every class, order and alliance is given a unique code using numbers and letters and has a simple descriptor indicating the character of the vegetation and the main features of its habitat. The names and code numbers of the EUNIS habitats which correspond to the phytosociological syntaxa are shown in italics.
A COASTAL MUD-FLATS AND BRACKISH WATERS

01 ZOSTERETEA
Eel-grass swards on muddy and sandy substrates in the sublittoral and eulittoral zones of temperate seas

01A POSIDONIETALIA
Mediterranean eel-grass swards

01A01 Cymodoceion nodosae
Mediterranean eel-grass swards of less dynamic deeper waters
  A2.7 Littoral sediments dominated by aquatic angiosperms
  A4.5 Shallow sublittoral sediments dominated by angiosperms

01A02 Posidonion oceanicae
Mediterranean eel-grass swards of more dynamic deep waters
  A4.5 Shallow sublittoral sediments dominated by angiosperms
  Temperate eel-grass swards on muddy and sandy substrates in sublittoral and eulittoral zones

01B01 Zosterion marinae
Temperate eel-grass swards on muddy and sandy substrates in sublittoral and eulittoral zones
  A2.7 Littoral sediments dominated by aquatic angiosperms
  A4.5 Shallow sublittoral sediments dominated by angiosperms

02 RUPPIETEA MARITIMAE
Submerged communities of brackish waters

02A RUPPIETALIA MARITIMAE
Submerged communities of brackish waters

02A01 Rhiellion helicophyllae
Pioneer ephemeral bryophyte communities of shallow saline lagoons in western Mediterranean

02A02 Ruppion maritimae
Tassel-weed communities of brackish waters
  A2.7 Littoral sediments dominated by aquatic angiosperms
  A4.5 Shallow sublittoral sediments dominated by angiosperms
  C1.5 Permanent inland saline and brackish lakes, ponds and pools

02A03 Scirpion parvuli
Spike-rush communities of brackish waters
  A2.7 Littoral sediments dominated by aquatic angiosperms
  C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation

B SALT-MARSH, SAND-DUNE AND SEA-CLIFF VEGETATION

03 SPARTINETEA MARITIMAE
Pioneer vegetation of perennial cord grasses on intertidal mud and sand

03A SPARTINETALIA MARITIMAE
Pioneer vegetation of perennial cord grasses on intertidal mud and sand

03A01 Spartinion maritimae
Pioneer vegetation of perennial cord grasses on intertidal mud and sand
  A2.6 Coastal saltmarshes and saline reedbeds

04 THEROSALICORNIEETEA
Pioneer communities of annual succulent halophytes on periodically flooded habitats

04A  LEPIDIETALIA LATIFOLII
Therophyte vegetation of inland salt pans of the Caspian region

04A01  Lepidion latifolii
Meadow solonchak communities of the lower Volga floodplain and delta

04B  THERO-SALICORNIALIA
Pioneer communities of annual succulent halophytes on periodically flooded habitats

04B01  Salicornion herbaceae
Pannonian-Caspian vegetation of salt pans dominated by short-lived succulents
   A2.6 Coastal saltmarshes and saline reedbeds
   E6.2 Continental inland saline grass and herb-dominated habitats

04B02  Salicornion patulae
Mediterranean pioneer glasswort communities of lagoons
   A2.6 Coastal saltmarshes and saline reedbeds

04B03  Thero-Salicornion
Pioneer glasswort communities of tidal mud-flats on Atlantic shores
   A2.6 Coastal saltmarshes and saline reedbeds
   B1.1 Angiosperm communities of sand beach driftlines
   E6.1 Mediterranean inland saline grass and herb-dominated habitats
   E6.2 Continental inland saline grass and herb-dominated habitats

04B04  Thero-Suaedion
Mediterranean therophyte succulent salt-marsh vegetation dominated by Suaeda
   A2.6 Coastal saltmarshes and saline reedbeds
   B1.1 Angiosperm communities of sand beach driftlines

05  JUNCETEA MARITIMI
Perennial maritime grasslands and related herb-rich vegetation of coastal and inland salt-marshes and sea-cliffs

05A  AGROPYRETALIA PUNGENTIS
Communities of salt-marsh strandlines in warmer parts of Europe

05A01  Agropyron pungentis
Communities of salt-marsh strandlines in warmer parts of Europe
   A2.6 Coastal saltmarshes and saline reedbeds

05B  GLAUCO-PUCCELLIETALIA
Usually closed swards on the saline silt and sand of salt-marshes, sea cliffs, and inland

05B01  Armerion maritimae
Perennial communities of upper salt marshes, rarely inundated by spring tides
   A2.6 Coastal saltmarshes and saline reedbeds
   D5.2 Beds of large sedges normally without free-standing water
   D6.1 Inland saltmarshes
   E6.2 Continental inland saline grass and herb-dominated habitats

05B02  Eleocharition uniglumis
Species-poor salt-marsh communities with a freshwater influence
   A2.6 Coastal saltmarshes and saline reedbeds

05B03  Puccinellion maritimae
Communities of lower, often inundated salt-marshes and inland salt marsh ephemeral communities
   A2.6 Coastal saltmarshes and saline reedbeds
   D6.1 Inland saltmarshes

05B04  Frankenio laevis-Armerion
Saltmarsh communities with Frankenia on the higher parts of Atlantic sandy shores

**05B05**

**Glauco maritimae-Juncion maritimi**
Atlantic oligo-haline salt-marsh communities
   *A2.6 Coastal saltmarshes and saline reedbeds*

**05B06**

**Puccinellio-Spergularion salinae**
Ephemeral communities of disturbed saline habitats with fluctuating moisture regime
   *A2.6 Coastal saltmarshes and saline reedbeds*
   *D6.1 Inland saltmarshes*
   *E6.1 Mediterranean inland saline grass and herb-dominated habitats*
   *E6.2 Continental inland saline grass and herb-dominated habitats*

**05B07**

**Silenion maritimae**
Closed swards of perennials on seaciff tops and ledges little splashed by salt-spray
   *B3.3 Rock cliffs, ledges and shores, with halophytic angiosperms*

**05C**

**HALO-AGROPYRETALIA**
Saline vegetation of heavy clayey soils of badlands in Italy

**05C01**

**Halo-Artemision**
Halophilous vegetation of heavy clayey soils of Italian badlands

**05D**

**JUNCETALIA MARITIMI**
Mediterranean-atlantic rush-dominated saline meadows and swards

**05D01**

**Agropyro-Artemision coerulescentis**
Mediterranean and Black Sea spring-line vegetation
   *A2.6 Coastal saltmarshes and saline reedbeds*
   *B3 Rock cliffs, ledges and shores, including the supralittoral*

**05D02**

**Juncion maritimi**
Mediterranean-Euxinic coastal saline wet meadows
   *A2.6 Coastal saltmarshes and saline reedbeds*
   *E6.2 Continental inland saline grass and herb-dominated habitats*

**05D03**

**Plantaginion crassifoliae**
Mediterranean damp dune-slack and lagoon margin communities
   *A2.6 Coastal saltmarshes and saline reedbeds*

**05D04**

**Puccinellion caespitosae**
Iberian continental salt-marsh edge communities
   *D6.2 Inland saline or brackish species-poor helophyte beds normally without free-standing water*

**05E**

**PUCCINELLIETALIA PHRYGANODIS**
Lower salt-marsh swards around Arctic coasts of Svalbard and Iceland

**05E01**

**Puccinellia phryganodis**
Lower salt-marsh swards around Arctic coasts of Svalbard and Iceland
   *A2.6 Coastal saltmarshes and saline reedbeds*

**06**

**SAGINETEA MARITIMAE**
Ephemeral vegetation with winter annuals on bare or disturbed salt-marsh mud and sand

**06A**

**FRANKENETALIA PULVERULENTAE**
Mediterranean ephemeral vegetation of clayey and muddy saline soils

**06A01**

**Frankenion pulverulentae**
Ephemeral vegetation of spray-splashed muds of the Iberian peninsula
   *A2.6 Coastal saltmarshes and saline reedbeds*
   *E6.1 Mediterranean inland saline grass and herb-dominated habitats*

**06A02**

**Gaudinio-Podospermion cani**
Saline therophyte vegetation of Calabro-Sicilian badlands
06A03 **Hordeion marini**
Ephemeral vegetation of saline clays in the Mediterranean region
- A2.6 Coastal saltmarshes and saline reedbeds
- E6.1 Mediterranean inland saline grass and herb-dominated habitats

06A04 **Limonion avei**
Subnitrophilous aerohaline therophyte coastal swards of the south-central Mediterranean

06B **SAGINETALIA MARITIMAE**
Atlantic-Mediterranean ephemeral vegetation on sandy soils or salt-marsh fringes

06B01 **Lolio-Plantaginion commutatae**
Aerohaline short-lived vegetation of disturbed coastal habitats of Dalmatia

06B02 **Romulion**
East Mediterranean ephemeroioid vegetation on humid salty sand
- A2.6 Coastal saltmarshes and saline reedbeds
- E6.1 Mediterranean inland saline grass and herb-dominated habitats

06B03 **Saginion maritimae**
Atlantic and west Mediterranean ephemeral vegetation on bare or disturbed salt-marsh mud and sand
- A2.6 Coastal saltmarshes and saline reedbeds
- B1.8 Moist and wet dune slacks
- C3.5 Pioneer and ephemeral vegetation of periodically inundated shores

06B04 **Spergularion macrorhizae**
Halophilous short-lived vegetation of summer-dry high salt-marshes of Corsica

07 **SALICORNIETEA FRUTICOSAE**
Mediterranean and thermo-Atlantic perennial salt-marsh scrub

07A **LIMONETALIA**
West Mediterranean semi-arid saline sea-lavender communities

07A01 **Limoniastrion monopetali**
Thermomediterranean strongly halophytic scrub
- A2.6 Coastal saltmarshes and saline reedbeds

07A02 **Limonion catalaunico-viciosoi**
Iberian semi-arid saline sea-lavender communities
- D6.2 Inland saline or brackish species-poor helophyte beds normally without free-standing water

07A03 **Limonion confusi**
North-west Mediterranean semi-arid saline sea-lavender communities

07A04 **Lygeo-Lepidion cardaminis**
Iberian continental salt-pan communities
- D6.2 Inland saline or brackish species-poor helophyte beds normally without free-standing water
- E6.1 Mediterranean inland saline grass and herb-dominated habitats

07A05 **Lygeo sparti-Limonion furfuracei**
South-east Iberian semi-arid saline sea-lavender communities
- D6.2 Inland saline or brackish species-poor helophyte beds normally without free-standing water
- E6.1 Mediterranean inland saline grass and herb-dominated habitats

07B **SALICORNIETALIA FRUTICOSAE**
Mediterranean and thermo-Atlantic halophilous succulent chenopodiaceous scrub

07B01 **Arthrocenion glauci**
Mediterranean hyper-saline succulent chenopodiaceous scrub on sandy soils
- A2.6 Coastal saltmarshes and saline reedbeds

07B02 **Limonion ferulacei**
Thermomediterranean saline dwarf sea-lavender scrub of North Africa and Sicily

_07B03_ **Salicornion fruticosae**
Mediterranean and thermo-atlantic vegetation of succulent dwarf shrubby chenopods

_A2.6 Coastal saltmarshes and saline reedbeds_

**07B04** **Suaedion braun-blanqueti**
Inland Iberian halophilous succulent chenopodiaceous scrub

_A2.6 Coastal saltmarshes and saline reedbeds_

**07B05** **Suaedion verae**
Slightly nitrophilous salt-marsh scrub of Mediterranean and Atlantic coasts

_A2.6 Coastal saltmarshes and saline reedbeds_

**08** **FESTUCO-PUCCINELLIETEA**
Saline steppes and derived steppic grasslands of the continental regions of eastern and southern Europe

**08A** **ARTEMISIO SANTONICAE-LIMONIETALIA GMELINII**
Meso-xerophytic saline communities in southeast Europe and west Siberia

**08A01** **Alhagion pseudalhagi**
Plant communities in the desert zone of the Caspian lowlands

**08A02** **Artemision santonicae**
Solonetz communities of estuarine and river floodplains in southern Ukraine

**08A03** **Astero tripoli-Puccinellion distantis**
Saltmarsh vegetation of depressions on riverine terraces of the steppe and forest-steppe zones of Ukraine

**08A04** **Limonio tomentelli-Artemision santonicae**
Xerophilous steppes on solonetz soils in Voronezh Region of central European Russia

**08A05** **Limonion sareptani**
Communities of limans in the semi-desert zone along the Lower Volga valley

**08A06** **Limonion tomentelli**
Communities of padings on watersheds in the central chernozem zone of Russia

**08A07** **Puccinellion fominii**
Saline vegetation of solonchaks soils of the coastal zones of Ukraine

**08A08** **Puccinellion giganteae**
Solonetz and solonchak communities of coastal bars and islands in southern Ukraine

**08A09** **Salicornio-Puccinellion**
Wet solonetz and solonchak communities of Ukraine and southeast Russia

_A2.6 Coastal saltmarshes and saline reedbeds_

**08B** **ARTEMISIO SANTONICAE-PUCCINELLIETALIA FOMINII**
Sarmato-Pannonian saline vegetation of succulent perennial eu-halophytes

**08B01** **Artemisio santonicae-Puccinellion fominii**
Communities of obligatory eu-halophytes of the Ukraine

**08B02** **Climacoptero-Suaedion**
Communities of obligatory perennial succulent eu-halophytes in the Caspian lowlands

**08C** **CIRSIELTALIA ESCULENTI**
Saline meadows in valleys of rivers in forest-steppe and steppe areas of east Europe and west Siberia

**08C01** **Cirso-Hordeion brevisubulati**
Mesophytic meadows on floodplains of small rivers in the South Ural

**08C02 Cirsion esculenti**
Mesophytic floodplain pastures in easternmost Europe and west Siberia

**08C03 Geranion collini**
Wet meadows of steppe and forest-steppe zones in the European part of Russia and western Siberia

**08C04 Glauco-Caricion dilutae**
Wet saline meadows of the steppe zone in the South Ural region

**08D Festuco-Limonietalia**
Solonetz steppes of Ukraine and southeast Russia

**08D01 Caricion stenophyllae**
Communities of steppes on solonetz soils of Eastern Europe in the semi-desert zone on liman slopes

**08D02 Festuco-Limonion gmelinii**
Solonetz steppes of the steppe zone in the South Ural region

**08E Glycyrrhizetalia glabrae**
Sub-saline meadow-steppe communities of the lower reaches of the Volga and Don river basins

**08E01 Elytrigio-Aeluropodion**
Meadow-steppe communities in the Caspian region of Russia

**08E02 Glycyrrhizion echinatae**
Sub-saline mesophytic meadows of the lower Don valley

- *E2.2 Coarse permanent grassland and tall herbs, usually mown but little grazed*
- *E6.2 Continental inland saline grass and herb-dominated habitats*

**08E03 Glycyrrhizion glabrae**
Sub-saline mesophytic meadows of the lower Volga valley

- *E2.2 Coarse permanent grassland and tall herbs, usually mown but little grazed*
- *E3.4 Moist or wet eutrophic and mesotrophic grassland*

**08E04 Limonio gmelinii-Artemision lerchianae**
Meadow-steppes on moderately saline soils in the floodplain of the Ural River

**08F Puccinellietalia**
Eurasian thermo-continental and sub-Mediterranean vegetation of saline pastures, meadows, salt-pans and badlands

**08F01 Atraphaco-Capparidion**
Communities of Crimean seaside badlands

**08F02 Camphorosmo-Agropyriion desertori**
Meso-xerophytic communities on saline soils of the Crimea

**08F03 Camphorosmo-Suaedion corniculatae**
Hypersaline annual chenopod-dominated communities on solonetz soils of the Caspian region and northwestern Siberia

**08F04 Festucion pseudovinae**
Pontic-Pannonian saline pastures of steppic character

- *E6.2 Continental inland saline grass and herb-dominated habitats*

**08F05 Limonio gmelinii**
Macedonian and north Aegean saline vegetation of salt pans

- *E6.1 Mediterranean inland saline grass and herb-dominated habitats*
- *E6.2 Continental inland saline grass and herb-dominated habitats*

**08F06 Peucedano officinalis-Asterion sedifolii**
Tall forb vegetation on calcareous slightly saline loess soils of the Pannonian Basin
E6.2 Continental inland saline grass and herb-dominated habitats

08F07 Puccinellion limosae
Communities of moist salt-pan in south-east Europe
A2.6 Coastal saltmarshes and saline reedbeds
D6.1 Inland saltmarshes
E6.2 Continental inland saline grass and herb-dominated habitats

08F08 Thero-Camphorosmion
Hyper-saline annual chenopod-dominated communities on solonetz soils of the Pannonian region and the central Balkans

08G SCORZONERO-JUNCALIA GERARDII
Moist halophytic meadows and pastures of south-east central and eastern Europe

08G01 Agrostio stoloniferae-Beckmannion eruciformis
Meadows and pastures of moist or wet slightly saline soils in the floodplains of rivers in the steppe zone of southern Russia
E3.4 Moist or wet eutrophic and mesotrophic grassland

08G02 Beckmannion eruciformis
Subsaline, nutrient-rich vegetation of flooded meadows of the Pannonian region
E6.2 Continental inland saline grass and herb-dominated habitats

08G03 Halo-Trichophorion pumili
Swards of Carpathian travertine sediments around mineral springs
D6.1 Inland saltmarshes

08G04 Scorzoner-Juncion gerardii
Moist halophytic meadows and pastures of south-east central and eastern Europe
D6.1 Inland saltmarshes
E6.2 Continental inland saline grass and herb-dominated habitats

09 CRITHMO-STATICETEAE
Communities of rocks and walls influenced by salt-spray from the sea

09A CRITHMO-ARMERIETALIA MARITIMAE
Open communities of crevices on rocky seaciffs much splashed by salt spray

09A01 Cochleario officinalis-Armerion maritimae
Open communities of shaded crevices on spray-splashed sea-cliffs
B3.3 Rock cliffs, ledges and shores, with halophytic angiosperms

09A02 Crithmo-Armerion maritimae
Open communities of crevices on rocky seaciffs much splashed by salt spray
B3.3 Rock cliffs, ledges and shores, with halophytic angiosperms

09B CRITHMO-STATICETALIA
Vegetation of the (predominantly limestone) cliffs in the salt-spray zone of the Mediterranean

09B01 Anthyllidion barbae-jovis
Subhalophilous dwarf scrub on limestone cliffs of the southern Italian coast

09B02 Astragalion tragacanthae
Halophilous rupicolous vegetation of Catalonian coasts

09B03 Crithmion maritimi
Open communities on exposed salt-spray habitats of West Mediterranean coasts

09B04 Crithmo-Daucion halophili
Sea lavender communities of salt-spray habitats on coasts of southern Iberia and northern Morocco

09B05 Crithmo-Frankenion hirsutae
Sea lavender communities on exposed cliffs of peninsular Greece and the Aegean islands

**09B06**

**Crithmo-Staticion**
Sea lavender communities on exposed cliffs on the coasts of the Tyrrhenian and Adriatic Sea

- **B3** Rock cliffs, ledges and shores, including the supralittoral
- **B3.3** Rock cliffs, ledges and shores, with halophytic angiosperms
- **F7.1** West Mediterranean spiny heaths
- **F7.2** Central Mediterranean spiny heaths

**09B07**

**Crucianellion rupestris**
Coastal dwarf scrub on cliffs of Libya and islands in the south-central Mediterranean

**09B08**

**Kochio prostratae-Limonion meyeri**
Plant communities of rocks affected by salt-spray in Crimea

- **B3.3** Rock cliffs, ledges and shores, with halophytic angiosperms

**09B09**

**Launaeon cervicornis**
Dwarf-shrub vegetation of lightly spray-splashed cliffs of the Balearic Islands

- **F7.1** West Mediterranean spiny heaths

**09B10**

**Plantagini-Thymelaeion hirsutae**
Slightly aerobic vegetation of clayey coastal habitats of the western Mediterranean

**09C**

**FRANKENIO-ASTYDAMIETALIA**
Vegetation of salt-sprayed coastal cliffs of the Macaronesian Isles

**09C01**

**Festucion petraeae**
Vegetation of salt-sprayed sea-cliffs on the Azores

- **B3.3** Rock cliffs, ledges and shores, with halophytic angiosperms

**09C02**

**Frankenio-Astydamion latifoliae**
Vegetation of salt-sprayed sea-cliffs of Madeira

- **B3.3** Rock cliffs, ledges and shores, with halophytic angiosperms

**10**

**CAKILETEA MARITIMAE**
Pioneer vegetation of nitrophilous summer annuals on strandlines of sand and shingle beaches

**10A**

**Atriplicetalia littoralis**
Halo-nitrophilous strandline communities of the mid-latitude Atlantic and Baltic shores

**10A01**

**Atriplici laciniatae-Salsalion kali**
Atlantic and Baltic annual nitrophilous forb high-beach and dune communities

- **B1.1** Angiosperm communities of sand beach driftlines
- **B2.1** Shingle beach driftline habitats

**10A02**

**Atriplicion littoralis**
Communities of salt-marsh and strandlines sometimes mixed with but not covered by sand

- **A2.6** Coastal saltmarshes and saline reedbeds
- **B1.1** Angiosperm communities of sand beach driftlines
- **B1.2** Sand beaches above the driftline

**10A03**

**Thero-Atriplicion**
Pioneer annual feeably halophyte vegetation of the Mediterranean

- **A2.6** Coastal saltmarshes and saline reedbeds

**10B**

**CAKILETALIA EDENTULAE**
Halo-nitrophilous strandline communities of the high-latitude (boreal)-Atlantic shores

**10B01**

**Cakilion edentulae**
Halo-nitrophilous strandline communities of the high-latitude (boreal)-Atlantic shores

B1.1 Angiosperm communities of sand beach driftlines
B1.2 Sand beaches above the driftline
B2.1 Shingle beach driftline habitats

10C EUPHORBIETALIA PEPLIS
Halo-nitrophilous strandline communities of the Mediterranean and Black Sea shores

10C01 Cakilion euxinae
Pontic halo-nitrophilous strandline communities
B1.1 Angiosperm communities of sand beach driftlines

10C02 Euphorbion peplis
Mediterranean and Cantabro-Atlantic halo-nitrophilous strandline communities
B1.1 Angiosperm communities of sand beach driftlines

11 HONCKENYO-ELYMETEA ARENARII
Vegetation of coastal shingle, boulders or rocky cliffs, enriched with organic detritus, of boreal-Atlantic shores

11A ELYMETALIA GIGANTEI
North Pontic and central Asian beach and dune communities

11A01 Elymion gigantei
Black Sea coastal dune communities
B1.1 Angiosperm communities of sand beach driftlines
B1.3 Shifting coastal dunes

11B HONCKENYO-ELYMETALIA
Vegetation of coastal shingle, boulders or rocky cliffs enriched with organic detritus

11B01 Agropyro-Rumicion
Boreo-atlantic pioneer communities of beaches and dunes
D5.3 Swamps and marshes dominated by [Juncus effusus] or other large [Juncus] spp.
E3.4 Moist or wet eutrophic and mesotrophic grassland

11B02 Honckenyo-Crambion maritimae
Communities of enriched coastal habitats, mostly boreal
A2.6 Coastal saltmarshes and saline reedbeds
B1.1 Angiosperm communities of sand beach driftlines
B2.3 Upper shingle beaches with open vegetation

11B03 Honckenyo-Elymion arenarii
North Atlantic and Baltic dune grass and forb communities
B1.2 Sand beaches above the driftline
B1.3 Shifting coastal dunes
H5.3 Clay, silt, sand and gravel habitats with very sparse or no vegetation

12 AMMOPHILETEA
Vegetation of moving and fixed dominated by rhizomatous grasses, sedges and chamaephytic dwarf shrubs

12A AMMOPHILETALIA
Vegetation of coastal dunes dominated by rhizomatous grasses or sedges

12A01 Agropyrion juncei
Pioneer vegetation of coastal foredunes in the Mediterranean
B1.3 Shifting coastal dunes

12A02 Agropyro-Minuartion peploidis
Pioneer vegetation of coastal foredunes of North Atlantic coasts
B1.3 Shifting coastal dunes

**Ammophilion arundinaceae**
Mediterranean and Atlantic grass-dominated dune communities

B1.2 Sand beaches above the driftline

B1.3 Shifting coastal dunes

**Sporobolion arenarii**
Open Sporobolus swards on young coastal dunes of the Mediterranean

12B **CRUCIANELLETALIA MARITIMAE**
Mediterranean and Cantabro-Atlantic communities of stabilised coastal hind dunes

12B01 **Crucianellion maritimae**
West Mediterranean chamaephyte hind-dune communities

12B02 **Euphorbio portlandicae-Helichryson stoechadis**
Thermo-atlantic chamaephyte hind-dune communities rich in lichens and bryophytes

12B03 **Helichryson picardii**
Ibero-atlantic chamaephyte hind-dune communities

12B04 **Sileno thymifoliae-Jurineion kileae**
Chamaephyte-rich vegetation of hind-dunes of southern shores of the Black Sea, including European Turkey

C ROCK CREVICE, SCREE AND BOULDER-FIELD VEGETATION

13 **ASPLENIETEA TRICHOMANIS**
Open vegetation with ferns and mosses in rock and wall crevices (and rarely on screes)

13A **AMPHORICARPETALIA**
Limestone crevice communities of montane to alpine belts of the Dinarides

13A01 **Amphoricarpion autariati**
Limestone crevice communities of subalpine and alpine belts of the Dinarides

13A02 **Amphoricarpion bertiscei**
Communities of shady limestone crevices of the subalpine belt of the southeasten Dinaric Mountains

13A03 **Amphoricarpion neumayeri**
Limestone crevice communities of subalpine belts of the coastal southeastern Dinarides

13B **ANDROSACETALIA VANDELLII**
Crevice vegetation of siliceous rocks at high altitudes of temperate and boreal Europe

13B01 **Androsacion vandelli**
Open vegetation of siliceous rocks in the alpine and nival belt

13B02 **Cheilanthon hispanicus**
Fern-rich crevice communities of the Iberian peninsula

13B03 **Dianthon gratianopolitanus**
Montane-subalpine basaltic rupicolous vegetation of Cantal (central France)

13B04 **Potentillion crassinerviae**
Cyrno-Sardean open vegetation of silicate rocks

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Crevice vegetation of the Balearic Islands

*H3.2 Basic and ultra-basic inland cliffs*

13E04 **Campanulion velutinae**
Limestone crevice vegetation of sunny rocks of southernmost Spain and northern Morocco

13E05 **Centaureion pentadactylis**
Xerophilous crevice vegetation of Calabria

13E06 **Cosentinio bivalentis-Lafuenteion rotundifoliae**
Crevice vegetation of southern Spain

13E07 **Dianthion rupicolae**
Mesophilous crevice vegetation of Sicily and Calabria

*H3.2 Basic and ultra-basic inland cliffs*

13E08 **Saxifragion boissiero-reuteranae**
Crevice vegetation of the Iberian Levantine area

13F01 **Antirrhinion asarinae**
Colline to sub-montane crevice vegetation in the Massif Central

*H3.1 Acid siliceous inland cliffs*

13F02 **Asplenio billotii-Umbilicion rupestris**
Crevice vegetation of siliceous rocks in the Atlantic regions of France

13F03 **Asplenion septentrionalis**
Low-altitude fern-rich crevice vegetation in the Carpathians and Hercynicum

*H3.1 Acid siliceous inland cliffs*

13F04 **Asplenion serpentini**
Fern-rich crevice vegetation of serpentine rocks

*E1.2 Perennial calcareous grassland and basic steppes*

*H3.1 Acid siliceous inland cliffs*

13F05 **Hypno-Polypodion vulgaris**
Fern- and moss-rich communities of shaded crevices in the colline to sub-montane belts of central Europe

*H3.1 Acid siliceous inland cliffs*

13G01 **Asperulion garganicae**
Vegetation of thermophilous calcareous crevices of coastal Apulia

*H3.2 Basic and ultra-basic inland cliffs*

13G02 **Centaureo-Campanulion**
Thermophilous vegetation of calcareous crevices of the northern Adriatic coast

*H3.2 Basic and ultra-basic inland cliffs*

13G03 **Centaureo-Portenschlagiellion**
Thermophilous vegetation of calcareous crevices of the central and southern Adriatic coast

*H3.2 Basic and ultra-basic inland cliffs*

13H01 **Cheilanthion pulchellae**
Mediterranean thermophilous crevice communities of acid and basic rocks
13H02 **Phagnalo saxatilis-Cheilanthon maderensis**
Macaronesian (Canarian and Madeiran) crevice vegetation
  *H3.1 Acid siliceous inland cliffs*

13H03 **Polygonon icarici**
Crevice vegetation of sunny siliceous rocks in the southern Aegean

13I **Cirisetaalia chamaepeucis**
Crevice vegetation of limestone fissures of the thermomediterranean Aegean

13I01 **Capparo-Amaracion**
Endemic crevice communities of the Sporades
  *H3.2 Basic and ultra-basic inland cliffs*

13I02 **Inulion heterolepidis**
Endemic crevice communities of the Dodecanese
  *H3.2 Basic and ultra-basic inland cliffs*

13I03 **Petromarulo-Centaurion argenteae**
Endemic crevice communities of Crete
  *H3.2 Basic and ultra-basic inland cliffs*

13J **Moltkeetalia petraeae**
Crevice vegetation of limestone fissures of the southern Adriatic

13J01 **Edraianthion**
Crevice vegetation of limestone fissures of the southern Adriatic
  *H3.2 Basic and ultra-basic inland cliffs*

13K **Onosmetalicia frutescens**
Open vegetation of thermophilous limestone rocks of the Ionian coastal region

13K01 **Campanulion versicoloris**
Open thermophilous vegetation of limestone rocks of the southern Ionian region
  *H3.2 Basic and ultra-basic inland cliffs*

13L **Parietarietalia**
Crevice vegetation of walls in temperate Europe, the Middle East and North Africa

13L01 **Brassicion oleraceae**
Halo-nitrophilous communities of exposed cliffs and maritime walls of the Atlantic coast of Iberia

13L02 **Cymbalario-Asplenion**
Fern-rich communities of crevices of sunny walls of regions with mild winter climate
  *H3.2 Basic and ultra-basic inland cliffs*

13L03 **Lavaterion maritimae**
Crevice vegetation of walls in western mediterranean regions

13L04 **Parietario-Galion muralis**
Nitrophilous vegetation of walls in the Mediterranean, sub-Mediterranean and Atlantic regions

13M **Petrocoptidetalia pyrenaicae**
Calcareous crevice vegetation of the western Pyrenees

13M01 **Petrocoptidion glaucifoliae**
Calcareous crevice vegetation in northern Spain

13M02 **Valeriano-Petrocoptidion**
Calcareous crevice vegetation of the western Pyrenees

13N **Petromaruletalia pinnati**
Endemic crevice vegetation on limestones of Crete

13N01 **Asterion creticae**
Low-altitude crevice vegetation of Crete
  *F5.1 Arborescent matorral*
  *F7.4 Hedgehog-heaths*
13N02  **Scutellarion sieberi**  
Mid-altitude crevice vegetation of Crete on limestone  

_H3.2 Basic and ultra-basic inland cliffs_

13O  **POTENTILLETALIA CAULESCENTIS**  
Vegetation of calcareous crevices at high altitudes of the Alps, Carpathians, Apennines, Pyrenees and mountains of the northern Iberian Peninsula

13O01  **Androsaco-Drabion tomentosae**  
Crevice communities of the southern Alps  

_H3.2 Basic and ultra-basic inland cliffs_

13O02  **Asplenio celtiberici-Saxifragion cuneatae**  
Crevice communities of shady rocks in northern Spain  

_H3.4 Wet inland cliffs_

13O03  **Cystopteridion**  
Crevice communities of shaded calcareous rocks in temperate and boreal Europe  

_H3.2 Basic and ultra-basic inland cliffs_  
_H3.4 Wet inland cliffs_

13O04  **Edraiantho graminifolii-Erysimum comati**  
Crevice communities of the subalpine belt in the central Balkans  

_H3.2 Basic and ultra-basic inland cliffs_

13O05  **Gypsophilion petraeae**  
Crevice communities of sunny rocks in subalpine mountains in the southern and eastern Carpathians  

_H3.2 Basic and ultra-basic inland cliffs_

13O06  **Jasionion foliosae**  
Crevice communities of shaded rocks in eastern and south-eastern Spain  

_H3.2 Basic and ultra-basic inland cliffs_

13O07  **Micromeron croatica**  
Crevice communities of sunny subalpine mountains in the northwest Dinarides  

_H3.2 Basic and ultra-basic inland cliffs_

13O08  **Micromeron pulegii**  
Crevice communities of sunny rocks in the montane belt of the westernmost southern Carpathians  

_H3.2 Basic and ultra-basic inland cliffs_

13O09  **Potentillion caulescentis**  
Vegetation of calcareous rocks and crevices of the subalpine belt  

_H3.2 Basic and ultra-basic inland cliffs_

13O10  **Saxifragion australis**  
Vegetation of calcareous rocks and crevices in the Apennines  

_H3.2 Basic and ultra-basic inland cliffs_

13O11  **Saxifragion camposii**  
Vegetation of sunny rocks in high mountains of the Sierra Nevada  

_H3.2 Basic and ultra-basic inland cliffs_

13O12  **Saxifragion lingulatae**  
Vegetation of calcareous rocks and crevices in the Maritime Alps  

_H3.2 Basic and ultra-basic inland cliffs_

13O13  **Saxifragion mediae**  
Vegetation of sunny rocks in the montane to high-alpine belt of the eastern Pyrenees  

_H3.2 Basic and ultra-basic inland cliffs_

13O14  **Saxifragion trifurcato-canaliculatae**  
Vegetation of sunny rocks in the high mountains of northern Spain  

_H3.2 Basic and ultra-basic inland cliffs_
**Violo biflorae-Cystopteridion alpinae**
Vegetation of shaded rocks in the high mountains of northern Spain

**POTENTILLETALIA SPECIOSAE**
Crevice vegetation of sunny situations on limestone rocks in montane to alpine belts in the southern Balkans

**Galion degenii**
Vegetation of sunny rocks on Pindos
*H3.2 Basic and ultra-basic inland cliffs*

**Ramondion nathaliae**
Vegetation of sunny rocks in the alpine belt of eastern Macedonia and Bulgaria
*H3.2 Basic and ultra-basic inland cliffs*

**Saxifragion scardicae**
Endemic calciphilous crevice vegetation of Greek Thessaly
*H3.2 Basic and ultra-basic inland cliffs*

**Silenion auriculatae**
Vegetation of sunny rocks in the Peloponnese
*H3.2 Basic and ultra-basic inland cliffs*

**Sarcocapnion enneaphyllae**
Crevice vegetation of southernmost regions of the Iberian Peninsula

**Sarcocapnion speciosae**
Crevice vegetation of southernmost regions of the Iberian Peninsula

**ADIANTEAE**
Chasmophytic, fern- and moss-rich communities of water-splashed habitats of Mediterranean, sub-Mediterranean and Atlantic regions

**ADIANTEALIA CAPILLI-VENERIS**
Fern-rich chasmophyte communities of water-splashed habitats

**Adiantion**
Chasmophyte fern-rich communities of water-splashed habitats
*C2.1 Springs, spring brooks and geysers*

**Pinguiculion longifoliae**
Endemic communities of mountains in the eastern Pyrenees

**PHAGNALO-RUMICETEA INDURATI**
Saxicolous communities of southern Iberia

**PHAGNALO SAXATILIS-RUMICETALIA INDURATI**
Saxicolous communities of southern Iberia

**Andryalo ramosissimae-Crambion filiformis**
Baetic serpentine-dolomite river gravel and scree communities

**Calendulo lusitanicae-Antirrhinion linkiani**
Saxicolous communities of western and central Portugal

**Melico-Phagnalion intermedii**
Saxicolous communities of southern Spain

**Rumici indurati-Dianthion lusitani**
Xerophytic vegetation of sunny situations

**Saxifragion continentalis**
Vegetation of shady situations

**Sesamoidion suffruticosae**
Saxicolous communities of southern Iberia
THLASPIEA ROTUNDIFOLII
Vegetation of scree and rubble

16A ANDROSACETALIA ALPINAE
Communities of siliceous scree

16A01 Allosuro-Athyron alpestris
Arctic-boreal communities of boulder fields
H2.3 Temperate-montane acid siliceous scree

16A02 Androsacion alpinae
Communities of siliceous-neutral scree and moraines
H2.3 Temperate-montane acid siliceous scree

16A03 Antitrichio-Rhodiolion roseae
Icelandic chionophilous communities of gravel substrates
H2.1 Boreal siliceous scree

16A04 Cerasio-Saxifragion cernuae
Spitzbergen scree and pioneer herb-rich communities
H2.1 Boreal siliceous scree

16A05 Holcion caespitosi
Sierra Nevada alpine scree communities
H2.5 Acid siliceous scree of warm exposures

16A06 Linario saxatilis-Seneconion carpetani
Central and northern Iberian siliceous scree communities
H2.5 Acid siliceous scree of warm exposures

16A07 Poion laxae
Communities of siliceous scree of the Balkans

16A08 Saxifrago stellaris-Oxyrion digynae
Boreal communities of debris washed by snow melt
E4.2 Moss and lichen dominated mountain summits, ridges and exposed slopes

16A09 Senecionion leucophylli
Pyrenean subalpine open scree communities
H2.5 Acid siliceous scree of warm exposures

16B ANDRYALETALIA RAGUSINAE
Southwest European meso-, supra- and sub-mediterranean vegetation of riverine gravel terraces

16B01 Glaucion flavi
Southwest European riverine shingle communities
C3.5 Pioneer and ephemeral vegetation of periodically inundated shores

16B02 Pimpinello-Goufficion
Catalonian submontane riverine gravel communities
H2.6 Calcareous and ultra-basic scree of warm exposures

16B03 Scrophularion sciophilae
Southern Spanish riverine gravel communities
H2.6 Calcareous and ultra-basic scree of warm exposures

16C ARABIDETALIA CAERULEAE
Vegetation of snow-beds on calcareous soils

16C01 Arabidion caeruleae
Vegetation of snow-beds on calcareous soils
E4.1 Snow-patch grassland
F2.1 Snow-patch dwarf willow scrub

16D DRYPIDETALIA SPINOSAE
East Mediterranean and South Balkan oromediterranean scree communities

16D01 Campanulion hawkinsianae
Montane ultramafic and flysch scree communities of the Pindos Mountains (Greece)

16D02  **Peltarion alliaceae**
Balkan montane limestone scree communities

16D03  **Silenion caesiae**
High-altitude limestone scree communities of peninsular Greece

16D04  **Silenion marginatae**
Dinaric-Friulian montane base-rich scree communities

16E  **EPILIOBIETALIA FLEISCHERI**
Communities of montane riverine gravel terraces of temperate mountain ranges

16E01  **Calamagrostion pseudophragmitis**
Pyrenean high-altitude vegetation of riverine gravel terraces

16E02  **Salicion incanae**
Alpine and Carpathian alpine and subalpine river gravel communities

16F  **GALEOPSIELTALIA**
Pyrenean to Carpathian sub-montane siliceous scree communities

16F01  **Galeopsion pyrenaicae**
Pyrenean submontane siliceous scree communities

16F02  **Galeopsion segetum**
Praealpic submontane siliceous scree communities

16G  **GALIO-PARIETARIALIA OFFICINALIS**
Thermophilous calcareous scree communities of colline to montane belts

16G01  **Leontodontion hyoseroidis**
Communities of low-altitude calcareous scree of eastern France

16G02  **Parietarion officinalis**
Carpathian scree vegetation of steep slopes of forested gorges

16G03  **Scrophularion juratensis**
Communities of low-altitude calcareous scree of the Jura

16G04  **Stipion calamagrostis**
Thermophilous communities of calcareous scree

16G05  **Teucrion montani**
East Carpathian montane open scree communities

16H  **POLYSTICHETALIA LONCHITIDIS**
Fern-rich vegetation of calcareous and siliceous rocks in the Pyrenees and Alps

16H01  **Arrhenatherion sardoi**
Oromediterranean grassy scree of Corsica

16H02  **Dryopteridion oreadis**
Pyrenean and Apennine subalpine siliceous scree and moraine communities

16H03  **Petasition paradoxi**
Carpathian to Pyrenean limestone gorge and montane scree communities

H2.4 Temperate-montane calcareous and ultra-basic screes

H2.6 Calcareous and ultra-basic screes of warm exposures

16I SCROPHULARIO-HELICHRYSETALIA
South Italian thermophilous scree communities

16I01 Euphorbion rigidae
Low-altitude Calabro-Sicilian pioneer communities of riverine gravel banks

16I02 Linarion purpureae
Sicilian montane scree communities

H2.6 Calcareous and ultra-basic screes of warm exposures

16J THLASPIETALIA ROTUNDIFOLII
Alpine and subalpine calcareous scree communities

16J01 Arenarion norvegicae
Icelandic and Svalbard base-rich to neutral scree and moraine communities

H2 Screes

H2.2 Boreal limestone screes

16J02 Bunion alpini
Dinaric (Velebit) alpine chionophilous scree communities

H2.6 Calcareous and ultra-basic screes of warm exposures

16J03 Drabion hoppeanae
Alpine neutral to calcareous slate scree communities

H2.4 Temperate-montane calcareous and ultra-basic screes

16J04 Iberidon spathulatae
Pyrenean calcareous scree communities

H2.6 Calcareous and ultra-basic screes of warm exposures

16J05 Iberido-Linarion propinqueae
Oro-Cantabrian and west Pyrenean thermophilous calcareous scree communities

H2.6 Calcareous and ultra-basic screes of warm exposures

16J06 Linario-Festucion dimorphae
Central and southern Apennine montane calcareous scree communities

H2.6 Calcareous and ultra-basic screes of warm exposures

16J07 Linario filicaulis
Calcareous scree communities of high altitudes of the Cantabrian Mountains

F2.3 Subalpine deciduous scrub

H2.5 Acid siliceous screes of warm exposures

H2.6 Calcareous and ultra-basic screes of warm exposures

16J08 Papaverion tatrici
West Carpathian alpine and subalpine calcareous scree communities

H2.4 Temperate-montane calcareous and ultra-basic screes

16J09 Papavero-Thymion pulcherrimi
Eastern and southern Carpathian alpine base-rich scree communities

H2.4 Temperate-montane calcareous and ultra-basic screes

16J10 Platycapno saxicolae-Iberidion granatensis
Oro- and supramediterranean scree vegetation of Granada

H2.6 Calcareous and ultra-basic screes of warm exposures

16J11 Saxifragion praetemissae
Oro-Cantabrian and Pyrenean vegetation of neutral screes

H2.6 Calcareous and ultra-basic screes of warm exposures

16J12 Saxifragion prenjae
Subalpine chionophilous calcareous scree communities of the Dinarides

H2.6 Calcareous and ultra-basic screes of warm exposures

16J13 Thlaspion rotundifolii
Vegetation of calcareous screes of subalpine and alpine belts of the Alps and Carpathians

16J14 **Thlaspion stylosi**
Southern Apennine calcareous scree communities

16J15 **Veronico-Papaverion degenii**
Endemic alpine limestone scree communities of the Pirin Mountains (Bulgaria)

16K **VIOLETALIA CALAMINARIAE**
Swards on soils rich in heavy metals, natural or anthropogenic

16K01 **Armerion halleri**
North-central European heavy metal tolerant communities of spoil heaps

16K02 **Thlaspion calaminariae**
Swards on soils rich in heavy metals, mostly in western Europe

**D FRESHWATER AQUATIC VEGETATION**

17 **LEMNETEA**
Free-floating duckwee communitys of still, relatively nutrient-rich, fresh waters in warmer parts of Europe

17A **LEMNETALIA MINORIS**
Free-floating duckwee communitys of still, relatively nutrient-rich, fresh waters

17A01 **Lemnion minoris**
Duckweed communities of eutrophic and hypertrophic waters

17A02 **Lemnion trisulcae**
Duckweed and liverwort communities of shallow, more mesotrophic waters

17A03 **Lemno minoris-Hydrocharition morsus-ranae**
Communities of free-floating macrophytes in fairly nutrient-rich waters

18 **CHARETAEA FRAGILIS**
Submerged stonewort swards

18A **CHARETALIA HISPIDAE**
Submerged stonewort swards

18A01 **Charion fragilis**
Submerged stonewort swards of lime-rich freshwaters

18A02 **Charion vulgaris**
Submerged stonewort swards of more eutrophic waters
18B **LAMPROTHAMNIA PAPULOSI**
Submerged stonewort swards of brackish to hyper-saline waters

18B01 **Charion canescens**
Submerged stonewort swards of brackish to hyper-saline waters

- A4.5 Shallow sublittoral sediments dominated by angiosperms
- C1.5 Permanent inland saline and brackish lakes, ponds and pools

18C **NITELLETALIA FLEXILIS**
Submerged stonewort swards of less lime-rich freshwaters

18C01 **Nitellion flexilis**
Submerged stonewort swards of lime-rich freshwaters

- C1.1 Permanent oligotrophic lakes, ponds and pools
- C1.2 Permanent mesotrophic lakes, ponds and pools
- C1.4 Permanent dystrophic lakes, ponds and pools

18C02 **Nitellion syncarpae-tenuissimae**
Submerged stonewort swards of lime-rich freshwaters

- C1.1 Permanent oligotrophic lakes, ponds and pools
- C1.2 Permanent mesotrophic lakes, ponds and pools
- C1.4 Permanent dystrophic lakes, ponds and pools

19 **POTAMETEA**
Communities of rooted, floating or submerged plants in mesotrophic and eutrophic fresh waters

19A **CALLITRICO-POTAMETALIA**
Crosswort, crowfoot and milfoil vegetation of moving waters and water margins

19A01 **Ranunculion fluitantis**
Crowfoot and milfoil vegetation of moving waters

- C1.1 Permanent oligotrophic lakes, ponds and pools
- C1.2 Permanent mesotrophic lakes, ponds and pools
- C1.3 Permanent eutrophic lakes, ponds and pools
- C1.4 Permanent dystrophic lakes, ponds and pools
- C1.6 Temporary lakes, ponds and pools (wet phase)
- C1.7 Springs, spring brooks and geysers
- C2.1 Permanent non-tidal, fast, turbulent watercourses
- C2.3 Permanent non-tidal, slow, smooth-flowing watercourses

19A02 **Ranunculion aquatilis**
Crosswort vegetation of shallow water and margins of streams, ditches and pools

- C1.1 Permanent oligotrophic lakes, ponds and pools
- C1.2 Permanent mesotrophic lakes, ponds and pools
- C1.3 Permanent eutrophic lakes, ponds and pools
- C1.4 Permanent dystrophic lakes, ponds and pools
- C1.5 Permanent inland saline and brackish lakes, ponds and pools
- C1.6 Temporary lakes, ponds and pools (wet phase)
- C2.1 Springs, spring brooks and geysers
- C2.2 Permanent non-tidal, fast, turbulent watercourses

19B **POTAMETALIA**
Communities of rooted, floating or submerged plants in mesotrophic and eutrophic fresh waters

19B01 **Ceratophyllum demersi**
Communities of submerged free-floating macrophytes
19B02  **Nelumbo nuciferae**  
Macrophyte communities in the Volga Delta dominated by *Nelumbo nucifera*  

- **C1.1 Permanent oligotrophic lakes, ponds and pools**  
- **C1.2 Permanent mesotrophic lakes, ponds and pools**  
- **C1.3 Permanent eutrophic lakes, ponds and pools**  
- **C1.4 Permanent dystrophic lakes, ponds and pools**  
- **C1.6 Temporary lakes, ponds and pools (wet phase)**

19B03  **Nymphaeion albae**  
Communities of rooted aquatics with floating leaves in sheltered nutrient-rich fresh water  

- **C1.1 Permanent oligotrophic lakes, ponds and pools**  
- **C1.2 Permanent mesotrophic lakes, ponds and pools**  
- **C1.3 Permanent eutrophic lakes, ponds and pools**  
- **C1.4 Permanent dystrophic lakes, ponds and pools**  
- **C1.6 Temporary lakes, ponds and pools (wet phase)**

19B04  **Parvopotamion**  
Rooted aquatic communities in moderate to deep standing water, often open to winds and waves  

- **C1.1 Permanent oligotrophic lakes, ponds and pools**  
- **C1.2 Permanent mesotrophic lakes, ponds and pools**  
- **C1.3 Permanent eutrophic lakes, ponds and pools**  
- **C1.4 Permanent dystrophic lakes, ponds and pools**  
- **C1.6 Temporary lakes, ponds and pools (wet phase)**

19B05  **Magnopotamion**  
Vegetation dominated by floating rooted broad-leaved *Potamogeton* species  

- **C1.1 Permanent oligotrophic lakes, ponds and pools**  
- **C1.2 Permanent mesotrophic lakes, ponds and pools**  
- **C1.3 Permanent eutrophic lakes, ponds and pools**  
- **C1.4 Permanent dystrophic lakes, ponds and pools**

19B06  **Utricularion vulgaris**  
Aquatic communities in sheltered, rather nutrient-rich, standing water

19C  **Zannichellietales pedicellatae**  
Communities of rooted aquatics in brackish waters

19C01  **Zannichellion pedicellatae**  
Communities of rooted aquatics in brackish waters  

- **A4.5 Shallow sublittoral sediments dominated by angiosperms**  
- **C1.1 Permanent oligotrophic lakes, ponds and pools**  
- **C1.2 Permanent mesotrophic lakes, ponds and pools**  
- **C1.3 Permanent eutrophic lakes, ponds and pools**  
- **C1.4 Permanent dystrophic lakes, ponds and pools**  
- **C1.5 Permanent inland saline and brackish lakes, ponds and pools**  
- **C1.6 Temporary lakes, ponds and pools (wet phase)**

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**E  SPRINGS, SHORELINE AND SWAMP VEGETATION**

20  **Montio-Cardaminetea**  
Vegetation of cold springs, commonly dominated by bryophytes

20A  **Cardamino-Chrysosplenietalia**
Vegetation of soft-water springs of the sub-montane to montane belts of central Europe

20A01 **Caricion remotae**
Soft-water spring communities dominated by phanerogams
  C2.1 Springs, spring brooks and geysers

20A02 **Lycopodo-Cratanerion commutati**
Nutrient-rich vegetation of lime-rich tepid springs at lower altitudes
  C2.1 Springs, spring brooks and geysers

20B **MONTIO-CARDAMINETALIA**
Vegetation of cold springs, commonly dominated by bryophytes

20B01 **Cardamino nymannii-Saxifragion foliolosae**
Water-spring communities of Spitzbergen
  C2.1 Springs, spring brooks and geysers

20B02 **Cardamino-Montion**
Spring vegetation of base-poor waters
  C2.1 Springs, spring brooks and geysers

20B03 **Cratoneurion commutati**
Calcareous spring communities, commonly dominated by mosses
  C2.1 Springs, spring brooks and geysers

20B04 **Dermatocarpion**
Water-splashed epiphytic lichen communities
  C2.1 Springs, spring brooks and geysers

20B05 **Epilobio nutantis-Montion**
Sub-atlantic moss-rich vegetation of oligotrophic, lime-poor springs
  C2.1 Springs, spring brooks and geysers

20B06 **Myosotidion stoloniferae**
Communities of oligotrophic springs in northern Spain
  C2.1 Springs, spring brooks and geysers

20B07 **Philonotidion seriatae**
Communities of oligotrophic springs of the Alps
  C2.1 Springs, spring brooks and geysers

21 **ISOÉTO-LITTORELLETEA**
Hairgrass swards and bladderwort and bog moss communities in oligotrophic waters

21A **LITTORELLETALIA**
Hairgrass swards and related communities in nutrient-poor, standing or slow-flowing waters

21A01 **Deschampsion litoralis**
Shore hair-grass communities
  C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation

21A02 **Eleocharition acicularis**
Vegetation of fluctuating waters with loamy soils in boreal and continental Europe
  C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation

21A03 **Hyperico elodis-Sparganion**
Vegetation of soakways and shallow, fluctuating, mesotrophic to oligotrophic standing waters
  B1.8 Moist and wet dune slacks
  C1.1 Permanent oligotrophic lakes, ponds and pools
  C1.2 Permanent mesotrophic lakes, ponds and pools
  C1.3 Permanent eutrophic lakes, ponds and pools
C1.4 Permanent dystrophic lakes, ponds and pools
C1.6 Temporary lakes, ponds and pools (wet phase)
C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation

21A04 Isoëtion lacustris
Quillwort vegetation of deeper, nutrient-poor waters of stony shores
C1.6 Temporary lakes, ponds and pools (wet phase)
C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation

21A05 Littorellion uniflorae
Water lobelia and quillwort swards in nutrient-poor standing waters
C1.6 Temporary lakes, ponds and pools (wet phase)
C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation

21A06 Potamion graminei
Rooted aquatic communities in nutrient-poor, moderate to deep, standing or slow-flowing waters
C1.1 Permanent oligotrophic lakes, ponds and pools
C1.2 Permanent mesotrophic lakes, ponds and pools
C1.3 Permanent eutrophic lakes, ponds and pools
C1.4 Permanent dystrophic lakes, ponds and pools
C1.6 Temporary lakes, ponds and pools (wet phase)

21B UTRICULARIETALIA INTERMEDIIO-MINORIS
Bladderwort and bog-moss communities

21B01 Scorpidio-Utricularion minoris
Bladderwort communities of lime-rich bog pools and soakways
C1.1 Permanent oligotrophic lakes, ponds and pools
C1.2 Permanent mesotrophic lakes, ponds and pools
C1.4 Permanent dystrophic lakes, ponds and pools

21B02 Sphagno-Utricularion
Bladderwort and bog-moss communities of dystrophic peaty waters
C1.1 Permanent oligotrophic lakes, ponds and pools
C1.2 Permanent mesotrophic lakes, ponds and pools
C1.4 Permanent dystrophic lakes, ponds and pools

22 ISOETO-NANOJUNCETEA
Pioneer ephemeral dwarf-cyperaceous vegetation on periodically flooded soils

22A CRYSIDETALIA ACULEATAE
Therophyte vegetation of inland salt pans of the Sarmato-Pannonian region

22A01 Cypero-Spergularion salinae
Annual halophilous vegetation of bottoms and edges of drained temporary pools of the Pannonian basin
A2.6 Coastal saltmarshes and saline reedbeds
E6.2 Continental inland saline grass and herb-dominated habitats

22A02 Polygono salsuginei-Crypsion aculeatae
Communities of depressions on the surface of spring muds in the Crimea

22A03 Puccinellion peisonis
Endemic pioneer inland salt-marsh swards of the Neusiedler See
E6.2 Continental inland saline grass and herb-dominated habitats

22B ISOETALIA
Pioneer ephemeral dwarf-cyperaceous vegetation on periodically flooded soils in the Mediterranean

22B01 Agrostion salmanticae
Communities of acid sands in hollows (vallicares) in north-west Iberia

\[\text{C3.5 Pioneer and ephemeral vegetation of periodically inundated shores}\]

\[\text{Isoëtion}\]
Temporary pools with quillworts in the Mediterranean zone

\[\text{Presliion cervinae}\]
Temporary pools on sandy soils in the Mediterranean zone

\[\text{B1.8 Moist and wet dune slacks}\]
\[\text{C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation}\]
\[\text{C3.5 Pioneer and ephemeral vegetation of periodically inundated shores}\]

\[\text{22C N ANOCYPERETALIA}\]
Pioneer ephemeral dwarf-cyperaceous vegetation on periodically flooded soils in temperate Europe

\[\text{Cicendio-Solenopson laurentiae}\]
Central and east Mediterranean ephemeral communities of oligotrophic temporarily flooded depressions

\[\text{Cicendion}\]
West Mediterranean-Atlantic ephemeral communities of oligotrophic temporarily flooded depressions

\[\text{Elatini macropodae-Damasonion alismae}\]
Mediterranean-Atlantic mesophytic ephemeral communities of temporary flooded depressions and edges of water bodies

\[\text{Eleocharition soloniensis}\]
Mesotrophic ephemeral communities of temporarily flooded depressions and edges of water bodies with continental distribution

\[\text{C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation}\]
\[\text{C3.5 Pioneer and ephemeral vegetation of periodically inundated shores}\]

\[\text{22C01 Lythriion tribracteati}\]
Communities of long-lasting temporary summer pools in inland Iberia

\[\text{Nanocyperion}\]
Pioneer dwarf cyperaceous and therophyte communities on bare, periodically flooded ground

\[\text{C2.1 Springs, spring brooks and geysers}\]
\[\text{C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation}\]
\[\text{C3.5 Pioneer and ephemeral vegetation of periodically inundated shores}\]

\[\text{22C07 Ranunculion omiophyllo-hederacei}\]
Pioneer therophyte communities of shallow, mesotrophic water in southwestern Europe

\[\text{Verbenion supinae}\]
Submediterranean and Mediterranean periodically flooded muddy, nutrient-rich and saline banks

\[\text{C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation}\]
\[\text{E5.4 Moist or wet tall-herb and fern fringes and meadows}\]

\[\text{23 PHRAGMITO-MAGNOCARICETEA}\]
Swamp, fen and marginal vegetation of fresh or brackish waters, dominated by graminoids, sedges and forbs

\[\text{23A NASTURTO-GLYCERIETALIA}\]
Vegetation dominated by mixtures of grasses and herbs along fresh-water streams and ditch banks
23A01  **Glycerio-Sparganion**  
Vegetation dominated by small grasses and herbs along stream and ditch banks  
* C3.1 Species-rich helophyte beds  

23A02  **Phalaridion arundinaceae**  
Reed canary-grass vegetation of water margins, often with fluctuation  
* C3.2 Water-fringing reedbeds and tall helophytes other than canes  
* C3.5 Pioneer and ephemeral vegetation of periodically inundated shores  
* D5.1 Reedbeds normally without free-standing water  

23B  **PHRAGMITETALIA**  
Swamp and fen vegetation dominated by graminoids, sedges and forbs, often species poor  

23B01  **Carici-Rumicion hydrolapathi**  
Vegetation with a floating raft of sedges in eutrophic waters  
* D2.3 Transition mires and quaking bogs  
* D5.2 Beds of large sedges normally without free-standing water  

23B02  **Caricion broterianae**  
Iberio-Atlantic swamps of turbulent waters  
* D5.2 Beds of large sedges normally without free-standing water  

23B03  **Deschampsion argenteae**  
Herbaceous vegetation of edges of flowing waters of Madeira  

23B04  **Magnocaricion elatae**  
Vegetation dominated by bulky sedges on peaty soils  
* C3.2 Water-fringing reedbeds and tall helophytes other than canes  
* D2.2 Poor fens  
* D2.3 Transition mires and quaking bogs  
* D5.2 Beds of large sedges normally without free-standing water  

23B05  **Oenanthion aquaticae**  
Vegetation of small emergent herbs on mud in and by the shallows of streams  
and ponds  
* C1.1 Permanent oligotrophic lakes, ponds and pools  
* C3.2 Water-fringing reedbeds and tall helophytes other than canes  
* D5.1 Reedbeds normally without free-standing water  

23B06  **Phragmition communis**  
Swamps and fens dominated by tall graminoids in standing or gently moving  
waters and winter-flooded fens  
* C3.2 Water-fringing reedbeds and tall helophytes other than canes  
* D5.1 Reedbeds normally without free-standing water  
* D5.2 Beds of large sedges normally without free-standing water  

23C  **SCIROPETALIA MARITIMI**  
Graminoid and sedge vegetation of brackish waters  

23C01  **Cirsio brachycephali-Bolboschoenion**  
Tall herb-rich reed vegetation on brackish soils in the Pannonian region  
* C3.2 Water-fringing reedbeds and tall helophytes other than canes  
* D5.1 Reedbeds normally without free-standing water  

23C02  **Scirpion maritimi**  
Vegetation of flushed depressions in upper salt-marshes of the Atlantic  
* C3.2 Water-fringing reedbeds and tall helophytes other than canes  
* D5.1 Reedbeds normally without free-standing water  

23C03  **Typhion laxmannii**  
Tall-herb communities of slightly salty waters described from the semi-desert  
zone in the Volga Delta
F BOGS AND FENS

24 **SCHUECHZERIO-CARICETEA FUSCAE**
Bog-pool, flush and mire vegetation dominated by small sedges and bryophytes

24A **CARICETALIA DAVALLIANAE**
Small-sedge rich-fen vegetation of oligo-mesotrophic calcareous peaty soils in springs and flushes

24A01 **Caricion atrofuscoco-saxatilis**
Small-sedge rich-fen vegetation of calcareous flushes at high altitudes

24A02 **Caricion davalliana**
Small-sedge rich-fen vegetation of calcareous oligotrophic flushes, soligenous mires and dune slacks at low altitude

24B **CARICETALIA FUSCAE**
Mires developing on mesotrophic and oligomesotrophic peats and peaty mineral soils

24B01 **Anagallido-Juncion bulbosi**
Acidophilous mires of mountains of northern Spain

24B02 **Bellidio-Bellion nivali**
Oromediterranean mires of Corsica

24B03 **Caricion fuscae**
Vegetation of acid oligo-mesotrophic peats or peaty mineral soils of temperate Europe

24B04 **Caricion intricatae**
Oromediterranean acidophilous mires of the Sierra Nevada
24B05 **Narthecion scardici**
Small-sedge fens at high altitudes in the central Balkans
   *D2.2 Poor fens*
24B06 **Sphagno recurvi-Caricion canescentis**
Small-sedge oligotrophic fens at the fringes of bog complexes
24B07 **Sphagno warnstorfiani-Tomenthypnion**
Small-sedge oligo-mesotrophic fens developing over siliceous to base-rich substrates
   *D2.2 Poor fens, D4.1 Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks*
24C **Scheuchzerietalia palustris**
Small-sedge mires developing on oligotrophic and oligo-mesotrophic peats
24C01 **Caricion lasiocarpaceae**
Mires developing on more mesotrophic peats
   *C1.4 Permanent dystrophic lakes, ponds and pools, D1.1 Raised bogs, D2.3 Transition mires and quaking bogs, D4.1 Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks*
24C02 **Rhynchosporion albae**
Vegetation of stagnant, acid, dystrophic waters in pools of Sphagnum bogs on deep peats
   *C1.4 Permanent dystrophic lakes, ponds and pools, D1.1 Raised bogs, D1.2 Blanket bogs, D2.3 Transition mires and quaking bogs*

25 **Oxyccoco-Sphagnetae**
Ombrotrophic bog and wet heathland vegetation of acid oligotrophic peats
25A **Erico-Levetalia**
Atlantic and sub-atlantic raised bogs
25A01 **Ericion tetralicis**
Wet heath and bog vegetation on drying deeper peats or winter-waterlogged peaty intergrades
   *D1.1 Raised bogs, D1.2 Blanket bogs, D2.2 Poor fens, F4.1 Wet heaths*
25A02 **Erico mackaianae-Sphagnion papillosi**
Bogs of the eu-oceanic region of northwestern Iberia
   *D2.3 Transition mires and quaking bogs*
25A03 **Oxyccoco-Ericion tetralicis**
Bog vegetation of deep, wet peats in raised, blanket and valley mires
   *D1.1 Raised bogs, D1.2 Blanket bogs, D2.1 Valley mires, D2.2 Poor fens, F4.1 Wet heaths*
25B **Sphagnetae medii**
Bog communities of sub-contiental regions of Europe
25B01 **Eriophorion vaginati**
Bogs of arctic regions, alpine belt and high altitudes of the boreal region
D1.1 Raised bogs

25B02
**Sphagnion medii**
Bogs of sub-continental and montane regions

D1.1 Raised bogs

G3.E Nemoral bog conifer woodland

25C
**Sphagno-Betuletalia**
Birch and pine open bog woodlands

25C01
**Betulion pubescentsis**
Birch-dominated swampy woodlands

D1.1 Raised bogs

G1.5 Broadleaved swamp woodland on acid peat

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

G3.E Nemoral bog conifer woodland

G5.6 Early-stage natural and semi-natural woodlands and regrowth

25C02
**Ledo-Pinion**
Pine-dominated swampy woodlands

F2.4 [Pinus mugo] scrub

G5.6 Early-stage natural and semi-natural woodlands and regrowth

G TEMPERATE GRASSLANDS, HEATHS AND FRINGE VEGETATION

26
**Molinio-Arrhenatheretalia**
Anthropogenic pastures and meadows on deeper, more or less fertile soils in lowland regions

26A
**Althaeetalia officinalis**
Meadows in the steppe and semi-desert zones of east Europe on moderately saline flooded soils

26A01
**Althaeion officinalis**
Meadows of the Lower Volga valley and surrounding limans on moderately saline flooded soils

26A02
**Euphorbion palustris**
Meadows in the steppe part of the Ural river valley on moderately saline flooded soils

26B
**Arrhenatheretalia**
Pastures and meadows on well-drained relatively fertile mineral soils

26B01
**Arrhenatherion**
Meadows of well-drained, relatively fertile mineral soils at lower altitudes

E2.1 Permanent mesotrophic pastures and aftermath-grazed meadows

E2.2 Coarse permanent grassland and tall herbs, usually mown but little grazed

E3.4 Moist or wet eutrophic and mesotrophic grassland

26B02
**Cynosurion cristati**
Pastures of relatively well-drained, fertile mineral soils at lower altitudes in central and western Europe

E2.1 Permanent mesotrophic pastures and aftermath-grazed meadows

E2.2 Coarse permanent grassland and tall herbs, usually mown but little grazed

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

E3.4 Moist or wet eutrophic and mesotrophic grassland

26B03
**Gaudinio fragilis-Cynosurion cristati**
Thermo-atlantic and supramediterranean mesic meadows of France and Spain
E2.2 Coarse permanent grassland and tall herbs, usually mown but little grazed

26B04  **Pancicion serbicae**  
Thermophilous montane meadows of the central Balkans

26B05  **Phyteumo-Trisetion**  
Meadows of less fertile mineral soils in central Europe with influence of Atlantic climate

   E2.2 Coarse permanent grassland and tall herbs, usually mown but little grazed

   E2.3 Mountain hay meadows

26C  **Cirsietalia vallis-demonis**  
Montane meadows in Sicily and Calabria

26C01  **Plantaginion cupanii**  
Montane mesic meadows in Sicily and Calabria

   E2.2 Coarse permanent grassland and tall herbs, usually mown but little grazed

26D  **Galietalia veri**  
Dry steppic herb-rich meadows of Ukraine and southern Russia

26D01  **Artemision ponticae**  
Steppe meadows of the lower reaches of the Don river floodplain

   E2.5 Meadows of the steppe zone

26D02  **Polygonion krascheninnikovii**  
Meadows of tall herbs on fertile mineral soils of the forest and montane zones of the South Ural

   E2.5 Meadows of the steppe zone

26D03  **Seselion libanotis**  
Steppe meadows of the lower reaches of Ural river floodplain

   E2.5 Meadows of the steppe zone

26D04  **Trifolion montani**  
Dry meadows of forest-steppe and steppe in east Europe and Siberia

   E2.5 Meadows of the steppe zone

26E  **Holoschoenetalia**  
Humid meadows and reed communities in the Mediterranean region

26E01  **Dactylorhizo-Juncion striati**  
Calabro-Sicilian humid meadows of high altitudes

   E1.4 Mediterranean tall-grass and [Artemisia] steppes

26E02  **Deschampsonia mediae**  
Humid pastures on loamy soils

   E3.2 Mediterranean short humid grassland

26E03  **Gaudinio fragilis-Hordeion bulbosi**  
Humid meadows on sandy soils along the Mediterranean coast

26E04  **Molinio-Holoschoenion**  
Reed communities on humid and seasonally sub-saline soils on ancient dune systems

   C3.3 Water-fringing beds of tall canes

   C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation

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

   E3.1 Mediterranean tall humid grassland

26E05  **Sieglingion decumbentis**  
Wet meadows on edges of mountain water courses in Corsica

26F  **Molinietalia**  
Meadows and pastures of moister soils, often peaty
26F01 **Alopecurion pratensis**
Meadows of fresh nutrient-rich soils dominated by graminoids, in floodplains of large rivers in central and eastern Europe
   E2.1 Permanent mesotrophic pastures and aftermath-grazed meadows
   E2.2 Coarse permanent grassland and tall herbs, usually mown but little grazed
   E3.3 Sub-mediterranean humid meadows
   E3.4 Moist or wet eutrophic and mesotrophic grassland

26F02 **Calthion palustris**
Wet meadows and pastures of fertile, often manured soils of western and central Europe
   D5.2 Beds of large sedges normally without free-standing water
   E2.1 Permanent mesotrophic pastures and aftermath-grazed meadows
   E3.4 Moist or wet eutrophic and mesotrophic grassland
   E5.5 Subalpine moist or wet tall-herb and fern habitats

26F03 **Carici distichae-Oenanthon fistulosae**
Submediterranean-atlantic wet meadows of broad valleys of western Europe

26F04 **Cnidion venosi**
Floodplain alluvial meadows of sub-continental regions of central Europe
   E3.4 Moist or wet eutrophic and mesotrophic grassland

26F05 **Deschampsion cespitosae**
Oligohaline moist tussocky meadows of southeast Europe
   E3.4 Moist or wet eutrophic and mesotrophic grassland

26F06 **Filipendulion**
Tall-herb vegetation, seldom mown or grazed, on moist fertile mineral soils and peats
   D5.2 Beds of large sedges normally without free-standing water
   E3.4 Moist or wet eutrophic and mesotrophic grassland
   E5.4 Moist or wet tall-herb and fern fringes and meadows
   E5.5 Subalpine moist or wet tall-herb and fern habitats

26F07 **Juncion acutiflori**
Meadows and pastures of moist peaty mineral soils with flushing or impeded drainage
   E3.4 Moist or wet eutrophic and mesotrophic grassland
   E3.5 Moist or wet oligotrophic grassland

26F08 **Junco-Molinion**
Meadows of moist but fresh soils in western Europe, usually unmanured
   E3.5 Moist or wet oligotrophic grassland

26F09 **Lythro-Euphorbion**
Meadows of moist soils in the river valleys of the semi-desert zone of European Russia
   E3.4 Moist or wet eutrophic and mesotrophic grassland
   E5.4 Moist or wet tall-herb and fern fringes and meadows

26F10 **Molinion caeruleae**
Wet unmanured low-altitude meadows of central Europe
   E3.4 Moist or wet eutrophic and mesotrophic grassland
   E3.5 Moist or wet oligotrophic grassland

26F11 **Trifolion squamosi**
Slightly saline inundated herb-rich meadows of hind-dune habitats
   A2.6 Coastal saltmarshes and saline reedbeds

26F12 **Veronicion longifolii-Lysimachion vulgaris**
Central European sub-continental unmown tall-forb meadows on alluvia of large rivers
26G  **PASPALO-HELEOCHLOETALIA**
Periodically flooded grasslands of muddy alluvia in the Mediterranean region

26G01  **Paspalo-Agrostidion semiverticillati**
Grassy carpets on muddy soils in the western Mediterranean region

26G02  **Trifolio fragiferi-Cynodontion**
Slightly saline flooded disturbed grasslands of the Mediterranean region

26H  **PLANTAGINI-PRUNELLETALIA**
Weedy grasslands on trampled soils of shaded habitats

26H01  **Plantagini-Prunellion**
Weedy grasslands on trampled soils of shaded habitats

26I  **POO ALPINAE-TRISETETALIA**
High-altitude mesic hay meadows of the Alps

26I01  **Poioion alpinae**
Cattle pastures of heavy fertile soils in subalpine belt of the Alps and Carpathians

26I02  **Poioion supinae**
Grasslands of heavily-trampled and overgrazed pastures at higher altitudes in temperate mountains of Europe

26I03  **Triseto-Polygonion bistortae**
Meadows of well-drained, relatively fertile mineral soils in low-input agricultural systems of montane regions

26J  **POTENTILLO-Polygonetalia**
Temporarily flooded disturbed grasslands of temperate Europe

26J01  **Alopecurion utriculati**
Oligohaline mediterranean-subatlantic meadows of western Europe

26J02  **Potentillian anserinae**
Low herb communities of variable habitats with wet-dry, or brackish-fresh conditions

26K  **TRIFOLIO-Hordeetalia**
Amphiadriatic meadows of endorhoeic basins (poljes) and similar periodically-flooded habitats

26K01  **Molinio-Hordeion secalini**
Dalmatian riverine and floodplain damp meadows
E3.3 Sub-mediterranean humid meadows

26K02 Ranunculion velutini
Apennine damp meadows of karstic plains
E3.3 Sub-mediterranean humid meadows

26K03 Trifolion pallidi
Riverine and damp meadows of the northern Dinarides
E3.3 Sub-mediterranean humid meadows

26K04 Trifolion resupinati
Oligohaline flooded meadows in central and southern Balkans and northern Greece
E3.3 Sub-mediterranean humid meadows

27 STIPO GIGANTEAE-AGROSTIETEA CASTELLANAE
Mediterranean-Iberoatlantic meso- to supra-mediterranean perennial grasslands

27A AGROSTIETALIA CASTELLANAE
Iberian perennial pastures of meso- and supra-mediterranean belts

27A01 Agrostio castellanae-Stipion giganteae
Pastures on humic brown soils in the mediterranean zone of Iberia
E1.A Mediterranean dry acid and neutral open grassland

27A02 Agrostion castellanae
Iberian meso- to supra-mediterranean perennial grasslands
E2.4 Iberian summer pastures (vallicares)

27A03 Festucion elegantis
Pastures on humic brown soils in humid Mediterranean mountains in Iberia
E1.8 Mediterranean dry acid and neutral closed grassland

27B FESTUCETALIA JUBATAE
Supra-mediterranean open grasslands of the Azores and Madeira

27B01 Deschampsio maderensis-Parafestucion albidae
Supra-mediterranean open grasslands of Madeira

28 FESTUCO-BROMETEA
Steppes, rocky steppes and sandy grasslands of the sub-continental temperate and sub-boreal regions

28A ASTRAGALO-POTENTILLETALIA
Dry steppic grasslands of the submontane and montane belt of the south-central Balkans

28A01 Armerio-Potentillion
Dry steppic grasslands over siliceous bedrock in the montane belt of Macedonia

28A02 Koelerio-Festucion dalmatica
Dry steppic grasslands over dolomite and ultramafic rock in Serbia

28A03 Saturejo-Thymion
Dry steppic grasslands over ultramafic rocks of Macedonia and south Serbia

28B BRACHYPODIETALIA PHOENICOIDIS
West and central Mediterranean dry perennial meadows and abandoned fields

28B01 Brachypodion phoenicoidis
West and central Mediterranean dry perennial meadows and abandoned fields
E1.2 Perennial calcareous grassland and basic steppes
E5.1 Over-grazed arid Mediterranean garrigues (ermes)

28C BROMETALIA ERECTI
Meso-xerophilous grasslands on deep calcareous soils

28C01 Artemisio albae-Dichanthion ischaemi
Meso-xerophilous, calcareous grasslands

**Bromion erecti**
Meso-xerophytic swards in sub-oceanic regions of western Europe
- *B1.4 Coastal stable dune grassland (grey dunes)*
- *E1.2 Perennial calcareous grassland and basic steppes*

**Cirsiio-Brachypodion pinnati**
Meso-xerophytic swards in sub-continental regions of central and eastern Europe
- *E1.2 Perennial calcareous grassland and basic steppes*

**Cytiso-Bromion caprini**
Submediterranean subarid grasslands of mid-altitudes in Calabria
- *F7.4 Hedgehog-heaths*

**Danthonio-Brachypodion**
Meso-xerophilous grasslands of the southern and eastern Carpathians
- *E1.2 Perennial calcareous grassland and basic steppes*

**Festuco-Bromion**
Meso-xerophytic swards of submediterranean regions of Provence and the Ligurian Alps

**Gentianello amarella-Avenulion pratensis**
Meso-xerophytic swards of north-west Europe

**Phleo ambigui-Bromion erecti**
Meso-xerophytic submontane-montane swards of the northern and central Apennines
- *E1.5 Mediterraneo-montane grassland*

**Potentillo montanae-Brachypodion rupestris**
Steppic grasslands of northern Spain and the Pyrenees
- *E1.2 Perennial calcareous grassland and basic steppes*

**Teucrio pyrenaici-Bromion erecti**
Calcareaous chamaephyte-rich dry pastures in the Cantabrian area
- *F7.4 Hedgehog-heaths*

**BROMOPSITAILIA CAPPADOCICAE**
Steppes and dwarf semi-shrubby communities of Crimean mountains

**Adonido vernalis-Stipion tirsae**
Crimean steppes and dwarf-shrub communities of low altitudes

**Carici humilis-Androsacion tauricae**
Crimean steppes and dwarf-shrub communities of higher altitudes

**Veronico multifidae-Stipion ponticae**
Communities of foothills in the eastern part of south Crimean coast and northern Crimean mountains

**FESTUCETAILA VAGINATAE**
European Continental steppes and dry meadows on sandy soils

**Bromion tectorum**
Pioneer vegetation among Pannonian steppe grasslands on acid sands
- *E1.2 Perennial calcareous grassland and basic steppes*
- *E1.9 Dry, open perennial and annual siliceous grassland, including inland dune grassland*

**Cynodonto-Teucrium polii**
Communities of older quartz sands and shell detritus on dunes with primitive soils in the Azov region
- *E1.2 Perennial calcareous grassland and basic steppes*

**Festucion beckeri**
Communities of Ukrainian sandy steppes
- *B1.4 Coastal stable dune grassland (grey dunes)*
28E04 Festucion vaginatae
Communities of Pannonian sandy steppes

28E05 Scabiosion ucranicae
Sand steppes of plains around the western seaboard of the Black Sea

28E06 Verbascion pinnatifidii
Communities of young quartz sands and shell detritus behind avadunes in the Azov region

28F Festucetalia valesiaca
Sub-continental to continental closed fescue pastures and swards

28F01 Agropyron pectinati
Xerophilous steppes on slightly saline soils described from the middle Volga region

28F02 Artemisio tauricae-Festucion
Xerothermic communities on volcanic substrates in the Crimea

28F03 Danthonio-Stipion tirsae
Circum-Pannonian steppic grasslands on deep soils with fluctuating yearly moisture regime

28F04 Diplachnion
Periodically arid swards on clayey soils in continental valleys of the eastern Alps

28F05 Festucion valesiaca
Sub-continental closed fescue pastures and swards of central Europe

28F06 Helianthemo-Globularion
Sub-boreal and boreal steppes of rendzinas on hard limestone (alvars)

28F07 Stipion lessingianae
Steppes of deep soils in Moldova, Dobrudga and southern Ukraine

28F08 Stipo-Poion carniolicae
Very arid swards of continental valleys in the western Alps

28F09 Stipo-Poion xerophilae
Very arid swards of continental valleys in the central and eastern Alps

28F10 Thymo comosi-Festucion sulcatae
Steppic dry grasslands of Transylvania
HALACSYETALIA SENDTNERI
Steppic vegetation on ultramafic soils in the Balkans

Centaureo-Bromion fibrosi
Rocky steppic grasslands over ultramafic bedrocks in Serbia and Albania

Polygonion albaniacae
Rocky steppic grasslands over ultramafic bedrocks in central Bosnia

Potentillion visianii
Rocky steppic grasslands over ultramafic bedrocks in eastern Bosnia

HELICTOTRICHO-STIPETALIA
Continental temperate grasslands of the steppe and semi-desert zones of the south Urals region and northern Kazakhstan

Centaurion sumensis
Xerophilous steppe communities of stony substrates in the Middle Volga region

Helictotricho desertori-Stipion rubentis
Continental steppes of North Kazakhstan and the South Ural

Lathyro pallescentis-Helictotrichion schelliani
Xero-mesophilous steppes in the South Ural region

Orostachyion spinosae
Floristically impoverished dry steppe communities of stony substrates

Scorzonero austriacae-Koelerion sclerophyllae
Xerophilous steppes of calcareous soils in the South Ural region

Tanacetio-Stipion lessingianae
Steppes of west Kazakhstan and adjacent parts of Russia

KOELERIO-PHILETALIA PHLEOIDIS
Silicicolous rocky steppe grasslands of western and central Europe

Chrysopogono-Danthonion
Steppic swards of lime-poor sandy soils in Serbia

Koelerio-Phleion phleoidis
Steppic rocky grasslands and swards of lime-poor sandy soils in central and Western Europe

POO-AGROSTIETALIA VINEALIS
Mesoxerophilous acidophilous alluvial sandy grasslands of Ukraine

Agrostio-Avenulion schellianae
Steppic acidophilous swards in eastern Europe

Agrostion vinealis
Xero-mesophilous meadows on leached chernozem-like soils

SCORZONERO-CHRYSOPOGONETALIA
Calcareous karstic grasslands of the Illyric-Dinaric region

Centaurieon dichroanthae
Illyrian-Praealpice steppic pastures on shallow calcareous soils

Chrysopogoni-Saturejeon
Illyrian-Dinaric steppic pastures on shallow calcareous soils
E1.2 Perennial calcareous grassland and basic steppes
F2.2 Evergreen alpine and subalpine heath and scrub

28K03 **Chrysopogono-Koelerion splendentis**
Ilyrian-Dinaric open steppic grasslands on calcareous substrates

28K04 **Scorzonerion villosae**
Ilyrian-Dinaric dry pastures on deep, partly calcified terra rossa and argillaceous flysch sediments of the Illyric and Dinaric regions

28L **SESLERIETALIA RIGIDAE**
Dealpine, closed, blue-grass dominated grasslands of the Alps, Hercynicum and Carpathians

28L01 **Diantho lumnitzeri-Seslerion albicans**
Dealpine grasslands on limestone and dolomite in south-east central Europe

E1.1 Open thermophile pioneer vegetation of sandy or detritic ground
E1.2 Perennial calcareous grassland and basic steppes

28L02 **Seslerio-Xerobromion**
Dealpine calcareous grasslands of the northern fringes of the Alps and of Hercynicum

E1.2 Perennial calcareous grassland and basic steppes

28L03 **Seslerion rigidae**
East Carpathian dealpine closed calcareous grasslands

E1.2 Perennial calcareous grassland and basic steppes
E4.4 Calciphilous alpine and subalpine grassland

28M **STIPO PULCHERRIMAE-FESTUCETALIA PALLENTIS**
Open xerophilous rocky grasslands of sunny aspects of central and southeast Europe

28M01 **Alyssion bertolonii**
Steppic vegetation on ultramafic soils in the northern Apennines and Tuscany

E1.2 Perennial calcareous grassland and basic steppes

28M02 **Alyssio saxatilis-Festucion pallentis**
Open grasslands on mineral-rich siliceous rocks in the eastern Hercynicum

E1.2 Perennial calcareous grassland and basic steppes

28M03 **Asplenio septentrionali-Festucion pallentis**
Open grasslands on shallow silicicolous soils in south-western Europe

E1.2 Perennial calcareous grassland and basic steppes

28M04 **Avenulo adsurgentis-Festucion pallentis**
Serpentine steppe vegetation of the eastern Alps

E1.2 Perennial calcareous grassland and basic steppes

28M05 **Bromo pannonici-Festucion pallentis**
Open xerophilous rocky calcareous grasslands of sunny aspects on northern fringes of the Pannonian Basin

E1.1 Open thermophile pioneer vegetation of sandy or detritic ground
E1.2 Perennial calcareous grassland and basic steppes

28M06 **Chrysopogono-Festucion dalmatica**
Open xerophilous rocky calcareous grasslands of sunny aspects on southern and southeastern fringes of the Pannonian Basin

E1.2 Perennial calcareous grassland and basic steppes

28M07 **Helianthemo cani-Festucion pallentis**
Rocky steppic grasslands on calcareous substrata of the Hercynicum

E1.2 Perennial calcareous grassland and basic steppes

28M08 **Pimpinello-Thymion zygoidi**
Semi-evergreen phrygana-like vegetation of the east Balkan steppes

E1.2 Perennial calcareous grassland and basic steppes

28M09 **Xerobromion**
Xerophilous open swards in south-west central Europe

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E1.2 Perennial calcareous grassland and basic steppes

28N THYMO CRETACEI-HYSSOPETALIA CRETACEI
Xerothermic grasslands on chalky outcrops in south-west European Russia and Ukraine

28N01 Artemisio hololeucae-Hyssopion cretacei
Communities of the south-western central Russian uplands

28N02 Centaureo carbonatae-Koelerion talievii
Grassy communities of the south-western central Russian uplands

28N03 Euphorbio cretophilae-Thymion cretacei
Communities of the lower reaches of the North Donetz river valley

28N04 Galio campanulatae-Poion versicoloris
Communities of calcareous soils on very steep rocky slopes of the Ukraine

E1.2 Perennial calcareous grassland and basic steppes

29 KOELERIO-CORYNEPHORETEA
Pioneer vegetation on primitive soils and rocky outcrops in regions with mild winter climate

29A ALYSSEO-SEDETALIA
Temperate pioneer grasslands and therophyte swards on calcareous immature soils

29A01 Alyssoo alyssoidis-Sedion albi
Thermophilous stonecrop communities of weathered calcareous rocks
E1.1 Open thermophile pioneer vegetation of sandy or detritic ground
E1.2 Perennial calcareous grassland and basic steppes

29A02 Sedion micrantho-sediformis
Communities of calcareous outcrops in thermo-mesomediterranean southwestern Iberia

29A03 Sedo-Cerastion
More or less closed swards on base rich, rather nutrient poor river dunes
E1.1 Open thermophile pioneer vegetation of sandy or detritic ground
E1.2 Perennial calcareous grassland and basic steppes
E1.9 Dry, open perennial and annual siliceous grassland, including inland dune grassland

29B ARTEMISIO-KOELERIETALIA
Bryophyte-rich grasslands on dry, calcareous soils in coastal dunes

29B01 Koelerion arenariae
Ephemeral vegetation of bare but stable calcareous sands
B1.4 Coastal stable dune grassland (grey dunes)
E1.1 Open thermophile pioneer vegetation of sandy or detritic ground
E1.2 Perennial calcareous grassland and basic steppes
E1.7 Non-Mediterranean dry acid and neutral closed grassland
E1.9 Dry, open perennial and annual siliceous grassland, including inland dune grassland

29B02 Polygalo-Koelerion
More or less closed (but not dense) swards on calcareous sands
E1.7 Non-Mediterranean dry acid and neutral closed grassland

29C CORYNEPHORETALIA CANESCENTIS
Open swards on sand of sub-atlantic regions of western and central Europe

29C01 Armerion girardii
Mediterranean sub-montane grasslands on dolomite sand in southern France
E1.3 Mediterranean xeric grassland

29C02 Corynephorion canescentis
Colonising vegetation of mobile acid sands on coastal and inland dunes
B1.4 Coastal stable dune grassland (grey dunes)
E1.9 Dry, open perennial and annual siliceous grassland, including inland dune grassland

29C03 Thero-Airion
Ephemeral vegetation of bare but stable acid sands or siliceous rocky outcrops
B1.4 Coastal stable dune grassland (grey dunes)
E1.9 Dry, open perennial and annual siliceous grassland, including inland dune grassland

29D Festuco-SEDETONIA
Dry grasslands on neutral sandy soils

29D01 Koelerion glaucae
Grasslands of stable neutral sandy soils in central and northeastern Europe
E1.1 Open thermophile pioneer vegetation of sandy or detritic ground
E1.2 Perennial calcareous grassland and basic steppes
E1.9 Dry, open perennial and annual siliceous grassland, including inland dune grassland

29D02 Plantaginio-Festucion ovinae
Closed swards of neutral to acidic, drought-prone soils
B1.4 Coastal stable dune grassland (grey dunes)
B1.9 Machair
E1.2 Perennial calcareous grassland and basic steppes
E1.7 Non-Mediterranean dry acid and neutral closed grassland
E1.9 Dry, open perennial and annual siliceous grassland, including inland dune grassland
E1.9 Heavy-metal grassland

29E SEDO-POETALIA GLAUCAE
Scandinavian pioneer vegetation on fine-grained and loam-rich shallow raw soils and rocky outcrops

29E01 Veroniceto-Poion glaucae
Scandinavian pioneer vegetation on fine-grained and loam-rich shallow raw soils and rocky outcrops
H2 Screes
H2.1 Boreal siliceous screes

29F SEDO-SCLERANTHETALIA
Pioneer grasslands and herb communities on immature soils over base-poor rocks

29F01 Hyperico perforati-Scleranthion perennis
Open grasslands on shallow soils on siliceous rocks in central Europe
B1.4 Coastal stable dune grassland (grey dunes)
E1.1 Open thermophile pioneer vegetation of sandy or detritic ground
E1.9 Dry, open perennial and annual siliceous grassland, including inland dune grassland

29F02 Sedion anglici
Stonecrop communities of shallow soils in the Atlantic zone
E1.1 Open thermophile pioneer vegetation of sandy or detritic ground

29F03 Sedion pyrenaici
Stonecrop communities of siliceous rocks in the Pyrenees and western Iberia
H3.6 Weathered rock and outcrop habitats

29F04 Sedo albi-Veronicion dillenii
Therophyte and geophyte vegetation on stable siliceous rubble
E1.1 Open thermophile pioneer vegetation of sandy or detritic ground

29F05 Sedo-Scleranthion biennis
Stonecrop communities of sunny slopes in the alpic valleys
E1.1 Open thermophile pioneer vegetation of sandy or detritic ground
H3.6 Weathered rock and outcrop habitats
30 **CALLUNO-ULICETEA**
Dwarf-shrub and mat-grass heaths on acidic soils from the planare to montane belts
30A **NARDETALIA STRICTAE**
Mat-grass swards on nutrient-poor soils at mid-altitudes
30A01 **Agrostion curtisi**
Mesophytic oligotrophic low-altitude grasslands of thermo-atlantic regions of France
   *E1.7 Non-Mediterranean dry acid and neutral closed grassland*
30A02 **Carici macrostylaec-Nardion strictae**
Cantabrian species-rich mat-grass pastures
30A03 **Equiseto-Galion borealis**
Slightly chionophilous grasslands on base-rich, deep soils of Iceland and Greenland
30A04 **Juncion squarrosi**
Heath-rush vegetation on peaty soils
   *B1.4 Coastal stable dune grassland (grey dunes)*
   *E3.5 Moist or wet oligotrophic grassland*
30A05 **Nardo-Agrostion tenuis**
Species-rich mat-grass pastures of central European mountains
   *E4.3 Acid alpine and subalpine grassland*
30A06 **Potentillion calabri**
Calabrian (Sila) high-altitude species-rich mat-grass pastures
   *E1.8 Mediterranean dry acid and neutral closed grassland*
   *E4.3 Acid alpine and subalpine grassland*
30A07 **Potentillo-Polygonion vivipari**
Slightly chionophilous heavily grazed pastures on base-rich soils of Scandinavia
   *E4.1 Snow-patch grassland*
30A08 **Violion caninae**
Unfertilised mat-grass pastures at lower altitudes
   *B1.4 Coastal stable dune grassland (grey dunes)*
   *E1.7 Non-Mediterranean dry acid and neutral closed grassland*
   *F4.2 Dry heaths*
30B **ULICETALIA MINORIS**
Gorse and ericoid heaths of winter-mild western Europe and Morocco
30B01 **Daboecion cantabricae**
Heathlands over ferric-humic podsols of northern Iberia
   *F4.1 Wet heaths*
   *F4.2 Dry heaths*
30B02 **Dactyliodo maritimae-Ulicion maritimi**
Gorse heaths of Atlantic coast sea-cliffs
   *F4.2 Dry heaths*
30B03 **Ericion cinereae**
Bell-heather communities on dry to fresh soils in sub-atlantic regions
   *B1.5 Coastal dune heaths*
   *F4.2 Dry heaths*
30B04 **Ericion umbellatae**
Mediterranean-Ibero-Atlantic heaths of central-western and southwest Iberia and northwest Morocco
   *B1.5 Coastal dune heaths*
   *F4.2 Dry heaths*
   *F5.2 Maquis*
F5.5 Thermo-Mediterranean shrub habitats

30B05 Genistion micrantho-anglicae
Hygrophilous heaths of Mediterranean and Ibero-Atlantic distribution on gley, humus-rich soils
F4.1 Wet heaths
F4.2 Dry heaths
F5.5 Thermo-Mediterranean shrub habitats

30B06 Stauracanthion boivinii
Southern Iberian and Moroccan silicicolous brezal
F5.2 Maquis
F5.5 Thermo-Mediterranean shrub habitats

30B07 Ulici-Ericion ciliaris
Gorse-Dorset heath communities of damper soils in the Atlantic region
F4.1 Wet heaths
F4.2 Dry heaths

30B08 Ulacion minoris
Gorse heaths of the Atlantic region
B1.5 Coastal dune heaths
F4.1 Wet heaths
F4.2 Dry heaths

30C Vaccinio-Genistetalia
Heaths of temperate central and northwestern Europe

30C01 Empetrium nigri
Coastal dune heathlands of northwestern and northern Europe
B1.5 Coastal dune heaths

30C02 Genistion pilosae
Greenweed heathlands in the lowland and montane zone of northwestern and central Europe
B1.5 Coastal dune heaths
E1.9 Dry, open perennial and annual siliceous grassland, including inland dune grassland
F2.2 Evergreen alpine and subalpine heath and scrub
F4.2 Dry heaths

30C03 Genisto-Vaccinion
Bilberry heaths of moist soils in the montane to subalpine belts of western Europe
B1.5 Coastal dune heaths
F2.2 Evergreen alpine and subalpine heath and scrub
F4.2 Dry heaths

31 Trifolio-Geranieta sanguinei
Thermophilous woodland fringe vegetation

31A Melampyro-Holcetalia
Herbaceous vegetation of woodland margins and rides on impoverished acid sands

31A01 Linarion triornithophorae
Acidophilous fringe vegetation of northern Spain
E5.2 Thermophile woodland fringes

31A02 Melampyrion pratensis
Woodland margin and ride vegetation in drier situations
E5.2 Thermophile woodland fringes

31A03 Origanion virentis
Species-rich fringe vegetation of the mesomediterranean belt of Cantabria
E5.2 Thermophile woodland fringes
31A04  **Potentillo erectae-Holcion mollis**
Woodland margin and ride vegetation on damp soils of the western part of central Europe
  
  *E5.2 Thermophile woodland fringes*
  
  *E5.3 [Pteridium aquilinum] fields*

31A05  **Ranunculo cortusifolii-Geranion canariensis**
Herb-rich fringe of Canary laurel forests

31B  **Origanetalia vulgaris**
Herbaceous vegetation of woodland margins and rides on calcareous soils

31B01  **Dictamno-Ferulagion galbaniferae**
Species-rich fringes of Illyrian forests
  
  *E5.2 Thermophile woodland fringes*

31B02  **Galio littoralis-Geranion sanguinei**
Fringe vegetation of dune thickets of the Atlantic coast
  
  *B1.4 Coastal stable dune grassland (grey dunes)*
  
  *E5.2 Thermophile woodland fringes*

31B03  **Geranion sanguinei**
Drought-tolerant communities in sunny woodland edges on calcareous soils
  
  *B1.4 Coastal stable dune grassland (grey dunes)*
  
  *E5.2 Thermophile woodland fringes*

31B04  **Trifolion medii**
Fringe communities of central European mesophilous forests
  
  *E5.2 Thermophile woodland fringes*

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**H  DRY GRASSLANDS AND SEMI-DESERTS**

32  **Helianthemetalia guttati**
Mediterranean terrestrial plant communities dominated by annual low-grown herbs and grasses

32A  **Helianthemetalia guttati**
Mediterranean and submediterranean ephemeral communities on acid soils in fire prone habitats

32A01  **Helianthemion guttati**
Early flowering communities on sandy soils
  
  *B1.4 Coastal stable dune grassland (grey dunes)*
  
  *E1.8 Mediterranean dry acid and neutral closed grassland*
  
  *H6.3 Fumaroles, solfataras and mofettes*

32A02  **Molinierion laevis**
Late flowering communities on sandy soils

32A03  **Scabioso-Trifolion dalmatici**
Silicicolous therophyte swards of submediterranean character in southeast Serbia

32A04  **Sedion pedicellato-andegavensis**
Communities of succulent annuals on fine gravel over silicate rocks

32A05  **Trifolion cherleri**
Silicicolous therophyte swards of submediterranean character in Macedonia and northern Greece

32B  **Malcolmietalia**
Mediterranean ephemeral vegetation of coastal sand dunes and beaches

32B01  **Anthyllido hamosae-Malcolmion lacerae**
Communities of coastal sandy habitats not exposed to saline influence
  
  *B1.4 Coastal stable dune grassland (grey dunes)*
Corynephoro-Malcolmion patulae
Ephemeral therophyte communities of inland sandy substrates of interior western Iberia
  E1.8 Mediterranean dry acid and neutral closed grassland
  E1.9 Mediterranean dry acid and neutral open grassland

Linarion pedunculatae
Coastal dunes exposed to saline influence
  B1.4 Coastal stable dune grassland (grey dunes)

Alkanno-Maresion nanae
Ephemeral therophyte communities of coastal and inland sandy areas of the Ibero-Levantine area

Maresion nanae
Ephemeral therophyte communities of semi-mobile coastal dunes of the central and eastern Mediterranean

Medicaginii-Triplachnion nitentis
Short-lived communities of sandy and gravelly beaches of the eastern Aegean and southern Anatolia

Ononidion tournefortii
Therophyte communities of deep coastal sandy soils of the Canary Islands

POETALIA BULBOSAE
Mediterranean and sub-Mediterranean pastures heavily grazed, trampled and manured by sheep

Plantaginion serrariae
Heavily grazed pastures

Poo bulbosae-Astragalion sesamei
Heavily grazed pastures on calcareous soils in central and eastern Iberia

Trifolium subterranei-Periballion
Heavily grazed pastures on siliceous soils in central and western Iberia

Vulpio ciliatae-Crepidotin neglectae
Therophyte swards of disturbed habitats rich in calcareous rubble in the central Mediterranean

STIPO-BUPLEURETALIA SEMICOMPOSITI
Subhalophilous therophyte swards of the most arid regions of the Mediterranean with influence of eremian elements

Asterisco-Velezion rigidae
Subhalophilous therophyte swards of the continental regions of the Iberian Peninsula

Daucu-Catananchion luteae
Subhalophilous therophyte swards on loamy-clayey soils of Sicily and southern Calabria
  E1.3 Mediterranean xeric grassland

Plantaginio-Catapodion marini
Subhalophilous therophyte swards of the Tyrrenian region
  E1.3 Mediterranean xeric grassland

TRACHYNIETALIA DISTACHYAE
Mediterranean ephemeral communities and pastures on basic soils

Trachynion distachyae
Ephemeral therophyte communities and pastures on base-rich soils
  E1.3 Mediterranean xeric grassland

Laguro-Vulpion fasciculatae
Subnitrophilous therophytic grasslands of disturbed coastal dunes of Corsica

Omphalodion commutatae
Mediterranean ephemeral communities and pastures on magnesitic soils
**E1.3 Mediterranean xeric grassland**

**Sedo-Ctenopson gypsophilae**
Mediterranean ephemeral communities and pastures on gypsum substrates

**E1.3 Mediterranean xeric grassland**

**Stipion retortae**
Mediterranean ephemeral communities and pastures on calcareous soils or chalk loam

**E1.3 Mediterranean xeric grassland**

**Vulpio-Lotion**
Mediterranean therophyte communities on terra rosa and calcareous soils in the Illyric-Dinaric coastal region

**E1.8 Mediterranean dry acid and neutral closed grassland**

**Vulpion ligusticae**
Ephemeral communities on base-rich soils of the Tyrrhenian region

**Xeranthemion annui**
Annual-rich vegetation of abandoned fields in Macedonia

**33 Thero-Brachypodietea ramosi**
Mediterranean pseudo-steppes and related perennial grasslands

**33A Cymbopogoni-Brachypodietalia**
East Mediterranean pseudosteppe dominated by tufted perennial grasses

**33A01 Cymbopogoni-Brachypodion ramosi**
Pseudosteppe on limestone in coastal areas of the Balkan Peninsula

**E1.3 Mediterranean xeric grassland**

**33B Hyparrhenietalia hirtae**
Tall tufted grasslands of the west and central Mediterranean

**33B01 Hyparrhenion hirtae**
Iberian and Sicilian tall tufted grasslands on exposed rocky slopes

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

**F6.2 Eastern garrigues**

**33C Thero-Brachypodietalia**
Mediterranean perennial grasslands (pseudosteppe)

**33C01 Agropyro pectinati-Lygeion**
Spanish and South Italian dense grasslands on continental clayey basins

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

**33C02 Avenulo-Ampelodesmion mauritanici**
Thermomediterranean perennial tussocky grasslands dominated by Ampelodesmos mauritanicus of Calabria and Sicily

**33C03 Diantho humilis-Velezion rigidae**
Pseudosteppe communities of montane regions of the Crimea

**E1.3 Mediterranean xeric grassland**

**33C04 Festucion scariosae**
Spanish dense Festuca grasslands on basic substrates mainly in mediterranean-montane zone

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

**33C05 Moricandio-Lygeion sparti**
Perennial, calcareous grasslands of Mediterranean Italy

**E1.3 Mediterranean xeric grassland**

**33C06 Stipion parviflorae**
Calcareous sub-nitrophilous dry to semi-arid grasslands of the Ibero-Levantine area

**33C07 Stipion tenacissimae**
South Spanish dense Stipa grasslands on limestone or chalk in the mediterranean-arid belt
  
  **E1.4 Mediterranean tall-grass and [Artemisia] steppes**
  
  **Thero-Brachypodion**
  Mediterranean garrigues and pseudosteppes on calcareous substrates
  
  **E1.3 Mediterranean xeric grassland**
  
  **F6.1 Western garrigues**
  
  **Trisetum velutini-Brachypodion boissieri**
  Mediterranean perennial grasslands of Spain

**33C08**

**PEGANO HARMALAE-SALSOLETEA VERMICULATAE**
Thermomediterranean and Macaronesian halo-nitrophilous semidesert scrub

**34A**

**CHENOLETEALIA TOMENTOSAE**
Macaronesian halo-nitrophilous semidesert scrub

**34A01**

**Chenoleion tomentosae**
Macaronesian halo-nitrophilous semidesert scrub
  
  **F6.8 Xero-halophile scrubs**
  
  **34B**
  
  **FORSSKAOLEO ANGUSTIFOLIAE-RUMICETALIA LUNARIAE**
  Macaronesian halo-nitrophilous scrub

**34B01**

**Argyranthemo suculenti-Callendulion maderensis**
Madeiran halo-nitrophilous coastal scrub

**34B02**

**Artemisio thusculae-Rumicion lunariae**
Canarian halo-nitrophilous dwarf shrubs in moist or semi-arid climates

**34B03**

**Launaeo arborescentis-Schizogynion sericeae**
Canarian halo-nitrophilous scrub in sub-desertic climates
  
  **F8.1 Canarian xerophytic habitats**
  
  **34B04**
  
  **Traganion moquinii**
  Canarian halo-nitrophilous coastal dune scrub in sub-desertic climates
    
    **B1.3 Shifting coastal dunes**
    **B1.4 Coastal stable dune grassland (grey dunes)**

**34C**

**HELICHRYSO STOECHADIS-SANTOLINETALIA SQUARROSAE**
Iberian sub-nitrophilous chamaephyte communities on degraded brown or red soils

**34C01**

**Artemisio glutinosae-Santolinion rosmarinifoliae**
Iberian sub-nitrophilous chamaephyte communities on acid soils

**34C02**

**Santolinion pectinato-canescentis**
Iberian sub-nitrophilous chamaephyte communities on basic soils

**34D**

**NICOTIANO GLAUCAE-RICINETALIA COMMUNIS**

**34D01**

**Nicotiano glaucae-Ricinion communis**

**34D02**

**Tall scrub, rich in tropical neophytes, of the thermomediterranean zone**

**34E**

**SALSOLO VERMICULATAE-PEGANETALIA HARMALAE**
Western Mediterranean halo-nitrophilous shrub communities in sub-desertic climates

**34E01**

**Artemision arborescentis**
Subnitrophilous coastal scrub of the central and eastern Mediterranean

**34E02**

**Carthamo arborescentis-Salsolion oppositifoliae**
Thermomediterranean halo-nitrophilous scrub in semi-arid to arid southeastern Spain

**34E03**

**Haloxylon tamariscifolii-Atriplicion glaucae**
Western Mediterranean halo-nitrophilous shrub on disturbed loamy soils

**34E04**

**Lycio europaei-Ipomoeion purpureae**
Halo-nitrophilous shrub communities

**34E05**

**Medicaginii citrinae-Lavaterion arboreae**
Mediterranean halo-nitrophilous communities on coastal cliffs covered by guano

**Salsolo vermiculatae-Peganion harmalae**
Mediterranean inland sub-desertic halo-nitrophilous scrub on clayey soils

### 35 **ARTEMISIETEA LERCHIANAE**
Aralo-Caspian sub-halophilous semideserts

#### 35A **ARTEMISIETALIA LERCHIANAE**
Caspian desert vegetation of stabilised loamy soils

- **Anabasion aphyllae**
  Intensively grazed Caspian desert vegetation on loamy soils

- **Artemision lerchianae**
  Moderately grazed Caspian desert vegetation on loamy soil

#### 35B **ARTEMISIETALIA TSCHERNIEVIANAE**
Caspian desert vegetation of sandy soils

- **Euphorbion seguieranae**
  Caspian desert vegetation of stabilized sandy dunes

- **Tamariceo-Salsolion australis**
  Caspian desert vegetation on mobile wind-modelled barkhans and raised sand dune

### I **OROMEDITERRANEAN GRASSLANDS AND SCRUB**

#### 36 **FESTUCETEA INDIGESTAE**
Oromediterranean Iberian xerophilous siliceous Festuca indigesta grasslands

#### 36A **FESTUCETALIA INDIGESTAE**
Oromediterranean Iberian xerophilous siliceous Festuca indigesta grasslands

- **Minuartio-Festucion curvifoliae**
  Alpine grasslands of the central Iberian mountains

- **Ptilotrichion purpurei**
  Chamaephyte-rich crioro-mediterranean grasslands of the Sierra Nevada

- **Teesdaliopsio-Luzulion caespitosae**
  Alpine and subalpine grasslands of the Cantabrian mountains

#### 36B **JASIONO SESSILIFLORAE-KOEleriTALIA CRASSIPEDIS**
Pastures in the Mediterranean zone of Iberia

- **Armerion eriophyllae**
  Pastures on serpentine in the Mediterranean zone of Iberia

- **Hieracio castellani-Plantaginion radicatae**
  Pastures with cushion chamaephytes in northern Iberia

#### 37 **FESTUCO HYSTRICIS-ONONIETEA STRIATAE**
Dry, basiphilous pastures and scrub of hemicyryptophytes and chamaephytes of humid to sub-humid, oro- to meso-mediterranean belts of southwest Europe

#### 37A **FESTUCO HYSTRICIS-POETALIA LIGULATAE**
Subalpine and upper mountain zone dwarf shrub on soils with traces of cryoturbation

- **Festucion burnatii**
High mountain pastures of the Cantabrian mountains
E1.5 Mediterraneo-montane grassland

37A02  **Minuartio-Poion ligulatae**
Oromediterranean pastures of central Iberia
E1.5 Mediterraneo-montane grassland

37A03  **Plantaginio discoloris-Thymion mastigophorii**
Supra- and oromediterranean montane pastures of central and northern Spain
E1.5 Mediterraneo-montane grassland

37B  **Ononidetalia striatae**
Calcareous pastures and low scrub of the colline to subalpine belts of southwestern Europe

37B01  **Echinospartion horridi**
 Communities of thorny cushions on basic substrates in the central Pyrenees
F7.4 Hedgehog-heaths

37B02  **Euphorbion ligusticae**
 Ultramafic Ligurian garrigue

37B03  **Festucion scoparioi**
Upper-montane and subalpine dry pastures on basic substrates in the Pyrenees
E4.4 Calciphilous alpine and subalpine grassland

37B04  **Festucion spadiceae**
Subalpine, thermophilous swards of Festuca spadicea in southern France and northern Iberia
E4.3 Acid alpine and subalpine grassland

37B05  **Genistion lobelli**
Low shrub vegetation of wind exposed limestone rocks
E1.5 Mediterraneo-montane grassland
F7.4 Hedgehog-heaths

37B06  **Genistion occidentalis**
Low shrubs on basic substrates in the Cantabrian Mountains and West Pyrenees
F7.4 Hedgehog-heaths

37B07  **Lavandulo angustifoliae-Genistion cinerea**
 Supra- and oromediterranean garrigue of southern France

37B08  **Ononidion cristatae**
Steppic grasslands of the upper montane belt in the southwestern Alps

37B09  **Ononidion striatae**
Pastures on rendzina soils in sub-mediterranean hills
E1.5 Mediterraneo-montane grassland
F6.6 Supra-Mediterranean garrigues

37B10  **Seslerion elegantissimae**
Supramediterranean calcareous Sesleria swards of southern France
E1.5 Mediterraneo-montane grassland

38  **Carici caryophylleae-Genistetalia salzmannii**
Cyno-Sardean supramediterranean and oromediterranean siliceous phrygana

38A  **Carici caryophylleae-Genistetalia salzmannii**
Cyno-Sardean oromediterranean siliceous phrygana

38A01  **Anthyllion hermanniae**
Low scrub on exposed and windy crests on siliceous rocks
F6.1 Western garrigues
F7.2 Central Mediterranea spinus heaths
F7.4 Hedgehog-heaths

38A02  **Festuco-Armerion sardoae**
Vegetation of cushion-like chamaephytes in windy habitats

**F7.4 Hedgehog-heaths**

38B TEUCRIO-SANTOLINETALIA
Secondary montane garrigue on siliceous and calcareous substrata of Sardinia

38B01 *Armerio sardoae-Genistion salzmannii*
Siliceous secondary montane garrigues of Sardinia

38B02 *Polygalo-Seslerion insularis*
Calcareous secondary montane garrigues of Sardinia

39 SAGINETEA PILIFERAE
Cyno-Sardean oromediterranean siliceous grasslands

39A SAGINETALIA PILIFERAE
Cyno-Sardean oromediterranean siliceous grasslands

39A01 *Plantaginion insularis*
Cyno-Sardean oromediterranean siliceous grasslands in snow-carrying depressions (pozzines)

E4.3 Acid alpine and subalpine grassland

39A02 *Sedo-Pheion brachystachyi*
Cyno-Sardean oromediterranean siliceous grasslands of cold north aspects

E4.3 Acid alpine and subalpine grassland

39A03 *Sesamoido-Poion violaceae*
Cyno-Sardean oromediterranean siliceous grasslands of warm south aspects

E4.3 Acid alpine and subalpine grassland

40 RUMICI-ASTRAGALETEA SICULI
Sicilian oromediterranean cushion scrub

40A RUMICI-ASTRAGALETALELI SICULI
Sicilian oromediterranean cushion scrub

40A01 *Rumici-Astragalion siculi*
Sicilian oromediterranean cushion scrub

E4.3 Acid alpine and subalpine grassland

H6.1 Sparsely vegetated volcanic mountain summits, lava and ash fields

41 DAPHNO-FESTUCETEA
Greek and Aegean oromediterranean calciphilous grasslands and phrygana

41A DAPHNO-FESTUCETALIA
Greek and Aegean oromediterranean calciphilous grasslands and phrygana

41A01 *Astragalo angustifoliis-Seslerion coerulantis*
Thorny cushion vegetation in step-shaped scarps on limestone

F7.4 Hedgehog-heaths

41A02 *Eryngio multifidi-Bromion fibrosi*
Discontinuous herb layer, zonal on limestone in the alpine belt

F7.4 Hedgehog-heaths

41A03 *Stipo pulcherrimae-Morinion persicae*
Secondary discontinuous carpet vegetation on limestone after cutting

F7.4 Hedgehog-heaths

41B SATUREJO-SCUTELLARIETALIA
Cretan oro-mediterranean calciphilous rocky grasslands and screes

41B01 *Campanulon jacquinii*
Rupiculous communities of high altitude in the Cretan mountains

F7.4 Hedgehog-heaths

41B02 *Scutellarion hirtae*
Vegetation of calcareous and dolomitic screes of high mountains of Crete
Verbascion spinosi
Communities of calcareous and dolomitic slopes of the high mountains of western Crete
  F5.1 Arborescent matorral
  F7.3 East Mediterranean phrygana
  F7.4 Hedgehog-heaths

J MONTANE TALL-HERB, GRASSLAND, FELL-FIELD AND SNOW-BED VEGETATION

42 MULGEDIO-ACONITETEA
Scrub and tall-herb vegetation at high altitudes, moistened and fertilised by percolating water

42A ADENOSTYLETALIA ALLIARIAE
Tall-herb and scrub communities on fertile soils at high altitudes of temperate and boreal Europe

42A01 Adenostylion alliariae
  Tall-herb communities of central European mountains
    E4.1 Snow-patch grassland
    E5.5 Subalpine moist or wet tall-herb and fern habitats
    F2.1 Snow-patch dwarf willow scrub
    F2.3 Subalpine deciduous scrub

42A02 Adenostylion pyrenaicae
  Tall-herb communities of the Pyrenees and northern Spain
    E5.5 Subalpine moist or wet tall-herb and fern habitats

42A03 Alnion viridis
  Subalpine green alder scrub of the Alps and Balkans
    F2.3 Subalpine deciduous scrub

42A04 Cirsion appendiculati
  Tall-herb communities of eastern and central Balkans
    E5.5 Subalpine moist or wet tall-herb and fern habitats

42A05 Cirsion flavispinae
  Tall-herb communities of the Sierra Nevada
    E5.5 Subalpine moist or wet tall-herb and fern habitats

42A06 Dryopterido-Athyron
  Fern-rich communities of the Carpathians and Hercynicum
    E5.5 Subalpine moist or wet tall-herb and fern habitats

42A07 Petasition doerfleri
  Tall-herb hygrophilous communities of the subalpine belt of the Dinarides

42A08 Salicion helveticae
  Silicicolous willow krummholz in subalpine belt of the Alps
    F2.3 Subalpine deciduous scrub

42A09 Salicion pentandrae
  Calciphilous willow krummholz in subalpine belt of the Alps
    F2.3 Subalpine deciduous scrub

42A10 Salicion silesiacae
  Tall herb-rich willow scrubs of the western Carpathians and Hercynicum
    F2.3 Subalpine deciduous scrub

42A11 Violion cornutae
  Tall herb communities of the Pyrenees

42B ADENOSTYLETALIA BRIQUETII
Tall-herb communities of nutrient-rich moist soils at high altitudes in Corsica

42B01 **Cymbalarion hepaticifoliae**
- Shaded, mesophilous communities of oromediterranean belts in Corsica
  - F2.2 Evergreen alpine and subalpine heath and scrub
  - F2.3 Subalpine deciduous scrub

42B02 **Doronicion corsici**
- Tall-herb communities in the supramediterranean belt in Corsica
  - C2.1 Springs, spring brooks and geysers
  - E5.5 Subalpine moist or wet tall-herb and fern habitats

42C **Calamagrostietalia villosae**
Tall-herb and fern communities of acidic and more impoverished soils

42C01 **Calamagrostion arundinaceae**
- Tall-grass species-rich communities on dry soils of the upper montane and subalpine belts of western and central Europe
  - E5.5 Subalpine moist or wet tall-herb and fern habitats
  - F2.3 Subalpine deciduous scrub

42C02 **Calamagrostion villosae**
- Tall-herb and fern communities of acidic and more impoverished soils
  - E5.5 Subalpine moist or wet tall-herb and fern habitats
  - F2.3 Subalpine deciduous scrub

42C03 **Festucion carpatica**
- Tall grass, chionophilous communities of upper montane and subalpine belts of the Carpathians
  - E5.5 Subalpine moist or wet tall-herb and fern habitats

42C04 **Poo chaixii-Deschampsion caespitosae**
- High-altitude species-poor grasslands on moist soils of Hercynicum
  - E5.5 Subalpine moist or wet tall-herb and fern habitats
  - F2.3 Subalpine deciduous scrub

42D **Rumicetalia alpini**
Subalpine nitrophilous ruderal communities of Europe and the Caucasus

42D01 **Rumicion alpini**
- Nitrophilous ruderal communities of the subalpine belt
  - E5.5 Subalpine moist or wet tall-herb and fern habitats

43 **Salicetea herbaceae**
Vegetation of long-lasting snow-beds and slopes irrigated by melt waters

43A **Salicietalia herbaceae**
- Vegetation of long-lasting snow-beds and slopes irrigated by melt waters

43A01 **Luzulion nivalis**
- Herb-rich snow beds on lime-rich soils in the upper alpine belt of Scandinavia
  - E4.1 Snow-patch grassland

43A02 **Mucizonion sedoidis**
- Cryo-oromediterranean and alpine silicicolous snow-bed communities of Iberia
  - E4.1 Snow-patch grassland

43A03 **Ranunculion crenati**
- Herbaceous communities with long snow cover on limestone in Crna Gora

43A04 **Salicion herbaceae**
- Dwarf-willow and moss dominated communities of snow-beds on lime-poor soils and rocks
  - E4.1 Snow-patch grassland
  - F2.1 Snow-patch dwarf willow scrub
  - H2.1 Boreal siliceous scree
  - H2.3 Temperate-montane acid siliceous scree

43A05 **Saxifrago-Ranunculion nivalis**
Herb-rich snow-bed communities with solifluction in Arctic and oro-Arctic boreal mountains
- E4.1 Snow-patch grassland
- F2.1 Snow-patch dwarf willow scrub
- H2.1 Boreal siliceous screes

44 **ELYNO-SESlerieta**
Alpine and subalpine calcareous grasslands

44A **ASTRAGALETALIA SEMPERVIRENTIS**
Calcareous grasslands of montane to alpine belts of the northern Apennines and southwestern Alps

44A01 **Avenion montanae**
Calcareous grasslands on rocky slopes
- E4.4 Calciphilous alpine and subalpine grassland

44A02 **Avenion sempervirentis**
Supramediterranean calcareous xerophilous open grasslands of the Alpes Maritimes and Ligurian Alps
- E4.4 Calciphilous alpine and subalpine grassland

44A03 **Ononidion cenisiae**
Calcareous grasslands in the Apennines and southwestern Alps
- E4.4 Calciphilous alpine and subalpine grassland

44B **CREPIDETALIA DINARICAe**
Montane to alpine calciphilous grasslands grasslands of the central Balkans

44B01 **Campanulion albanicae**
Calcareous grasslands of the subalpine belt of the Bjelasica Mountains

44B02 **Campanulion linifoliae**
Subalpine secondary grasslands on slightly acid soils in Montenegro
- E4.4 Calciphilous alpine and subalpine grassland

44B03 **Festucion xanthinae**
Secondary subalpine grasslands on slightly acid soils in east Serbia

44B04 **Oxytropidion urumovii**
Mediterranean altimontane grasslands on volcanic rocks in Montenegro
- E4.4 Calciphilous alpine and subalpine grassland

44C **ONOBRYCHIDO-SESlerieta**
Balkan montane and submediterranean altimontane calciphilous grasslands

44C01 **Edraiantho-Seslerion**
Alpine tussock grasslands of central Balkan mountains (Macedonia)
- E4.4 Calciphilous alpine and subalpine grassland

44D **SESlerieta** **ALBICANTIS**
Alpine and subalpine calcareous grasslands

44D01 **Armerion cantabricae**
Subalpine and alpine calciphilous grasslands in the Cantabrian mountains
- E4.4 Calciphilous alpine and subalpine grassland

44D02 **Calamagrostion variae**
Calcareous meso-hygrophilous tall-grass montane to subalpine grasslands in the Carpathians

44D03 **Caricion austroalpinae**
Montane limestone grasslands at the southern margin of the Eastern Alps
- E4.4 Calciphilous alpine and subalpine grassland

44D04 **Caricion ferrugineae**
Alpine and subalpine calcareous sedge swards on steep, seasonally wet slopes of the Alps
- E4.4 Calciphilous alpine and subalpine grassland
Caricion firmae  
Calcareous open sedge swards on terraced slopes in the alpine belt of the Alps and Carpathians  
E.4.4 Calciphilous alpine and subalpine grassland  
F.2.2 Evergreen alpine and subalpine heath and scrub

Laserpitio-Ranunculion thorae  
Alpine and subalpine calcareous grasslands  
E.4.4 Calciphilous alpine and subalpine grassland

Primulion intricatae  
Alpine calcareous grasslands of the Pyrenees  
E.4.4 Calciphilous alpine and subalpine grassland

Seslerion albicantisi  
Alpine and subalpine calcareous blue-grass swards  
E.4.4 Calciphilous alpine and subalpine grassland

Seslerion biezi  
Chionophilous calcareous alpine grasslands of the eastern and southern Carpathians  
E.4.4 Calciphilous alpine and subalpine grassland  
E.5.5 Subalpine moist or wet tall-herb and fern habitats

Seslerion tatrae  
Chionophilous calcareous alpine grasslands of the western Carpathians  
E.4.4 Calciphilous alpine and subalpine grassland

Seslerietalia tenuifoliae  
Subalpine and alpine tussock grasslands in wind-exposed habitats of the northwestern Dinarides

Festucion pungentis  
Terraced subalpine grasslands on steep slopes in the Dinarides  
E.4.4 Calciphilous alpine and subalpine grassland

Festuco-Knaution longifoliae  
Subalpine grasslands of eastern Serbia  
E.4.4 Calciphilous alpine and subalpine grassland

Seslerio-Festucion xanthinae  
Secondary montane grasslands on limestone, derived from beech and pine woodlands  
E.4.4 Calciphilous alpine and subalpine grassland

Seslerion apenninae  
Subalpine and alpine tussock grasslands in wind-exposed habitats in the central and southern Apennines

Seslerion nitidae  
Secondary calcareous grasslands of exposed sunny slopes in Macedonia  
E.4.4 Calciphilous alpine and subalpine grassland

Seslerion tenuifoliae  
Subalpine and alpine tussock grasslands in wind-exposed habitats in the Dinarides  
E.4.4 Calciphilous alpine and subalpine grassland

Carici rupestris-Kobresietea bellardii  
Subalpine and alpine grasslands and dwarf-shrub heaths, tundra and fjell vegetation

Kobresio-Dryadetaalia  
Grassy and dwarf-shrub fjell vegetation of Scandinavia, Iceland and Arctic islands

Caricion nardinae  
Chionophobous grassy and dwarf-shrub heaths on well-drained soils  
E.4.4 Calciphilous alpine and subalpine grassland
F2.2 Evergreen alpine and subalpine heath and scrub

45B OXYTROPIDO-ELYNETALIA
Grassy alpine tundra of high mountains in central Europe and the Balkans

45B01 Oxytropido-Elynion
Kobresia carpets in windy places in the alpine belt
E4.4 Calciphilous alpine and subalpine grassland
F2.2 Evergreen alpine and subalpine heath and scrub

46 JUNCETEA TRIFIDI
Pastures, rush-heaths and fjell-field on lime-poor soils above the forest belt in alpine and subalpine zones

46A CARICETALIA CURVULAE
Swards on lime-poor impoverished humic soils in the alpine and subalpine zones

46A01 Achilleo-Arnicion
Montane mat-grass communities in the Balkans
E4.3 Acid alpine and subalpine grassland

46A02 Androsacion ciliatae
Central Pyrenees neutral to siliceous scree communities

46A03 Anemonastro sibiricae-Festucion ovinae
Moderately chionophilous alpine grasslands of the Urals and south Siberian mountains

46A04 Caricion curvulac
Alpine acid swards of the Alps and eastern and southern Carpathians
E4.3 Acid alpine and subalpine grassland
E4.4 Calciphilous alpine and subalpine grassland

46A05 Deschampsio-Anthoxanthion
Grass and herb communities on slopes irrigated by frigid melt-waters in Scandinavia
E4.1 Snow-patch grassland
E4.3 Acid alpine and subalpine grassland
E4.4 Calciphilous alpine and subalpine grassland

46A06 Festucion eskiac
Subalpine and alpine grasslands of the Pyrenees
E4.3 Acid alpine and subalpine grassland

46A07 Festucion supinae
Chionophilous grasslands of the humid-perhumid Pyrenees
E4.3 Acid alpine and subalpine grassland

46A08 Juncion trifidi
Rush-heaths of Scandinavia, the Alps and the western Carpathians
E4.2 Moss and lichen dominated mountain summits, ridges and exposed slopes
E4.3 Acid alpine and subalpine grassland

46A09 Nardo-Caricion rigidae
Moderately chionophilous mat-grass communities of Scandinavia and Riesengebirge
D4.1 Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks
E4.3 Acid alpine and subalpine grassland

46B FESTUCETALIA SPADICEAE
Species-rich grasslands on deep mesotrophic acid soils in the mountains of the Alpic orogeny

46B01 Agrostion schraderanae
Open grassy swards of ground disturbed by avalanches in the eastern Alps
**Festucion macrantherae**
Grasslands on deep, decalcified soils of high altitudes of the central and southern Apennines

**Festucion pictae**
Tall-herb communities in humid depressions and gullies of the alpine belt of the Carpathians

\[ H2.3 \text{ Temperate-montane acid siliceous screes} \]

**Festucion variae**
Dense grassy swards on steep, exposed and sunny slopes extending into the alpine belt

**Nardion strictae**
Dense chionophilous grassy swards of the subalpine and alpine belts of the Alps, Carpathians and northern Apennines

**FESTUCETALIA VERSICOLORIS**
Tussocky grasslands on steep, terraced slopes in the subalpine belt of east Hercynicum and the Carpathians

**Agrostion alpinae**
Tussocky grasslands on steep, terraced slopes in the subalpine belt of east Hercynicum

**Jasionion orbiculatae**
Swards on relatively acidic soils of sheltered habitats

**Poion violaceae**
Swards on strongly acidic soils of sheltered habitats

**Potentillo ternatae-Nardion**
Mat-grass swards of the alpine belt in the mountains of the eastern Balkans

**Seslerion comosae**
Alpine swards in windy habitats in the eastern and central Balkans

**Trifolietalia Parnassii**
Oromediterranean chionophilous mat-grass swards in the mountains of central Greece

**Trifolion parnassii**
Acidophilous oromediterranean grasslands of central Greece

**Udo-Nardetalia**
Mat-grass swards of the Sierra Nevada and northern Atlas

**Campanulo hermini-Nardion strictae**
Species-rich mat-grass swards of southern Iberian mountains

**Plantaginion thalackeri**
Mat-grass swards of the Sierra Nevada
K MEDITERRANEAN GARRIGUE, MAQUIS, MATTORAL, TOMILLAR AND PHRYGANA

47 **Rosmarinetea officinalis**
Low-grown calcicolous west Mediterranean scrub (matorral, garrigue, tomillar)

47A **Anthyllidetalia terniflorae**
Tomillar communities in regions with Mediterranean-semiarid climate in southern Spain

47A01 **Anthyllido terniflorae-Salsolion papillosae**
Communities on clayey soils or litosoils in the more arid part of the Spanish coast

47A02 **Sideritidion bourgaeanae**
Tomillar communities in southern Spain

47A03 **Thymo moroderi-Sideritidion leucanthae**
South Spanish tomillar on heavy soils under slight sea-borne salt influence

47B **Convolvuletalia boissieri**
Prostrate chamaephyte vegetation in Mediterranean-montane Iberia

47B01 **Andryalion agardhii**
Prostrate chamaephyte vegetation in Mediterranean-montane Iberia

47B02 **Lavandulion lanatae**
Prostrate chamaephyte vegetation in Mediterranean-montane Iberia

47C **Erinaceetalia anthyllidis**
Oromediterranean thorny-cushions of windy habitats

47C01 **Cerastio-Astragallion nebrodensis**
Calciphilous hedgehog-heath phrygana in mountains of northern Sicily

47C02 **Xeroacantho-Erinaceion**
Oromediterranean hedgehog scrub of the Sierra Nevada and Atlas mountains

47D **Gypsophiletalia**
Chamaephytic lichen-rich communities on gypsum substrates of central and south-east Spain

47D01 **Lepidion subulati**
Chamaephytic lichen-rich communities on gypsum substrates of central and south-east Spain

47D02 **Thymo-Teucrion verticillati**
Chamaephytic lichen-rich communities on gypsum substrates of central and south-east Spain

47E **Rosmarinetalia officinalis**
Dwarf shrub and herb communities in regions with humid Mediterranean climate

47E01 **Cisto cretici-Genistion corsicae**
Cyno-Sardean garrigue on brown soils and tarra rossa at low altitude

47E02 **Eryngio trifidi-Ulicion erinacei**
Communities on clayey and calcareous soils in the warmer part of Iberia
F5.5 Thermo-Mediterranean shrub habitats

47E03 Euphorbion pithyusaë
Low-grown garrigue on scree and hard-rock littoral substrata of Corsica

47E04 Aphyllanthion
Communities on loam and marl, mostly with a summer water reserve in deep horizons

\[\begin{align*}
E1.5 & \text{ Mediterraneo-montane grassland} \\
F6.1 & \text{ Western garrigues} \\
F6.6 & \text{ Supra-Mediterranean garrigues} \\
F7.4 & \text{ Hedgehog-heaths}
\end{align*}\]

47E05 Hypericion balearici
Balearic dwarf shrub vegetation on exposed, windy rocks

\[\begin{align*}
F6.1 & \text{ Western garrigues} \\
F7.2 & \text{ Central Mediterranean spiny heaths} \\
F7.4 & \text{ Hedgehog-heaths}
\end{align*}\]

47E06 Hypericion ericoidis
East Iberian xeric communities of crevices in almost horizontal limestone layers

\[\begin{align*}
F6.1 & \text{ Western garrigues}
\end{align*}\]

47E07 Lavandulo lanatae-Genistion boissieri
Open basophilous endemic-rich heath of chamaephytes and dwarf shrubs in supramediterranean southern Spain (Baetic ranges)

\[\begin{align*}
F6.6 & \text{ Supra-Mediterranean garrigues} \\
F7.4 & \text{ Hedgehog-heaths}
\end{align*}\]

47E08 Rosmarinion officinalis
Communities on xeric substrates (eroded red or brown soils, xerorendzina) in the western Mediterranean

\[\begin{align*}
F5.5 & \text{ Thermo-Mediterranean shrub habitats} \\
F6.1 & \text{ Western garrigues} \\
F7.2 & \text{ Central Mediterranean spiny heaths}
\end{align*}\]

47E09 Sideritido incanae-Salvion lavandulifoliiæ
Communities on degraded marl and clayey soils in Spain

\[\begin{align*}
F6.1 & \text{ Western garrigues}
\end{align*}\]

47E10 Teucrion mari
Thermomediterranean coastal phrygana of Corsica

\[\begin{align*}
F5.5 & \text{ Thermo-Mediterranean shrub habitats}
\end{align*}\]

48 ONOSMO POLYPHYLLEA-PTILOSTEMONETEA
Crimean mediterranoid garrigue over flysch

48A ONOSMO POLYPHYLLEA-PTILOSTEMONETALIA
Crimean mediterranoid garrigue over flysch

48A01 Ptiostemonion
Crimean mediterranoid garrigue over flysch

\[\begin{align*}
F6.4 & \text{ Black Sea garrigues}
\end{align*}\]

49 CYTISETEA SCOPARIO-STRIATI
Thermomediterranean broom heathlands (retamal)

49A CYTISETALIA SCOPARIO-STRIATI
Thermomediterranean broom heathlands

49A01 Adenocarpion decorticantis
Mediterranean montane retamoid shrublands of southern Spain

\[\begin{align*}
F3.1 & \text{ Temperate thickets and scrub} \\
F5.5 & \text{ Thermo-Mediterranean shrub habitats}
\end{align*}\]
49A02 **Cytision oromediterraneo-scoparii**  
Thermomediterranean broom heathlands of mountains in Spain and Portugal

49A03 **Genistion floridae**  
Mediterranean montane broom heaths of central and northern Spain  
- F3.1 Temperate thickets and scrub  
- F3.2 Mediterraneo-montane broadleaved deciduous thickets  
- F5.5 Thermo-Mediterranean shrub habitats

49A04 **Genistion polygaliphyllae**  
Mediterranean montane broom heaths of northwest Spain and Portugal  
- F3.1 Temperate thickets and scrub  
- F3.2 Mediterraneo-montane broadleaved deciduous thickets  
- F5.5 Thermo-Mediterranean shrub habitats  
- F7.4 Hedgehog-heaths

49A05 **Retamion sphaerocarpae**  
Mediterranean montane heath, mainly on sandy soils  
- F5.5 Thermo-Mediterranean shrub habitats

49A06 **Ulici europaei-Cytision striati**  
Mediterranean montane heaths of northwest Iberia and southwest France  
- F5.5 Thermo-Mediterranean shrub habitats

49B **CYTISO VILLOSI-TELINETALIA MONSPESULANAE**  
Thermomediterranean broom heathlands

50 **CISTO-LAVANDULETEA**  
Low-grown mediterranean scrub (matorral, garrigue, tomillar, phrygana) on siliceous and ultramafic substrata

50A **LAVANDULETALIA STOECHADIS**  
Xeric-acidophilous scrub on compact substrates from degraded forest brown soils

50A01 **Armerion nebrodensis**  
Acidophilous hedgehog scrub of north Sicilian mountains  
- F7.4 Hedgehog-heaths

50A02 **Cistion ladaniferi**  
West and central Mediterranean xeric-acidophilous shrub communities  
- F5.2 Maquis  
- F7.4 Hedgehog-heaths

50A03 **Cistion laurifolii**  
Xeric-acidophilous shrub communities in districts with continental climate  
- F5.2 Maquis  
- G2.1 Mediterranean evergreen [Quercus] woodland

50A04 **Staehelino-Ulicion baetici**  
Xeric-acidophilous shrub communities on peridotites and serpentine rocks  
- F5.5 Thermo-Mediterranean shrub habitats

50A05 **Ulici argentei-Cistion ladaniferi**  
Ibero-Moroccan thermo-mesomediterranean, xeric silicicolous scrub  
- F5.2 Maquis  
- F5.5 Thermo-Mediterranean shrub habitats

50B **STAURACANTHO GENISTOIDIS-HALIMETALIA COMMUTATI**  
Shrub communities on sandy soils and fossil dunes

50B01 **Coremion albi**  
Degraded or secondary shrub communities on sandy soils and fossil dunes  
- F5.2 Maquis
F5.5 Thermo-Mediterranean shrub habitats

51 CISTO-MICROMERIETEA JULIANAE
East Mediterranean hedgehog-heaths and low-grown broom phryganas

51A CISTO-ERICETALIA
Sclerophyllous scrub on red soils and limestone in the Balkans and southern Italy

51A01 Cisto-Ericion
Sclerophyllous scrub on red soils and limestone in the Balkans and southern Italy

F5.1 Arborescent matorral
F5.2 Maquis
F6.3 Illyrian garrigues
G3.7 Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])

51B POTERIETALIA SPINOSI
Low-growing broom phryganas of the eastern Mediterranean

51B01 Cisto-Hypericion bithynici
East-Mediterranean xeric and moderately acidophilous shrub communities

F6.2 Eastern garrigues
F6.3 Illyrian garrigues

51B02 Dorycnio-Coridothymion capitati
Mesomediterranean low scrub of rocky calcareous soils in northern Greece

F6.2 Eastern garrigues
F7.3 East Mediterranean phrygana

51B03 Hyperico empetrifolii-Micromeron graecae
Thermomediterranean phrygana of peninsular Greece and the Aegean region

F6.2 Eastern garrigues
F7.3 East Mediterranean phrygana

51B04 Micromeron julianae
Mesomediterranean phrygana on humus soils in northern Greece

52 QUERCETEA ILICIS
Mediterranean maquis, mediterranean pine woods and associated sclerophyllous scrub

52A PISTACIO LENTISCI-RHAMNETALIA ALATERNI
Maquis and matorral centered in the thermomediterranean belt

52A01 Acero sempervirenti-Cupression sempervirentis
Cypress forest of the supramediterranean belt of Crete

F5.1 Arborescent matorral
G3.9 Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

52A02 Alyssion euboei
Ultramafic Pinus halepensis woodlands of Euboea and the Greek mainland

52A03 Arbuto andrachnae-Quercion cocciferae
East Mediterranean degraded sclerophyllous scrub on calcareous soils of the mesomediterranean belt

F5.1 Arborescent matorral
F6.2 Eastern garrigues
G2.1 Mediterranean evergreen [Quercus] woodland

52A04 Arbuto unedonis-Laurion nobilis
Atlantic broadleaf laurel woodland of northern Spain

F5.1 Arborescent matorral
F9.3 Southern riparian galleries and thickets

52A05 Asparago albi-Rhamnion oleoidis
West Mediterranean maquis in the semiarid and arid belts
F5.2 Maquis
F5.5 Thermo-Mediterranean shrub habitats

52A06 Ceratonio-Rhamnion oleoidis
East Mediterranean scrub of the thermomediterranean belt
F5.1 Arborescent matorral
F5.2 Maquis
F5.5 Thermo-Mediterranean shrub habitats
G2.4 [Olea europaea] - [Ceratonia siliqua] woodland
G3.7 Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])

52A07 Ericion arboreae
Spanish sclerophyllous evergreen scrub
F5.2 Maquis

52A08 Genisto spartioidis-Phlomidion almeriensis
Thermophilous evergreen scrub of southern Spain
F5.5 Thermo-Mediterranean shrub habitats

52A09 Juniperion turbinatae
West Mediterranean juniper woodland on larger dune systems
B1.6 Coastal dune scrub
F5.1 Arborescent matorral
F5.2 Maquis
F5.5 Thermo-Mediterranean shrub habitats

52A10 Oleo-Ceratonion siliquae
East and central Mediterranean maquis, matorral and thermophilous pine woodlands
B1.6 Coastal dune scrub
F5.2 Maquis
F5.5 Thermo-Mediterranean shrub habitats
G2.1 Mediterranean evergreen [Quercus] woodland
G2.4 [Olea europaea] - [Ceratonia siliqua] woodland
G3.7 Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])
G3.9 Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

52A11 Peripliocion angustifoliae
South Mediterranean low maquis
F5.1 Arborescent matorral
F5.2 Maquis
F5.5 Thermo-Mediterranean shrub habitats
G3.9 Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

52A12 Pino acutisquamae-Juniperion phoeniceae
Thermomediterranean maquis

52A13 Quercion fruticosae
Coastal evergreen oak woodland of southwest Iberia

52A14 Rhamno graeci-Juniperion lyciae
Aegeo-Anatolian low-grown coastal maquis and garrigue

52A15 Rhamno lycioidis-Quercion cocciferae
West Mediterranean dense scrub of spiny oak in the semiarid regions
F5.2 Maquis
F5.5 Thermo-Mediterranean shrub habitats
F6.1 Western garrigues

52A16 Rubo longifoliae-Coremion albi
Scrub of coastal dunes in south-west Iberia

52B QUERCETALIA ILICIS
Evergreen oak woods and maquis of the Mediterranean

52B01  **Erico-Quercion ilicis**
Acidophilous evergreen oak woods of the northwestern Mediterranean

52B02  **Quercion broteroii**
Iberian evergreen or semi-evergreen forests in regions of mild mediterranean-atlantic climate

   G1.7 Thermophilous deciduous woodland
   G2.1 Mediterranean evergreen [Quercus] woodland

52B03  **Quercion ilicis**
Calciphilous evergreen oak woods of the northwestern Mediterranean

   F5.1 Arborescent matorral
   F5.2 Maquis
   F6.1 Western garrigues
   F6.3 Illyrian garrigues
   G1.7 Thermophilous deciduous woodland
   G2.1 Mediterranean evergreen [Quercus] woodland
   G2.2 Eurasian continental sclerophyllous woodland
   G2.5 [Phoenix] groves
   G2.6 [Ilex aquifolium] woods
   G3.1 [Abies] and [Picea] woodland
   G3.7 Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])
   G3.9 Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

52B04  **Querco rotundifoliae-Oleion sylvestris**
Evergreen oak woods and maquis on deep soils of the thermomediterranean belt of the Iberian Peninsula

   F5.3 Pseudomaquis
   G1.7 Thermophilous deciduous woodland
   G2.1 Mediterranean evergreen [Quercus] woodland

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L  TEMPERATE BROADLEAVED FORESTS AND SCRUB

53  **SALICETEA PURPUREAE**
Willow and poplar scrub and woodland of margins of mountain and lowland rivers

53A  **SALICETALIA PURPUREAE**
Willow scrub and woodland of margins of lowland and mountain rivers

53A01  **Rubo caesii-Amorphion fruticosae**
Scrub on gleyic temporarily-flooded soils of Ukraine

53A02  **Salicion albae**
Willow scrub and woodland of sub-montane and lowland river shools and terraces

   F9.1 Riverine and lakeshore [Salix] scrub
   G1.1 Riparian [Salix], [Alnus] and [Betula] woodland
   G1.3 Mediterranean [Populus], [Fraxinus], [Ulmus] and related riparian woodland
   G1.7 Thermophilous deciduous woodland
   G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

53A03  **Salicion eleagno-daphnoidis**
Willow scrub of montane stream banks in the Alps and Carpathians

   F9.1 Riverine and lakeshore [Salix] scrub

53A04  **Salicion phyllicifoliae**
Willow scrub of montane stream banks and deltas in northern Europe

**Salicion salviifoliae**
Willow scrub of montane stream banks in Iberia

*F9.1 Riverine and lakeshore [Salix] scrub*

**Salicion triandrae**
Willow scrub of river banks below levées

*F9.1 Riverine and lakeshore [Salix] scrub*

**Salicion triandro-neotrichae**
Willow scrub of lime-rich montane stream banks in northern Spain

*F9.1 Riverine and lakeshore [Salix] scrub*

**Securinegion buxifoliae**
Thorny riparian scrub in southwestern Iberia

*F9.3 Southern riparian galleries and thickets*

**POPULATEA ALBAE**
Ash, Alder and Willow riparian woodlands

**FRAXINETALIA**
Riparian woodlands of western, central and southeastern Europe

**Alnion incanae**
Ash and alder woodland communities of flushed lime-rich soils in central and western Europe

*G1.1 Riparian [Salix], [Alnus] and [Betula] woodland
G1.2 Fluvial [Fraxinus] - [Alnus] and [Quercus] - [Ulmus] - [Fraxinus] woodland
G1.3 Mediterranean [Populus], [Fraxinus], [Ulmus] and related riparian woodland
G1.7 Thermophilous deciduous woodland
G1.8 Acidophilous [Quercus]-dominated woodland
G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]
G1.A Meso-and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
G1.B Non-riverine [Alnus] woodland*

**Alno-Quercion roboris**
Southeast European and Italian ash-alder floodplain woods

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

**Fraxinion angustifoliae**
Ash woodland swamps and fens in the Apennines

*G1.1 Riparian [Salix], [Alnus] and [Betula] woodland
G1.2 Fluvial [Fraxinus] - [Alnus] and [Quercus] - [Ulmus] - [Fraxinus] woodland
G1.3 Mediterranean [Populus], [Fraxinus], [Ulmus] and related riparian woodland*

**POPULETALIA ALBAE**
Mediterranean and sub-mediterranean pioneer riparian woodlands

**Lauro-Fraxinion oxycarpae**
Riparian woodlands of the eastern Balkans and Greece

**Osmundo-Alnion**
Alder and willow woodlands of west Mediterranean streams

*G1.1 Riparian [Salix], [Alnus] and [Betula] woodland
G1.4 Broadleaved swamp woodland not on acid peat
G1.5 Broadleaved swamp woodland on acid peat*
**Populion albae**
Submediterranean and mediterranean poplar and willow riparian woods

- G1.1 Riparian [Salix], [Alnus] and [Betula] woodland
- G1.3 Mediterranean [Populus], [Fraxinus], [Ulmus] and related riparian woodland

**ALNETEA GLUTINOSAE**
Alder and willow woodlands of swamps, fens and wet pastures

**ALNETALIA GLUTINOSAE**
Alder and willow woodlands of swamps, fens and wet pastures

**55A01 Alnion glutinosae**
Alder and willow woodlands of swamps, fens and wet pastures

- G1.2 Fluvial [Fraxinus] - [Alnus] and [Quercus] - [Ulmus] - [Fraxinus] woodland
- G1.3 Mediterranean [Populus], [Fraxinus], [Ulmus] and related riparian woodland
- G1.4 Broadleaved swamp woodland not on acid peat
- G1.5 Broadleaved swamp woodland on acid peat

**FRANGULETEA**
Scrub and hedges on acid, nutrient poor, often peaty soils of western and central Europe

**56A RUBETALIA PLICATI**
Acidophilous scrub, hedges and underscrub of forest clearings on dry sandy, nutrient-poor soils

**56A01 Lonicero-Rubion silvatici**
Bramble underscrub of woodland edges and clearings in the Atlantic zone

**56A02 Ulici-Sarothamnion**
Broom and gorse scrub

**56B SALICETALIA AURITAE**
Willow scrub and woodland of mires

**56B01 Salicion cinereae**
Willow scrub and woodland of mires

- D1.1 Raised bogs
- D2.2 Poor fens
- D4.1 Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks
- F9.2 [Salix] carr and fen scrub
- F9.3 Southern riparian galleries and thickets
- G1.1 Riparian [Salix], [Alnus] and [Betula] woodland
- G1.5 Broadleaved swamp woodland on acid peat
- G3.E Nemoral bog conifer woodland

**57 NERIO-TAMARICETEA**
Mediterranean riparian gallery forests and riverine scrub

**57A PLATANETALIA ORIENTALIS**
Riparian gallery forests in the eastern and central Mediterranean

**57A01 Platanion orientalis**
Riparian gallery forests in the eastern and central Mediterranean

**57B TAMARICETALIA AFRICANAE**
Scrub-woodlands of river banks and moist places in the west and south Mediterranean
57B01 **Imperato-Erianthion ravennae**
Vegetation of humid and subsaline depressions in sand

*C3.3 Water-fringing beds of tall canes*

57B02 **Nerion oleandri**
East-Mediterranean riverine scrub with Nerium oleander

*F9.3 Southern riparian galleries and thickets*

57B03 **Rubo ulmifolii-Nerion oleandri**
Riverine Nerium scrub of southwest Europe

57B04 **Tamaricion africanae**
Iberian tamarisk scrub of fresh-water streams

*F9.3 Southern riparian galleries and thickets*

57B05 **Tamaricion boveano-canariensis**
Southern Iberian sub-halophilous tamarisk scrub

*F9.3 Southern riparian galleries and thickets*

57B06 **Tamaricion parviflorae**
Tamarisk scrub of the south-west Balkans

*F9.1 Riverine and lakeshore [Salix] scrub*

57C **TAMARICETALIA RAMOSISSIMAE**
Tamarisk scrub of southeast Europe and central Asia

57C01 **Agropyro fragilis-Tamaricion ramosissimae**
Desert communities dominated by Tamarix ramosissima

57C02 **Artemisio scopariae-Tamaricion**
Tamarisk scrub of the southeast Balkans

57C03 **Galio humifusi-Tamaricion ramosissimae**
Xeromesophilous communities of Tamarix ramosissima and Elaeagnus angustifolia

58 **RHAMNO-PRUNETEA**
Sub-scrub and scrub vegetation seral or marginal to broadleaved woodland

58A **PRUNETALIA SPINOSAE**
Sub-scrub and scrub vegetation seral or marginal to broadleaved woodland

58A01 **Amygdalion nanae**
Scrub communities of the steppe zone of Ukraine and south Russia

*E1.2 Perennial calcareous grassland and basic steppes*

58A02 **Berberidion vulgaris**
Thermophilous scrub on sunny, stony slopes in southern and central Europe

*B1.6 Coastal dune scrub*

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

*F3.1 Temperate thickets and scrub*

*F3.2 Mediterraneo-montane broadleaved deciduous thickets*

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

58A03 **Berberido creticae-Prunion cocomiliae**
Thermophilous thorn scrub of the submediterranean regions of the Apennine and Balkan peninsulas

58A04 **Carpino-Prunion**
Mesophilous hedges and scrub of mesotrophic, base-rich soils in the Atlantic zone

*F3.1 Temperate thickets and scrub*

58A05 **Cytision sessilifoli**
Thermophilous broom scrub of submontane and montane belts of the central and southern Apennines

58A06 **Frangulo alni-Pyrion cordatae**
Mesophytic thorny hedges and scrub on base-poor soils in the colline zone of the Cantabrian fringe

**F3.1 Temperate thickets and scrub**

58A07

**Geo-Acerion platanoidis**
Anthropogenic woodlands in cities of the South Ural

58A08

**Lonicero-Berberidion hispanicae**
Supra- and oro-mediterranean scrub on base-rich substrates in the Baetic and north African mountains

58A09

**Pruno tenellae-Syringion**
Thermophilous scrub on dry soils of the northern and central Balkans

58A10

**Pruno-Rubion radulae**
Bramble communities on neutral and base-rich soils in western and central Europe

- B1.6 Coastal dune scrub
- E5.3 [Pteridium aquilinum] fields
- F3.1 Temperate thickets and scrub
- F5.3 Pseudomaquis
- F5.5 Thermo-Mediterranean shrub habitats
- H3.1 Acid siliceous inland cliffs

58A11

**Pruno-Rubion ulmifolii**
Bramble communities of southern Europe

- B1.6 Coastal dune scrub
- C3.3 Water-fringing beds of tall canes
- E5.3 [Pteridium aquilinum] fields
- F3.2 Mediterraneo-montane broadleaved deciduous thickets

58B

**SALICETALIA ARENARIAE**
Atlantic scrub of coastal dune sands

58B01

**Ligustro-Hippophaeion**
Elder, privet and sea buckthorn scrub of Atlantic dunes

- B1.6 Coastal dune scrub

58B02

**Salicion arenariae**
Willow and sea buckthorn scrub communities of dune slacks and ridges

- B1.6 Coastal dune scrub

58C

**SAMBUCETALIA RACEMOSAE**
Seral elder and willow scrub of nutrient-rich mull soils

58C01

**Arctio-Sambucion nigrae**
Elder scrub of derelict habitations in the Atlantic zone

58C02

**Sambuco racemosae-Salicion capreae**
Seral elder and willow scrub of nutrient-rich mull soils

- F2.3 Subalpine deciduous scrub
- F3.2 Mediterraneo-montane broadleaved deciduous thickets
- G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]
- G5.8 Recently felled areas

58C03

**Senecioni ovati-Corylion**
Hazel scrub on nutrient-rich soils in the (sub)montane zone of central Europe

59

**QUERCO-FAGETEA**
Mixed broadleaved woodland of more temperate climates in central and western Europe

59A

**BETULO PENDULAE-POPULETALIA TREMULAE**
Birch-poplar woodlands
59A01 **Betulion carpatico-pubescentis**
Birch woodlands in mountain regions of southwestern Europe

59A02 **Betulion fontquerio-celtibericae**
Birch woodlands in Spain

\[ G1.9 \] Non-riverine woodland with \([Betula], [Populus tremula], [Sorbus aucuparia]\) or \([Corylus avellana]\)

59A03 **Corylo-Populion tremulae**
Secondary forests of disturbed areas in humid to hyperhumid temperate regions of Spain and France

\[ G1.9 \] Non-riverine woodland with \([Betula], [Populus tremula], [Sorbus aucuparia]\) or \([Corylus avellana]\)

59B **FAGETALIA SYLVATICAE**
Broadleaved woodland and scrub communities of more fertile soils

59B01 **Aconito septentrionalis-Piceion obovatae**
Mixed forests of Picea obovata, Abies sibirica and Tilia cordata on fertile soils of the South Ural

\[ G3.A \] [Picea] taiga woodland

\[ G3.B \] [Pinus] taiga woodland

\[ G4.3 \] Mixed sub-taiga woodland with acidophilous \([Quercus]\)

59B02 **Aconito septentrionalis-Tilion cordatae**
Broadleaved forests of the forest and forest-steppe zones on fertile soils of the South Ural

59B03 **Arenonio-Fagion**
Beech and mixed beech-fir woods of the Illyrian region and western Dinarides

\[ G1.6 \] [Fagus] woodland

\[ G1.7 \] Thermophilous deciduous woodland

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

\[ G3.1 \] [Abies] and [Picea] woodland

59B04 **Carpinion betuli**
Broadleaved woodlands rich in hornbeam on lime-rich and neutral mull soils

\[ F3.1 \] Temperate thickets and scrub

\[ F5.1 \] Arborescent matorral

\[ G1.2 \] Fluvial \([Fraxinus]-[Alnus] and [Quercus]-[Ulmus]-[Fraxinus]\) woodland

\[ G1.4 \] Broadleaved swamp woodland not on acid peat

\[ G1.6 \] [Fagus] woodland

\[ G1.7 \] Thermophilous deciduous woodland

\[ G1.8 \] Acidophilous \([Quercus]\)-dominated woodland

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

\[ G2.6 \] [Ilex aquifolium] woods

\[ G3.1 \] [Abies] and [Picea] woodland

59B05 **Cephalanthero-Fagion**
Thermophilous beech forests mostly on limestone

\[ G1.6 \] [Fagus] woodland

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

59B06 **Doronico orientalis-Fagion moesiaci**
Beech and mixed beech-fir woods of the Dinarides east of the Drina and of the Rodopi

\[ G1.6 \] [Fagus] woodland

\[ G3.1 \] [Abies] and [Picea] woodland
Endymio non-scripti-Fagion
Beech woods of the British Isles and Atlantic fringes of western Europe

Erythronio-Carpinion
Illyrian hornbeam forests
G1.6 [Fagus] woodland
G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

Fagion sylvaticae
Beech and mixed beech-fir woods of western central and northern Europe
F3.2 Mediterraneo-montane broadleaved deciduous thickets
G1.6 [Fagus] woodland
G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]
G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
G1.B Non-riverine [Alnus] woodland
G2.6 [Ilex aquifolium] woods
G3.1 [Abies] and [Picea] woodland
G3.5 [Pinus nigra] woodland
G3.7 Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])
G3.9 Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]
G4.3 Mixed sub-taiga woodland with acidophilous [Quercus]

Galio rotundifolii-Fagion
Relict beech woods of Corsica

Geranio nodosi-Fagion
Beech and mixed beech-fir woods of the northern and central Apennines
G1.6 [Fagus] woodland

Geranio striati-Fagion
Beech and mixed beech-fir woods of the southern Apennines and southern
regions of the Balkan Peninsula
G1.6 [Fagus] woodland
G3.1 [Abies] and [Picea] woodland

Lonicero alpigenae-Fagion
Beech and mixed beech-fir woods of the northern fringes of the Alps
G1.6 [Fagus] woodland
G3.1 [Abies] and [Picea] woodland

Pulmonario longifoliae-Quercion roboris
Mixed oak woods in southwestern Europe
G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

Querco roboris-Tilion cordatae
East European broadleaved and mixed forests from the European part of Russia
and the Baltic countries
G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

Scillo lilio-hyacinthi-Fagion
Beech and mixed beech-fir woods of the Pyrenees and the Cantabrian region
G1.6 [Fagus] woodland

Symphyto cordati-Fagion
Beech and mixed beech-fir woods of the Carpathians
G1.6 [Fagus] woodland
G3.1 [Abies] and [Picea] woodland

**Tilio-Acerion**
Sub-montane maple and lime woods on steep slopes with a mild and humid mesoclimate

* F3.1 Temperate thickets and scrub
* G1.6 [Fagus] woodland
* G1.7 Thermophilous deciduous woodland
* G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

59C **RHODODENDRO PONTICI-FAGETALIA ORIENTALIS**
Euxinic beech and hornbeam forests

59C01 **Fagion orientalis**
Oriental beech woods of Crimea

59C02 Rhododendro pontici-Fagion orientalis
Beech forest with Fagus orientalis of southern Bulgaria and European Turkey

G1.6 [Fagus] woodland
G3.1 [Abies] and [Picea] woodland

60 **QUERCETEA PUBESCENTIS**
Thermophilous woodlands with deciduous oaks of eastern sub-Mediterranean regions

60A **FRAXINO ORNI-COTINETALIA**
Thermophilous mantle communities fringing oak sibljak woodlands of eastern sub-Mediterranean regions

60A01 **Fraxino orni-Cotinion**
Thermophilous mantle communities of circum-Pannonian oak woodlands

* F3.2 Mediterraneo-montane broadleaved deciduous thickets
* G1.7 Thermophilous deciduous woodland

60A02 **Paliuro-Carpinion orientalis**
Sub-mediterranean xerophilous scrub (sibljak) in the Balkans and Italy

* F3.2 Mediterraneo-montane broadleaved deciduous thickets
* F5.3 Pseudomaquis
* F6.2 Eastern garrigues
* F6.3 Illyrian garrigues
* F6.6 Supra-Mediterranean garrigues

60A03 **Syringo-Carpinion orientalis**
Thermophilous mantle communities of the central Balkan oak woodlands

* F3.2 Mediterraneo-montane broadleaved deciduous thickets
* F5.3 Pseudomaquis
* G1.7 Thermophilous deciduous woodland

60B **QUERCETALIA PUBESCENTI-PETRAEAE**
European xerothermophilous forests

60B01 **Abietion cephalonicae**
Greek fir montane forests

* G3.1 [Abies] and [Picea] woodland
* G3.5 [Pinus nigra] woodland

60B02 **Aceri granatensis-Quercion fagineae**
Mesophytic oak and fir forests of Iberia

* G1.7 Thermophilous deciduous woodland
* G2.1 Mediterranean evergreen [Quercus] woodland
* G3.5 [Pinus nigra] woodland

60B03 **Aceri tatarici-Quercion**
Xerophilous oak woods of deep soil in the Sarmato-Pannonian region
G1.7 Thermophilous deciduous woodland
G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

60B04

Carpinion orientalis
Hornbeam woodlands in the Balkans and Italy
F3.1 Temperate thickets and scrub
F3.2 Mediterraneo-montane broadleaved deciduous thickets
F5.3 Pseudomaquis
G1.3 Mediterranean [Populus], [Fraxinus], [Ulmus] and related riparian woodland
G1.7 Thermophilous deciduous woodland
G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

60B05

Carpino orientalis-Quercion pubescentis
Crimean thermophilous oak woodlands on deep brown forest soils over limestone

60B06

Cytiso-Quercion pubescentis
Mountainous thermophilous oak woodlands

60B07

Elytrigio nodosae-Quercion pubescentis
Crimean thermophilous open oak woodlands on deep dry soils on south-facing slopes

60B08

Junipero excelsae-Quercion pubescentis
Crimean thermophilous pseudomaquis replacing oak woodlands
F5.3 Pseudomaquis
G1.7 Thermophilous deciduous woodland
G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland
G3.7 Lowland to montane mediterranean [Pinus] woodland (excluding [Pinus nigra])
G3.9 Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

60B09

Lathyrion veneti
Mediterranean acidophilous deciduous forests of Corsica
G1.7 Thermophilous deciduous woodland
G2.1 Mediterranean evergreen [Quercus] woodland

60B10

Lathyro montani-Quercion cerridis
Mediterranean acidophilous deciduous forests of Italy

60B11

Lathyro-Quercion roboris
Thermophilous forests of the South Ural region

60B12

Lonicero etruscae-Quercion pubescentis
Thermophilous submediterranean deciduous oak woods of central Italy

60B13

Melitto-Quercion
Deciduous oak forests of southern Greece
G1.7 Thermophilous deciduous woodland

60B14

Paeonio broteroi-Abietion pinsapo
Baetic fir woods with Abies pinsapo
G2.1 Mediterranean evergreen [Quercus] woodland

60B15

Quercion conferta
Thermophilous mixed oak forests in the Balkans, Greece and southern Italy
F5.1 Arborescent matorral
G1.6 [Fagus] woodland
G1.7 Thermophilous deciduous woodland
G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]

60B16 **Quercion petraeae**
Central European thermophilous oak forests on acidic bedrocks
- F5.3 Pseudomaquis
- G1.7 Thermophilous deciduous woodland
- G1.8 Acidophilous [Quercus]-dominated woodland

60B17 **Quercion pubescenti-sessiliflorae**
Downy oak forest of the western sub-mediterranean zone and of the fringes of central European mountains
- G1.7 Thermophilous deciduous woodland
- G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]
- G2.1 Mediterranean evergreen [Quercus] woodland
- G3.2 Alpine [Larix] - [Pinus cembra] woodland

61 **QUERCETEA ROBORIS**
Acidophilous species-poor oak, oak-birch and beech deciduous woods on nutrient-poor soils

61A **LUZULO-FAGETALIA**
Acidophilous beech forests in central and western Europe

61A01 **Ilici-Fagion**
Acidophilous beech forests of south-west Europe
- G1.6 [Fagus] woodland
- G1.8 Acidophilous [Quercus]-dominated woodland

61A02 **Luzulo-Fagion**
Acidophilous beech forests of central and north-west Europe
- G1.6 [Fagus] woodland
- G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]

61B **QUERCETALIA ROBORIS**
Oak and oak-birch woods on acid soils in western, central and eastern Europe

61B01 **Agrostio capillaris-Quercion petraeae**
Oak and oak-birch woods on acid soils in central Europe

61B02 **Castaneo-Quercion petraeae**
Submediterranean acidophilous chestnut-oak woods of the Balkans and southeastern Europe
- G1.A Meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland

61B03 **Convallario majalis-Quercion roboris**
Acidophilous species-poor oak woods on gleyic podzolized soils of the Ukraine

61B04 **Dicrano-Quercion**
Oak and oak-birch woods on extreme nutrient poor xerovague soils in northwestern Europe

61B05 **Genisto germanicae-Quercion**
Oak and oak-birch woods of central and east-central Europe
- G1.7 Thermophilous deciduous woodland
- G1.8 Acidophilous [Quercus]-dominated woodland
- G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]

61B06 **Molinio-Quercion roboris**
West European wet acidophilous oak-woods on gleyic soils
**Pino-Quercion**
Acidophilous pine-oak woods of sub-boreal eastern Europe
- G1.8 Acidophilous [Quercus]-dominated woodland
- G3.4 [Pinus sylvestris] woodland south of the taiga

**Quercion pyrenaicae**
Oak woods of south-west Europe
- G1.7 Thermophilous deciduous woodland
- G1.8 Acidophilous [Quercus]-dominated woodland
- G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]
- G2.1 Mediterranean evergreen [Quercus] woodland

**Quercion roboris**
Oak and oak-birch woods of acid soils in central and western Europe
- E5.3 [Pteridium aquilinum] fields
- G1.6 [Fagus] woodland
- G1.7 Thermophilous deciduous woodland
- G1.8 Acidophilous [Quercus]-dominated woodland
- G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]
- G2.6 [Ilex aquifolium] woods
- G3.4 [Pinus sylvestris] woodland south of the taiga

**Vaccinio myrtilli-Quercion petraeae**
Oak and oak-birch woods of acid soils in northwestern Europe

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**M MONTANE HEATHS AND CONIFEROUS FORESTS**

62  **LOISELEURIO-VACCINIETEA**
Arctic-boreal and (sub)alpine dwarf-shrub heathlands

62A  **RHODODENDRO-VACCINIETALIA**
Arctic-boreal and (sub)alpine dwarf-shrub heathlands

62A01  **Bruckenthalion spiculifoliae**
Subalpine acidophilous heath of the southern Carpathians and Stara Planina (Balkans)
- F2.2 Evergreen alpine and subalpine heath and scrub

62A02  **Loiseleurio-Diapension**
Arctic-boreal chionophilous tundra scrub
- E4.2 Moss and lichen dominated mountain summits, ridges and exposed slopes
- E4.3 Acid alpine and subalpine grassland
- F2.2 Evergreen alpine and subalpine heath and scrub
- F4.2 Dry heaths

62A03  **Loiseleurio-Vaccinion**
Arctic chionophobous heath of wind-swept exposed slopes and summits
- F1.2 Moss and lichen tundra
- F2.2 Evergreen alpine and subalpine heath and scrub
- F4.2 Dry heaths

62A04  **Phyllodoco-Vaccinion myrtilli**
Moderately chionophilous communities of snow-bound slopes of Scandinavia
- F2.2 Evergreen alpine and subalpine heath and scrub
- G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]
62A05 **Rhododendro-Vaccinion**
Subalpine chionophilous wind-swept dwarf shrub heath of the Alps and Carpathians

- F2.2 Evergreen alpine and subalpine heath and scrub
- F2.3 Subalpine deciduous scrub
- F2.4 [Pinus mugo] scrub
- F7.2 Central Mediterranean spiny heaths
- G3.2 Alpine [Larix] - [Pinus cembra] woodland
- G3.3 [Pinus uncinata] woodland

62A06 **Juniperion nanae**
Juniper scrub of dry, wind-swept habitats of the western and central Alps

- F2.2 Evergreen alpine and subalpine heath and scrub
- F2.3 Subalpine deciduous scrub
- G3.3 [Pinus uncinata] woodland

63 **ERICO-PINETEA**
Calcareous relict montane pine woods of the Balkans, the Alps and Carpathians

63A **ERICO-PINETALIA**
Calcareous relict montane pine woods of the Balkans, the Alps and Carpathians

63A01 **Erico-Pinion sylvestris**
Relict open pine woods of the Alps, Carpathians and northern Dinarides

- F2.2 Evergreen alpine and subalpine heath and scrub
- F7.2 Central Mediterranean spiny heaths
- G3.2 Alpine [Larix] - [Pinus cembra] woodland
- G3.3 [Pinus uncinata] woodland
- G3.4 [Pinus sylvestris] woodland south of the taiga
- G3.5 [Pinus nigra] woodland

63A02 **Fraxino orni-Ericion**
Balkan relict pine woods on ultramafic rocks and dolomites

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

63A03 **Fraxino orni-Pinion nigrae**
Central and southern Balkan open Pinus nigra woods on calcareous substrates

- G3.4 [Pinus sylvestris] woodland south of the taiga
- G3.5 [Pinus nigra] woodland

63A04 **Juniperion excelsae**
Balkan open conifer woods on limestone and schist

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

63A05 **Pinion heldreichii**
Calcareous and ultramafic Balkan open Pinus leucodermis woods

- G3.6 Subalpine mediterranean [Pinus] woodland

63A06 **Pinion kochianae**
Calcareous Crimean open pine woods

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

63B **RHODODENDRO HIRSUTI-ERICETALIA CARNEAE**
Dwarf heath on calcareous soils in the Alps and northern Dinarics

63B01 **Epipactido atropurpureae-Pinion mugo**
Calcicolous krummholz in the subalpine belt of the central Apennines
Ericion carneae
Dwarf heath on calcareous soils in the Alps and northern Dinarics
F2.2 Evergreen alpine and subalpine heath and scrub

Pino mugo-Ericion
Calciphyllous krummholz of Pinus mugo
F2.2 Evergreen alpine and subalpine heath and scrub
F2.4 [Pinus mugo] scrub
F7.2 Central Mediterranean spiny heaths
G3.2 Alpine [Larix] - [Pinus cembra] woodland
G3.3 [Pinus uncinata] woodland

Pyrolo-Pinetea
Euro-Siberian (sub)continental thermophilous pine woods

Ononido-Pinion
Thermophilous inner alpine pine woods with undergrowth of steppic character
G3.4 [Pinus sylvestris] woodland south of the taiga

Festuco-Pinetalia sylvestris
Continental north-temperate and sub-boreal pine woods on stabilized sands

Cytiso ruthenici-Pinion
Boreal and sub-continental pine woodlands
G3.4 [Pinus sylvestris] woodland south of the taiga

Festuco vaginatae-Pinion
Pine woods on old sand dunes of the Pannonian Basin
G3.4 [Pinus sylvestris] woodland south of the taiga

Pino-Juniperetalia
Oromediterranean and supra-mediterranean dry acidic juniper-pine woods and scrub of Iberia, Italy and the western Alps

Juniperetalia hemisphaericae
Oromediterranean secondary oligotrophic dwarf scrub of the Iberian Peninsula, northern Tyrrhenian fringes and North African Atlas

Cytision oromediterranei
Silicicolous pine woodland and juniper scrub in the Iberian mountains
F2.2 Evergreen alpine and subalpine heath and scrub
F3.2 Mediterraneo-montane broadleaved deciduous thickets
F7.4 Hedgehog-heaths
G3.3 [Pinus uncinata] woodland
G3.4 [Pinus sylvestris] woodland south of the taiga

Genisto versicoloris-Juniperion hemisphaericae
Silicicolous dwarf broom and juniper scrub in the oromediterranean belt of the Sierra Nevada

Pruno prostratae-Juniperion sabinae
Oromediterranean and supra-mediterranean calcicolous dry juniper scrub of central and southern Iberia

Pino-Juniperetalia
Pine woodlands in mediterranean-montane climate

Avenello ibericae-Pinion ibericae
Oromediterranean silicicolous dry pine woodlands of the Iberian Peninsula

Daphno oleoidis-Juniperion alpinæ
Calcicolous juniper scrub of montane and subalpine belts of the central and southern Apennines

**65B03 Juniperion thuriferae**
West Mediterranean-montane juniper woods or scrub
- G3.5 [Pinus nigra] woodland
- G3.9 Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

**65B04 Junipereto intermediae-Pinion catalaunicae**
Pine woodlands of the montane belt of the Pyrenees
- G3.3 [Pinus uncinata] woodland
- G3.7 Lowland to montane Mediterranean [Pinus] woodland (excluding [Pinus nigra])

**65B05 Pino sylvestris-Juniperion sabinae**
Pyrenean and West Alpic oromediterranean pine woods and juniper scrub
- F2.2 Evergreen alpine and subalpine heath and scrub
- G3.3 [Pinus uncinata] woodland
- G3.4 [Pinus sylvestris] woodland south of the taiga

**66 Vaccinio-Piceetea**
Coniferous forest communities, and related heaths, of more acidic soils

**66A Athyrrio-Piceetalia**
Mesophilous spruce and fir forests of central and northern European mountains

**66A01 Abieti-Piceion**
Mesophilous spruce-fir forests on brown forest soils of central European mountains
- G3.1 [Abies] and [Picea] woodland

**66A02 Chrysanthemo rotundifolii-Piceion**
Herb-rich mesophilous spruce forests of central and northern European mountains
- G3.1 [Abies] and [Picea] woodland

**66B Junipereto-Pinetalia Mugo**
Subalpine silicicolous krummholz of mountains of central and southwestern Europe

**66B01 Pinion mugo**
Subalpine silicicolous krummholz of mountains of central and southwestern Europe
- F2.4 [Pinus mugo] scrub
- F7.2 Central Mediterranean spiny heaths
- G3.1 [Abies] and [Picea] woodland
- G3.2 Alpine [Larix] - [Pinus cembra] woodland

**66C Piceetalia excelsae**
European coniferous forest communities of nutrient-poor acid soils

**66C01 Dicrano-Pinion**
Pine and juniper woodland communities of acid soils
- B1.7 Coastal dune woods
- F3.1 Temperate thickets and scrub
- G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]
- G3.4 [Pinus sylvestris] woodland south of the taiga
- G3.E Nemoral bog conifer woodland

**66C02 Piceion excelsae**
Spruce and birch related woodland communities
- F2.2 Evergreen alpine and subalpine heath and scrub
F2.3 Subalpine deciduous scrub
F2.4 [Pinus mugo] scrub
F7.2 Central Mediterranean spiny heaths
G1.9 Non-riverine woodland with [Betula], [Populus tremula], [Sorbus aucuparia] or [Corylus avellana]
G3.1 [Abies] and [Picea] woodland
G3.2 Alpine [Larix] - [Pinus cembra] woodland
G3.4 [Pinus sylvestris] woodland south of the taiga
G3.E Nemoral bog conifer woodland

66C03 Pinion peucis
Montane and subalpine silicicolous woodlands of the Balkans
G3.6 Subalpine mediterranean [Pinus] woodland

66C04 Pinion uncinatae
Acidophilous forests of Pinus uncinata of the western Alps and Pyrenees
G3.3 [Pinus uncinata] woodland

N WEED COMMUNITIES

67 STELLARIETEA MEDIAE
Weed communities of arable crops, gardens and waste places

67A ATRIPLICI-CHENOPODIETALIA ALBI
Weed communities of arable crops, gardens and waste places
67A01 Arnoseridion minimae
Weed communities of cereal fields on lime-deficient soils
67A02 Galeopsion bifidae
Segetal communities of oligotrophic soils in the forest zone of European Russia
67A03 Lolio remotae-Linion
Central European flax field weed communities
67A04 Panico-Setarion
Weed communities of root crops and summer cereals dominated by graminoids
67A05 Polygono-Chenopodion polyspermi
Weed communities of root crops and summer cereals dominated by herbs
67A06 Scleranthion annui
European arable weed communities of neutral to acid loamy and sandy-loam soils
67A07 Spergulo-Oxalidion
European arable weed communities of moist loamy soils

67B CENTAUREETALIA CYANI
Weed communities of arable crops, gardens and waste places
67B01 Anthemido ruthenicae-Sisymbrium orientalis
Cereal weed communities on chernozem and sandy meadow soils in steppe zone of Ukraine
67B02 Caucaolidion lappulae
Spring segetal communities of cereal crops on base-rich soils in central Europe
67B03 Chenopodio albi-Descurainion sophiae
Cereal weed communities on typical chernozem soils in the forest-steppe and steppe zones of Ukraine
67B04 Fumario wirtgenii-agrariae
Central Mediterranean winter-crop arable weed communities
67B05 Lactucion tataricae
Weed communities on chernozem soils of the south Ural steppe zone

Papaverion rhoeadis
Weed communities of grey-forest soils in Ukraine

Ridolfion segeti
Weed communities of semi-arid areas of North Africa and Spain

Roemerion hybridae
Spring segetal communities on clayey and calcareous soils of mesomediterranean and lower supramediterranean zones of western Europe

II.3 Arable land with unmixed crops grown by low-intensity agricultural methods

Sherardion arvensis
Central European arable weed communities

Trifolio-Medicaginion sativae
Perennial weed communities of animal food crops in central and south Europe

Veronicco chaubardii-Scandicion graeae
Southern Greek weed communities of calcareous, loamy and clayey soils

Veronico politae-Taraxacion
Weed communities in permanent fodder plant cultures on loamy and clayey soils

Veronico-Euphorbion
Communities of arable and garden weeds on base-rich soils

Veronico-Fumarion
European vineyard weed communities

Vicio narbonensis-Milion vernalis
Segetal communities of cereals in northern Greece

CHENOPODIETALIA MURALIS
Mediterranean nitrophilous ruderal communities of low-grown herbs

Chenopodion muralis
Mediterranean ruderal communities of semi-shaded, nutrient-rich places

Mesembryanthemion crystallini
Nitrophilous communities of succulents on sub-halophytic soils

ERAGROSTIETALIA
Thermophilous grass-rich ruderal vegetation on dry sandy substrates

Amarantho-Chenopodion
East and southeast European thermophilous weed communities of crops on sandy soils

Diplotaxidion erucoidis
West and central Mediterranean weed communities of sandy, acidic, nutrient-poor soils

Eragrostio-Polygonion arenastri
Summer-dry west and central European trampled plant communities on dry sandy soils

Euphorbion prostratae
Iberian and Macaronesian xerophilous trampled communities of disturbed sandy soils

Matricario chamomillae-Chenopodion albi
Weed communities of warm-temperate regions of east Europe on slightly salty, heavy soils

Polycarpo-Eleusinion indicae
Thermophilous communities rich in C4 species of trampled habitats in Italy and the Illyrian region

Salsolion ruthenicae
Central European and Pannonian ruderal communities of disturbed gravelly and sandy soils

E1.2 Perennial calcareous grassland and basic steppes

67E SISYMBRIETALIA
Ruderal communities of arable crops, gardens and waste places

67E01 Atriplicion nitentis
Central and east European ruderal communities of tall fast-growing herbs

67E02 Fedio-Convulvulion cupaniani
Ruderal communities in southern Europe

67E03 Malvion neglectae
Nitrophilous ruderal communities of low-grown herbs of temperate Europe

E6.2 Continental inland saline grass and herb-dominated habitats

67E04 Salsolo-Atriplicion nitentis
Ruderal communities of dry mineral habitats of industrial wastes and roadsides in the South Ural

67E05 Sisymbriion officinalis
Tall-herb ruderal communities of spring annuals of sandy and loamy skeletal soils of temperate winter-mild Europe

67F THERO-BROMETALIA
Overgrazed vegetation of abandoned fields on nutrient-poor soils in the Mediterranean area

67F01 Alyssio granatensis-Brassicion barrelieri
Spring pioneer communities of nutrient-poor soils of the Spanish Meseta Central

E1.6 Subnitrophilous grassland

67F02 Resedo lanceolatae-Moricandion
South Iberian arid xerophilous sub-nitrophilous low-herb communities

E1.6 Subnitrophilous grassland

67F03 Cerintho majoris-Fedion cornucopiæ
South Iberian segetal communities of lime-rich clays

67F04 Echio plantaginei-Galactition tomentosae
Mediterranean tall short-lived herb communities on lime- and nutrient-rich soils

67F05 Hordeion murini
Mediterranean ruderal communities rich in winter annual grasses

67F06 Laguro ovati-Bromion rigidì
Therophytic closed grasslands on disturbed coastal sand dunes of western Europe

67F07 Linario polygalifoliae-Vulpion aloepecuroïdis
South Spanish therophyte-rich disturbed coastal dune pasture communities

67F08 Taeniathero-Aegilopion geniculatae
Thermophilous annual grassy communities of formerly overgrazed disturbed habitats of the Spanish Meseta Central

E1.6 Subnitrophilous grassland

68 POLYGONO-POETEA ANNUAE
Therophyte-rich vegetation of trampled habitats

68A POLYGONO ARENASTRI-POETALIA ANNUAE
Therophyte-rich vegetation of trampled habitats

68A01 Matricario-Polygonion avicularis
Weed communities of drier trampled and shaded places in temperate climates

68A02 Polycarpon tetraphylli
Central and west Mediterranean and sub-mediterranean communities
Saginion procumbentis
Strongly-trampled vegetation in moister places

ARTEMISIETEA VULGARIS
Perennial and thistle-rich (sub)xerophilous ruderal communities of temperate and mediterranean regions

ACHILLEETALIA MILLEFOLII
Weed communities of agricultural crops of perennial grasses in the South Ural region

Achilleion millefolii
Weed communities of agricultural crops of perennial grasses in the South Ural region

AGROPYRETALIA REPENTIS
Anthropogeneous dry tall-grass perennial swards on loamy soils

Agropyro-Kochion
Short grasslands on loess with relics of Pannonian steppes

Bassio-Artemision austriacae
Xerophyte communities of grazed steppes in Ukraine and southeast Russia

Bromo-Oryzopsion miliaeeae
West and central Mediterranean xerophytic, moderately nitrophilous tall grass disturbed communities

Convulvulo arvensis-Agropyron repentin
Tall-herb mainly grass-dominated perennial ruderal vegetation on loamy, base-rich soils of central and southeast Europe

Inulo viscosae-Agropyron repentin
Tall-herb perennial ruderal communities on loamy soils of the submediterranean regions of Italy, southeast Europe and the Balkans

CARTHAMETALIA LANTII
Biennial and annual weed communities of the Mediterranean

Onopordion illyrici
Thistle vegetation of disturbed calcareous substrates of the submediterranean and higher-altitudes of the Mediterranean

Onopordion castellani
Thistle vegetation of lime-rich substrates in Iberia

Silybo-Urticion
Tall thistle vegetation of the central Mediterranean

Erysimo wittmannii-Hackelion
Xero-mesophilous ruderal communities of biennials on nutrient-rich soils

Arction lappae
Mesophytic communities of moister soils in cooler climates

Carduo carpetani-Cirsion odontolepidis
Nitrophilous supra-oromediterranean thistle communities of the Spanish Meseta Central

Cirsion richterano-chodati
Biennial vegetation of disturbed soils in Cantabria and the Pyrenees at high altitudes

Dauco-Melilotion
Xero-mesophilous ruderal communities of biennials on nutrient-rich soils of central Europe

Erysimo wittmannii-Hackelion
Therophyte-rich vegetation of mammal lairs under stone overhangs in the Alps and Carpathians

**Onopordion acanthii**
Xero-mesophilous ruderal communities of tall thorny biennials on nutrient-rich soils of subcontinental Central Europe

**69D06**

**70 GALIO-URTICETEA**
Tall-herb mesophilous anthropogeneous fringe vegetation of woodlands and scrub and semi-natural tall saum of water courses of temperate Europe

**70A CHELIDONIO-ROBINIETALIA**
Spontaneous Robinia and Acer negundo woodlands

**70A01**
**Balloto nigrae-Robinion**
Robinia groves and scrub with weedy understorey on loamy-sandy dry soils

**70A02**
**Chelidonio-Acerion negundi**
Eastern European spontaneous groves and scrub dominated by Acer negundo

**70A03**
**Chelidonio-Robinion**
Robinia groves and scrub with weedy understorey on loamy-clayey, mesic soils

**70B CONVOLVULETALIA SEPIUM**
Semi-natural saum vegetation on banks of rivers and other water bodies of temperate Europe

**70B01**
**Bromo ramosi-Eupatorion cannabini**
Tall-herb and liane-rich vegetation of river banks in Spain

**70B02**
**Cynancho-Convulvolion sepium**
Mediterranean tall-herb riparian vegetation

**70B03**
**Galio veri-Aristolochion clematidis**
Herb-rich communities on sandy soils with alternating water regime of riverine alluvia of Dnipr River (Ukraine)

**70B04**
**Nardosmion laevigatae**
Natural nitrophilous communities of tall perennial herbs of mountain rivers and streams in south Urals

**70B05**
**Petasition officinalis**
Tall-herb vegetation of raw alluvium soils on montane streamsides in Carpathians and Hercynicum

**70B06**
**Senecionion fluitatis**
Communities of tall herbaceous nitrophiles around eutrophic lakes and ditches

**E5.4 Moist or wet tall-herb and fern fringes and meadows**

**70B07**
**Senecionion samniti**
Nitrophilous tall-herb communities of mountain streamsides of the central and southern Apennines

**70C GERANIO-CARDAMINETALIA HIRSUTAE**
Mediterraneo-Atlantic mesic nitrophilous fringe winter-annual vegetation

**70C01**
**Drabo muralis-Cardaminion hirsutae**
Therophytic sciophilous fringe communities of atlantic regions of France

**70C02**
**Geranio purpurei-Torilidion neglectae**
Canary Island herbaceous fringe communities of mesic to wet laurel woodland

**70C03**
**Geranio pusilli-Anthriscion caudalis**
Mesic nitrophilous fringe vegetation of Atlantic to sub-Mediterranean regions

**70C04**
**Parietario lusitanico-mauritanicae**
Mesic nitrophilous fringe vegetation of Mediterranean regions

**70C05**
**Veronicico-Urticion urentis**
Central and east Mediterranean heliophilous and nitrophilous winter-annual communities
70D Lamio albi-Chenopodieta Boni-Henrici
Ruderal and semi-natural communities of tall mesophilous and nitrophilous perennials

70D01 Aegopodion podagrariae
Communities of sunny and semi-shaded margins and clearings of woody vegetation

- A2.6 Coastal saltmarshes and saline reedbeds
- E5.4 Moist or wet tall-herb and fern fringes and meadows
- E5.5 Subalpine moist or wet tall-herb and fern habitats

70D02 Allion triquetri
West Mediterranean communities of shady fringes

70D03 Anthriscion nemorosae
Oak-woodland fringe communities dominated by winter annuals of central Italy

70D04 Balloto-Conion maculati
Nitrophilous perennial tall-herb communities of man-made habitats at high-altitudes in (sub)mediterranean southern Europe

70D05 Carduo-Urticion dioicae
Sub-montane to subalpine communities on more base-rich substrates in central Europe

70D06 Galio-Alliarion
Thermophilous semi-natural communities of nitrophilous perennials of sunny forest meadow ecotones

- E5.4 Moist or wet tall-herb and fern fringes and meadows

70D07 Impatientinolitangere-Stachyion sylvaticae
Mesophilous and sciophilous forest-fringe and clearing vegetation of deciduous woods of colline to submontane belts in central Europe

- E5.4 Moist or wet tall-herb and fern fringes and meadows

71 Epilobietea angustifolii
Species-poor vegetation of damp fertile soils in woodland margins, clearings and burned places

71A Atropetalia
Tall-herb vegetation of clearings of deciduous woodlands

71A01 Asparago verticillati-Crataegion tauricae
Thermophilous shrub communities of Crimea

71A02 Atropion
Herbaceous forest-clearing communities associated with deciduous forests on nutrient-rich soils of central and western Europe

- G5.8 Recently felled areas

71A03 Carici piluliferae-Epilobion angustifolii
Herbaceous forest-clearing communities associated with deciduous forests on nutrient-poor soils of central and western Europe

- E1.7 Non-Mediterranean dry acid and neutral closed grassland
- G5.8 Recently felled areas

71A04 Linarion niveae
Vegetation of clearings in Iberian acidophilous oak woodlands

72 Bidentetalia tripartitae
Pioneer vegetation dominated by nutrient-demanding summer annuals on periodically flooded edges of water bodies and heavily nutrient-loaded ruderal habitats

72A Bidentetalia tripartitae
Pioneer vegetation dominated by nutrient-demanding summer annuals on periodically flooded edges of water bodies and heavily nutrient-loaded ruderal habitats

72A01

**Bidenton tripartitae**

Pioneer vegetation dominated by nutrient-demanding summer annuals on periodically flooded bottoms and edges of water bodies

*C.5 Pioneer and ephemeral vegetation of periodically inundated shores*

72A02

**Chenopodion rubri**

Pioneer vegetation dominated by nutrient-demanding summer annuals in heavily nutrient-loaded ruderal habitats

*C.5 Pioneer and ephemeral vegetation of periodically inundated shores*

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**ORYZETEA SATIVAE**

Weed communities of rice fields

73A

**CYPERO DIFFORMIS-ECHINOCCHLOETALIA ORYZOIDIS**

Weed communities of rice fields

73A01

**Oryzo sativae-Echinochloion oryzoidis**

Weed communities of rice fields

*I.5 Bare tilled, fallow or recently abandoned arable land*

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**OZONAL AND ENDEMIC VEGETATION OF MACARONESIA**

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Macaronesian halophilous coastal dune scrub

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**ZYGOHYLLO FONTANESII-POLYCARPAETALIA NIVEAE**

Macaronesian halophilous coastal dune scrub

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**Ononido ramosissimae-Polycarpion niveae**

Macaronesian halophilous coastal dune scrub

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**Soncho-Sempervivion**

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77 KLEINIO NERIFOLIAE-EUPHORBIETEA CANARIENSIS
Macaronesian succulent scrub on semi-desert lava beds (taibal and cardonal)

77A KLEINIO-EUPHORBIETALIA CANARIENSIS
Macaronesian succulent scrub on semi-desert lava beds (taibal and cardonal)

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Macaronesian succulent scrub on semi-desert lava beds (taibal and cardonal)

F8.1 Canarian xerophytic habitats
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Canarian high-mountain volcanic semideserts

78A SPARTOCYTISETALIA SUPRANUBII
Canarian high-mountain volcanic semideserts

78A01 Spartocytision nubigeni
Canarian high-mountain volcanic semideserts

F7.4 Hedgehog-heaths
H6.1 Sparsely vegetated volcanic mountain summits, lava and ash fields

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Canarian pine woods

79A CYTISO-PINETALIA CANARIENSIS
Canarian pine woods and related scrub

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Canarian pine woods and related scrub

G3.8 Canary Island [Pinus canariensis] woodland

80 PRUNO HIXAE-LAURETEA AZORICAE
Macaronesian laurisilva and related scrub

80A ANDRYALO-ERICETALIA
Macaronesian maquis

80A01 Myrico fayae-Ericion arboreae
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G3.8 Canary Island [Pinus canariensis] woodland

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Macaronesian broad-leaved forests

G2.3 Macaronesian [Laurus] woodland

80B03 Juniperion brevifoliae
Azorean Juniper scrub with laurophyll species
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Macaronesian genistoid shrub-heath

\textbf{80B07} \textbf{Visneo mocanerae-Apollonion barbujanae}
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ABOUT THE AUTHORS

John Rodwell is Professor of Plant Ecology at Lancaster University in the UK. He coordinated the British National Vegetation Classification and is editor of the five-volume British Plant Communities. John Rodwell is independent international expert of the European Topic Centre on Nature Protection and Biodiversity. He is one of the initiators and coordinator of the European Vegetation Survey.

Joop Schaminée is employed at Alterra, Green World Research in Wageningen, the Netherlands, at present as senior researcher. He was project leader of the Dutch National Vegetation Classification, of which the results are published in five volumes. Joop Schaminée is president of the Dutch Society for Phytosociology and, since 1998, Secretary General of International Association for Vegetation Science. Like Rodwell, he is an independent international expert of the European Topic Centre on Nature Protection and Biodiversity, and one of the initiators of the European Vegetation Survey.

Laco Mucina received his education in Slovakia (Bratislava) and the Netherlands (Nijmegen). His research activities concentrate on problems of vegetation surveys and data-management aspects in vegetation science, plant ecology and biogeography; he coordinated the Austrian National Vegetation Classification programma, of which the results were published in three volumes. He has served as lecturer and performed research at various universities in former Czechoslovakia, the Netherlands, Austria, Italy, Sweden and South Africa. At present, Laco Mucina is associated as Professor in botany with the University of the North, Qwa-Qwa Campus, South Africa, and serves as Vice-President of International Association for Vegetation Science. Mucina, too, was one of the initiators of the European Vegetation Survey.

Sandro Pignatti is at present professor of Ecology at the University of Rome ‘La Sapienza’ (formerly in Trieste). He is past president of the International Association of Vegetation Science (IAVS). He initiated the European Vegetation Survey and is president of the annual meetings of this working group in Rome. Among the books he has published, we mention Flora d'Italia (1982), Ecologia del paesaggio (1994) and I boschi d'Italia (1998). Sandro Pignatti is a Member of the Accademia Nazionale dei Lincei.
Julian Dring is a zoological taxonomist and worked for the Institute of Terrestrial Ecology and the Nature Conservancy Council. At present, he is Database Development Officer in the Unit of Vegetation Science at Lancaster University. He developed the software version of the Syntaxa-EUNIS Crosswalk which is published here. Together with John Rodwell, he worked on the Darwin Project (1995-1998).

Dorian Moss is Head of the Environmental Information Centre at the Centre for Ecology & Hydrology, Monks Wood. Originally trained as a mathematician, he took a PhD in the ecology of birds before joining the Institute of Terrestrial Ecology (the predecessor of CEH) as a biometrician. He was leader of the CORINE Biotopes Project and, with his colleague Cynthia Davies, began the development of the EUNIS habitat classification in 1996. He works closely with the European Environment Agency and is a member of the management committee of its European Topic Centre on Nature Protection and Biodiversity.
Captions figures

Figure 1. Relationships between EUNIS and other European habitat classification systems.

Figure 2. Number of phytosociological units (formations, classes, orders, alliances) in Europe, including Asiatic Russia and Macaronesia.

Figure 3. Extend of phytosociological knowledge across Europe. Three categories have been distinguished (high, moderate, low), on the base of number of relevés, the existence of national data bases and the publication of a national overview. The map does not show Macaronesia (high) and Asiatic Russia (low).

Figure 4. An example of the EUNIS habitat classification level 3 links to Habitat Directive Annex I. Relation codes: = EUNIS and Annex I habitats are equivalent; > EUNIS habitat is included within the Annex I habitat; < EUNIS habitat includes the Annex I habitat; # Partial overlap between the definitions; ? Relationship is not known (Moss & Davies 1999).

Figure 5. The distribution of the Tilio-Acerion woodlands in the Czech Republic (Chytry et al. 2001).

Figure 6. The distribution of the Cynosurion cristati in Europe. --- = Lolio-Cynosuretum, 1 = Centaureo-Cynosuretum, 2 = Lino-Cynosuretum, 3 = Junco-Cynosuretum, 4 = Galio-Trifolietum, 5 = Anthemanto-Agrostietum, 6 = Anthemido-Cynosuretum and Bromo-Cynosuretum, and 7 = Festuco-Agrostietum (Zuidhoff et al. 1995).
**Figure 1**

Relationships between classifications

- **CORINE/PALAEARCTIC**
  - pan-European
  - marine & terrestrial
  - comprehensive and detailed
  - non-legislative
  - 1996-2001

- **EUROPEAN VEGETATION SURVEY**
  - overview of syntaxa
  - pan-European
  - marine & terrestrial
  - non-legislative
  - 1992-2001

- **HELCOM**
  - Baltic Sea
  - marine and coastal
  - mainly abiotic
  - Helsinki Convention
  - 1998

- **CORINE Land Cover**
  - pan-European
  - marine & terrestrial
  - 3 levels, 44 classes
  - land cover mapping
  - 1986-1994

- **Habitats Directive Annex I**
  - EU
  - marine & terrestrial
  - varying levels
  - EU Habitats Directive
  - 1992 (from CORINE, 1989)

- **EMERALD Annex I**
  - EU -> Palaearctic realm
  - mainly terrestrial
  - comprehensive and detailed
  - non-legislative
  - 1986-1999 ...

- **BARCELONA**
  - Mediterranean Sea
  - marine
  - comprehensive
  - Barcelona Convention
  - 1998

- **OSPAR/ICES**
  - NE Atlantic
  - marine
  - started 1999

- **BioMar**
  - British and Irish seas
  - marine
  - comprehensive
  - non-legislative
  - 1996-1997

- **BioMar**
  - British and Irish seas
  - marine
  - comprehensive
  - non-legislative
  - 1996-1997

- **Habitats Directive Annex I**
  - EU
  - marine & terrestrial
  - varying levels
  - EU Habitats Directive
  - 1992 (from CORINE, 1989)
Figure 2

<table>
<thead>
<tr>
<th>Phytosociological unit</th>
<th>Number</th>
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<tbody>
<tr>
<td>Formations</td>
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<td>Classes</td>
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<tr>
<td>Orders</td>
<td>233</td>
</tr>
<tr>
<td>Alliances</td>
<td>933</td>
</tr>
</tbody>
</table>
### A Marine habitats

#### A1 Littoral rock and other hard substrata
- A1.1 Littoral rock very exposed to wave action
  - # 1170 Reefs
- A1.2 Littoral rock moderately exposed to wave action
  - # 1170
- A1.3 Littoral rock sheltered from wave action
  - # 1170
- A1.6 Littoral caves and overhangs
  - # 8330 Submerged or partly submerged sea caves

#### A2 Littoral sediments
- A2.1 Littoral gravels and coarse sands
  - # 1130 Estuaries
- A2.2 Littoral sands and muddy sands
  - > 1140 Mudflats and sandflats not covered by seawater at low tide
- A2.3 Littoral muds
  - > 1140
- A2.6 Coastal saltmarshes and saline reedbeds
  - < 1310 Salicornia and other annuals colonising mud and sand
  - < 1320 Spartina swards (Spartinion maritimae)
  - < 1330 Atlantic salt meadows (Glaucoproserpinicetalia)
  - # 1410 Mediterranean salt meadows (Juncetalia maritimi)
  - < 1420 Mediterranean and thermo-Atlantic halophilous scrubs
  - < 1630 Boreal baltic coastal meadows
- A2.7 Littoral sediments dominated by aquatic angiosperms
  - # 1140 Mudflats and sandflats not covered by seawater at low tide
Figure 5
Captions photographs

LIGGEND (HALF-GROOT FORMAAT)

Picture 1. In autumn, the dwarf-shrub Vaccinium myrtillus colours the subalpine heathlands of the Genisto-Vaccinion in the Black Forest (Southern Germany) pinkish orange (photo: J.H.J. Schaminée).

Picture 2. At many places in the lower Volga area (Russia), the zonal steppe vegetation has been replaced by xerophytic, weed-rich communities of the Bassio-Artemision austriacae, due to overgrazing. The dominant namegiving plant Artemisia austriaca colours the stands grey (photo: J.A.M. Janssen).

Picture 3. In almost permanently inundated depressions in the floodplains of the lower Volga (Russia), aquatic communities of the Nymphaeion albae and helophytic communities of the Glycerio-Sparganion can form mosaics. Both vegetation types are generally poor in species. In the helophytic stands on this picture, Sium latifolia, Butomus umbellatus and Sagittaria sagittifolia are preponderant (photo: J.A.M. Janssen).

Picture 4. In the subalpine zone of the Picos de Europa (Northern Spain), dwarf-shrub heathlands of the Daboecion cantrabicae are found on plateaus with relatively deep soils (photo: J.A.M. Janssen).

Picture 5. Primula farinosa is a small but striking plant of marshes and wet meadows on base-rich soils in subalpine areas throughout Europe; here, it often occurs in communities of the Caricion davallianae. In the crosswalk, this alliance is linked with eight EUNIS types, among which D4.2: Basic mountain flushes and streamsides, with a rich arctic-montane flora. The subalpine form of the Caricion davallianae has no equivalent in the Annex I list of the Habitat Directive (photo: J.H.J. Schaminée).

Picture 6. In non-calcareous wet dune slacks, like these on the Danish Wadden island of Rømø, communities of the Ericion tetralicis may develop, which are dominated by dwarfshrubs like Erica tetralicis, Vaccinium uliginosum and Empetrum nigrum (photo: J.H.J. Schaminée).

Picture 7. The hautes-chaumes of the Massif Central in France are characterized by dwarf-shrub heathlands (Genisto-Vaccinion), grasslands (Nardion strictae) and tall forb communities (Calamagrostion arundinaceae). Lower down the slopes, these communities are gradually replaced by beech krummholz of the Fagion sylvatici (photo: J.H.J. Schaminée).

Picture 8. Species rich mountain meadows in the Monts du Forez (Massif Central, France) belong to the Triseto-Polygonion bistortae. In the
southern part of this mountain range, the communities are locally

Picture 9. In early spring, Narcissus bulbocodium is a striking species of the
Nardus-rich grasslands of the Serra de Estrela in Portugal, belonging to
the class Juncetea trifidi (photo: J.H.J. Schaminée).

Picture 10. Weed communities of the Caucalidion lappulae may develop in cereal
crops on little fertilized, base-rich soils, like here on the island of Rügen
in the southern part of the Baltic Sea (photo: J.H.J. Schaminée).

Picture 11. Semi-desert lava beds in Macaronesia may be covered by succulent
scrubs of the Aeonio-Euphorbion canariensis, like here on low-situated
slopes of the northern outlyers of the volcanic mountains at Tenerife.
Locally, the palm Phoenix canariensis is a striking tree in these

Picture 12. High mountain volcanic semidesert communities of the Spartocyttision
nubigeni are present at several macaronesian islands; the largest stands
are found in the caldero of the Teyde on Tenerife, at an altitude of 1800-
2200 m (photo: J.H.J. Schaminée).

Picture 13. Allium schoenoprasum subsp. sibiricum in a dry grassland vegetation
on the 'stora alvaret' of Öland (Sweden). These limestone grasslands,
comprising many rare and endangered species, belong to the

Picture 14. Lobelia dortmanna is a characteristic species of the Littorellion
uniflora, which is confined to slightly-buffered unpolluted lakes and
heathlands pools. In Connemara (Western Ireland), the minerals that
prevent strong acidification of the water body derive from the underlying

Picture 15. In Western Ireland, different types of blanket bogs (lowland, highland,
mountain) may develop in areas with an annual precipitation of more
than 1,300 mm. In contrast to raised bogs, these (Oxyccocco-Ericion
tetralicis) peatlands are not restricted to valleys or other depressions but
follow the gentle topography of the landscape (photo: J.H.J.
Schaminée).

Picture 16. As a result of overgrazing by sheep, salt marshes of the Armerion
maritimae may be transformed into uniform, species poor grasslands,
like here along the shores of Killary harbour near Leenane in Western

Picture 17. Tulipa saxatilis, an early-spring flowering endemic plant of Crete, may
find shelter in spiny bushes of phrygana, like here on the Omalos plain
at an altitude of 1000 m (photo: J.H.J. Schaminée).
Picture 18. On Mallorca, the endemic Cyclamen balearicum is found mostly in evergreen forests of the Quercion ilicis. On Mallorca, these mediterranean climax forests are best developed in a belt between 500 and 1200 m (photo: J.A.M. Janssen).

Picture 19. In southern Europe, as here in the coastal region of Portugal near Lisboa, Cistus species play an important role in scrub communities of the Cisto-Lavanduletea. One of the low-growing species of this group is Cistus crispus, easily recognised by its undulate leaves and rather small purplish-red flowers (photo: J.H.J. Schaminée).

Picture 20. In the alpine belt of the Alps and Carpathians, Dryas octopetala may dominate communities of the Caricion firmae. The species grows on slightly weathered calcareous rocks, as here near Serfaus in Austria (photo: J.H.J. Schaminée).

STAAND (GROOT FORMAAT)

Picture 21. In lowland regions, like here in Münsterland in Western Germany, woodlands of the Carpinion betuli form the climax vegetation on badly drained, loamy, nutrient-rich soils. The species-rich herb layer is characterized by Paris quadrifolia, Melica uniflora and Oxalis acetosella among others (photo: J.H.J. Schaminée).

Picture 22. Dictamnus albus is a striking species of calcareous fringe communities of the Geranion sanguinei, like here at Kyffhäuser (Eastern Germany). The plant produces such an amount of etheric oils that it can be put into fire just by holding a match to it (photo: J.H.J. Schaminée).

Picture 23. Isoplexis canariensis is an endemic Scrophulariaceae species of Macaronesia (Tenerife), where it can be found in laurisilva forests of the Ixantho-Laurion azoricae (photo: J.H.J. Schaminée).

Picture 24. Mongan bog near Athlone is one of the best-developed raised bogs (Oxyccoco-Ericion tetralicis) in Ireland. The peat body reaches a depth of almost 15 m and the surface shows a striking pattern of hummocks and hollows, each dominated by specific Sphagnum species (photo: J.H.J. Schaminée).

LIGGEND (HALF-GROOT FORMAAT)

Picture 25. On dolomite in the Tematin hills of Slovakia, dry grasslands of the Festucion valesiacae have been derived by clearance of thermophilous oak woodland and are now threatened by abandonment of grazing (photo: M. Chýtry).
Picture 26. Stormy weather in Antibes (Southern France) illustrates the high spray input typical of the Critthmion maritimi, an alliance of Mediterranean coastal crevice communities on natural rocks and sea walls (photo J.S. Rodwell).

Picture 27. Sunrise on a frosty winter morning lights up the extensive Seslerion albicantis pastures characteristic of carboniferous limestone hills of northern England, long cleared of forest and now grazed by sheep (photo J.S. Rodwell).

Picture 28. On abandoned arable fields among arolla pine (Pinus pinea) forest of the Mediterranean coast in central Italy, tall weedy vegetation of the Echict-Galactition is characteristic; the pinky-white flowering Asphodelus aestivus is a dominant species in this community (photo J.S. Rodwell).

Picture 29. On ungrazed sea cliffs along the western coast of Europe, the mild, moist Atlantic climate sustains Ulici-Ericion heaths with Ulex gallii (flowering yellow here), Erica vagans and Erica ciliaris (photo J.S. Rodwell).

Picture 30. Near to the ancient temple of Segesta in Sicily, abandoned arable fields have weed communities of the Hordeion murini rich in annual grasses and colourfull herbs that germinate in the rains of winter (photo J.S. Rodwell).

Picture 31. On mediterranean shores, like here on the Balearic island of Mallorca, dead remnants of Posidonia oceanica bear witness to eelgrass-swards of the Posidonion oceanicae nearby in the sea. The Posidonion oceanicae is an example of an one-to-one relationship with the Annex I list of the Habitat Directive (1120 Posidonia beds). In the EUNIS habitat classification this alliance is part of A4.5: Shallow sublittoral sediments dominated by angiosperms (photo J.H.J. Schaminée).

Picture 32. Nitrophilous tall-forb communities of the Rumicion alpini, like here in the subalpine belt in the German Alps near Brauneck, are indicative of places where cattle gather. Rumex alpinus and the yellow flowering Senecio alpinus are dominant (photo J.H.J. Schaminée).

Picture 33. Macaronesian chasmophytic vegetation with Aeonium spathulatum on exposed volcanic rocks at higher altitude near San Juan de los Llanos on Tenerife are assigned to the class Aeonio-Greenovietea (photo J.H.J. Schaminée).

STAAND (GROOT FORMAAT)

Picture 34. Luxurious Adiantion fern vegetation develops in the crevices of natural and man-made habitats like this fountain in the Orto Botanico in
Rome where there is constant drenching with sprays of fresh water (photo J.S. Rodwell).

Picture 35. The lush vegetation of the Tilio-Acerion lime-maple woodlands is confined to cool, humid ravines throughout central and north-west Europe (photo J.S. Rodwell).

Picture 36. Madeiran broad-leaved laurel forests are classified in an endemic alliance, the Sibthorpio peregrinae-Clethrion arboreae. The best way to explore these almost inaccessible evergreen forests is via so-called levadas, artificial water-courses (photo J.H.J. Schaminée).

Picture 37. Apium repens is a small, creeping Umbelliferae from Central and Eastern Europe. It occurs on wet places that are generally grazed by cattle. Phytosociologically, it can be assigned to the alliance Potentillion anserinae (G-26J02 in the overview). The related EUNIS type is E3.4: Moist or wet eutrophic and mesotrophic grasslands. Although this unit has some links with the Annex I list of the Habitat Directive, this specific Potentillion habitat is not included. Nevertheless, Apium repens finds protection under the Habitat Directive Annex II species list (photo J.H.J. Schaminée).

Picture 38. In the Netherlands, the Cynosurion cristati is represented by two associations, the Lolio-Cynosuretum and the Galio-Trifolietum (Schaminée et al. 1996). The first plant community is the most common of the two and widely distributed throughout the country. Among the few herbs in this rather species poor grassland, Bellis perennis and Ranunculus bulbosus are the most conspicuous (photo J.H.J. Schaminée).

Picture 39. Trisetos-Polygonion hay-meadows are characteristic of traditional sub-montane farms with low-input pastoral agriculture like this one in the Pennine hills of northern England (photo J.S. Rodwell).

Picture 40. Cutting a crop of herbage for hay to feed farm animals through the winter is an essential element of managing Trisetos-Polygonion meadows (photo J.S. Rodwell).