PLANT COMMUNITIES OF ALBANIA - A PRELIMINARY OVERVIEW

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Abstract – The phytosociological analysis of Albania was initiated by F. Markgraf in the 30ies, but still remains incomplete. This is a preliminary list of the plant communities resulting from the literature and from field research carried out during the last years and may represent a first contribution for further research. Many communities are described only by dominant species, other are quoted as nomina nuda. Some further syntaxa, probably present in the study area, are added.

Key words – Albania, Vegetation, Syntaxonomy, Check list, Plant communities

Introduction

The first substantial scientific account of the vegetation of Albania was provided by Markgraf (1932) at a time when the country was ruled by King Zog. In the decades following the Second World War, when the country became increasingly isolated from the rest of Europe, little was heard of any scientific activity there and opportunities for study by foreign visitors were virtually impossible. From this period, we have only the study on flora and vegetation by Ubrizsy & Penzes (1960) and the investigations of alder woodlands by Karpati & Karpati (1961) and Karpati (1962). Vegetation types represented in Albania also figured in the overview of south-east Europe provided by Horvat, Glavac & Ellenberg (1974), but it was not until the 1980s that the activities of Albanian botanists and vegetation scientists began to see the light of day. Then, in publications in Albania, in dissertations for the University of Tiranë and in unpublished reports, Dr. Kozma Buzo, Dr Petrit Hoda, Dr Mersin Mersinllari, Dr Alfred Mullaj, Dr Jani Vagjeli, Dr L.Topuzi and Dr B. Ruci, began to build up a picture of the diversity of Albanian plant communities.

In 1994, following a visit to Albania, Sandro Pignatti of La Sapienza University in Rome, working in collaboration with Petrit Hoda and Kozma Buzo, produced the

first tentative overview of Albanian vegetation types using a phytosociological frame of classes, orders and alliances (Pignatti, Buzo and Hoda, 1994). With support from the UK Environmental Know-How Fund, the Unit of Vegetation Science at Lancaster University then began a project with the University of Tiranë transferring software skills to develop a database to undergone such a classification. Further funding from the UK Darwin Initiative supported short-course training in Lancaster for an Albanian team and a brief research fellowship for Petrit Hoda during which he refined the overview of vegetation types and prepared a demonstration project using data from Albanian beech forests (Hoda, 1996).

With the civil strife in Albania in the next twelve months, collaboration was interrupted but, meanwhile, Petrit Hoda, Mersin Mersinllari and Alfred Mullaj extended and consolidated the Albanian classification. Concurrently, the European Vegetation Survey project had been developing an overview of European vegetation down to alliance level (Mucina *et al.*, 1993; Rodwell *et al.*, 1995; Mucina, 1997; Rodwell *et al.*, 1999). During a further Darwin fellowship, Petrit Hoda recast the Albanian scheme within the wider perspective provided by this European overview and Sandro Pignatti then made valuable comments on the proposals. It is this version which is published here.

The advantages of this perspective are two-fold. First, it offers a place among the continuing study by European vegetation scientists of our heritage of plant communities for an Albanian contribution that will be widely understood and respected. Second, because of developing links between the overview of alliances and the European Union EUNIS habitat classification (Rodwell *et al.*, 1998), there is the prospect of some harmony in Albanian initiatives to conserve the biodiversity in the plant communities there with that developing elsewhere in Europe.

The Darwin Initiative project at Lancaster, which also involved Russia, Latvia, Slovakia and the Czech Republic, has now come to an end. These other countries, with something of a head start in the state of vegetation science, have produced a variety of Red Data books of plant communities (eg. Solomeshch *et al.*, 1997; 1998; Ermakov *et al.*, 1997; Koci *et al.*, 1997; Pakalne *et al.*, 1998; Kucera *et al.*, 1998; Valachovic & Rodwell, 1998). With this encouragement, we hope it will be possible to apply the Red Data Book approach (Rodwell & Cooch ,1999) to the plant communities of Albania to provide some indication of their extent and vulnerability to threats. Meanwhile, we offer this conspectus as one small sign of hope for the future of Albania, its flora, vegetation and landscapes.

Where possible, the Albanian contributors have followed the *Code of Phytosociological Nomenclature* (Barkman *et al.*, 1986) in referring to formal author citations for the syntaxa. Where descriptions of vegetation types have not yet been published, the author and the date of the report or relevés referring to the syntaxa are printed in italics. Some phytosociological alliances are included in the overview even if no plant communities have yet been described from Albania because it is highly probable that representative vegetation types occur there. We hope this will be an encouragement and guide as to where subsequent vegetation survey might be focused. Codes given in brackets after alliance names refer to the EUNIS habitats (Davies & Moss, 1997) within which such vegetation types can be found.

CHECK LIST

A) COASTAL MUDFLATS AND BRACKISH WATERS

ZOSTERETEA MARINAE Pignatti 1953
Eel-grass swards on muddy and sandy substrates in the sublittoral and eulittoral zones, exposed no more than 2-3 hours at a time
POSIDONIETALIA Den Hartog 1976
Mediterranean eel-grass swards of more dynamic deeper waters
Posidonion oceanicae Br.-Bl.1952 (A5.5)
- Posidonietum oceanicae

THLASSIETALIA Den Hartog 1976 (A5.5)
Mediterranean eel-grass swards of less dynamic deeper waters
Cymodoceion nodosae Den Hartog 1976
- Cymodoceetum nodosae

ZOSTERETALIA MARINAE Béguinot 1941 em. Tx. et Oberd. 1958
Eelgrass swards of shallow waters
Zosterion marinae Christiansen 1934 (A2.6, A5.5)
- Zosteretum marinae (Boergesen 1905) Harmsen 1936
- Zosteretum noltii Harmsen 1936

RUPPIETEA MARITIMAE J. Tx. 1960
Tassel-weed and spike-rush swards of brackish to saline waters in estuaries, salt-marsh pools and dykes of reclaimed coastal marshes
RUPPIETALIA MARITIMAE J. Tx. 1960
Ruppion maritimae Br.-Bl. 1931 (C1.3)
- Ruppietum cirrhosae *Ruci et al. 1995*
- Ruppietum maritimae Iversen 1934

B) SALT-MARSH AND SEA-CLIFF VEGETATION

THERO-SALICORNIETEA (Pignatti 1953) Tx. in Tx. et Oberd. 1958
Pioneer communities of annual glassworts, seablite and other halo-nitrophiles on tidal mud-flats
THERO-SALICORNIETALIA Pignatti 1953 em.Tx. 1954 ex Tx. et Oberd. 1958 corr.Tx.1974
Pioneer communities of annual glassworts and seablite on tidal mudflats
Pholiuro-Spergularion Pignatti 1953
Mediterranean ephemerous communities on mud in reclaimed habitats
- Parapholidi-Spergularietum marginatae Pignatti 1953

Salicornion patulae Géhu et Géhu-Franck 1984 (A3.1)
Mediterranean pioneer communities of lagoons and inland salt-pans
- Salicornietum europaeae Warming 1906
- Salsoletum sodae Slavnic 1939

- Suaedetum maritimae (Conard 1935) Pignatti 1953

JUNCETEA MARITIMI Tx. et Oberd. 1958
Perennial maritime grasslands and related herb-rich vegetation of coastal and inland salt-marshes and sea cliffs
JUNCETALIA MARITIMI Br.-Bl.1931
Mediterranean and Mediterranean-Atlantic weakly saline wet meadow communities

Juncion maritimi Br.-Bl.1931 (A3.4)
Mediterranean coastal wet meadow communities
- Juncetum acuti *Demiriz 1962*
- Juncetum maritimi (Bilik 1956) Krausch 1965
- Juncetum maritimi-acuti Horvatic 1934
- Junco-Caricetum extensae Br.-B. & De Leeuw 1936

Plantaginion crassifoliae Br.-Bl. (1931) 1952 (A3.4)
Mediterranean damp dune-slack and lagoon margin communities
- Holoschoenetum romani *Mullaj 1989*
- Schoeno nigricantis-Plantaginetum crassifoliae Br.-Bl. (1931) 1952
- Schoeno-Erianthetum Pignatti 1953

SALICORNIETEA FRUTICOSAE Br.-Bl. et Tx. de Bolos y Vayreda 1950
Mediterranean and thermo-Atlantic perennial salt-marsh scrub
LIMONIETALIA Br.-Bl et de Bolos 1957 em. Rivas-Mart. et Costa 1984
Mediterranean semi-arid sea-lavender communities
SALICORNIETALIA FRUTICOSAE (Br.-Bl. 1931) Tx. et Oberd.1958
Mediterranean and thermo-Atlantic perennial salt-marsh scrub

Salicornion fruticosae Br.-Bl.1931 (A3.4, A3.5)
- Puccinellio maritimae-Halimionion portulacoidis Géhu et Biondi 1995
- Salicornietum fruticosae Markgraf 1932
- Arthrocnemetum glauci Br.-Bl. 1933
- Artemisietum Horvatic 1931
- Limonio-Halocnemetum strobilacei *Mersinllari & Hoda 1985*

CRITHMO-LIMONIETEA Br.-Bl. in Br.-Bl., Roussine et Nègre 1952
Communities of rocks and walls influenced by salt spray from the sea
CRITHMO ARMERIETALIA MARITIMAE Géhu 1964
Open communities of crevices on rocky seacliffs much splashed by salt spray

Crithmo-Armerion maritimae Géhu 1968 (B3.1)
Open communities of crevices on rocky seacliffs much splashed by salt spray
- Brassicetum oleraceae Géhu 1962
- Crithmo-Limonietum anfracti *Mullaj 1989*

C) STRANDLINE AND SAND-DUNE COMMUNITIES

CAKILETEA MARITIMAE Tx. et Preising in Tx. ex Br.-Bl. et Tx. 1952
Pioneer vegetation, mostly of nitrophilous summer annuals, on nutrient-rich detritus of strandlines at the upper tidal limit of sand and shingle beaches

EUPHORBIETALIA PEPLIS Tx. 1950
Communities of the Mediterranean and Black Sea shores

Euphorbion peplis R. Tx. 1950 (B2.1)
Mediterranean and Cantabro-atlantic annual halo-nitrophilous forb communities
- Cakilo-Xanthietum italici (Bég. 1941) Pignatti 1953

Thero-Atriplicion *Pignatti 1953* (A3.4)
Pioneer annual vegetation, only feebly halophytic, of Mediterranean coasts
- Atriplicetum hastati-tataricae *Lavrentiades 1963*

AMMOPHILETEA Br.-Bl. et Tx. ex Westhoff, Dijk et Passchier 1946
Vegetation dominated by rhizomatous grasses or sedges on mobile or fixed sands in coastal or inland dunes
AMMOPHILETALIA AUSTRALIS Br.-Bl. (1931) 1933 em. J.M. et J. Géhu 1988
Vegetation of young to fixed dunes

Agropyrion juncei Pignatti 1953 (B1.3)
Pioneer vegetation of coastal foredunes in the Mediterranean
- Agropyretum mediterraneum *(Br.-Bl. 1933)*

Ammophilion australis Br.-Bl. (1931) 1932 em. J.M et J. Géhu 1988 – incl. *Ammophilion arenariae* (Tx.1945) J.-M. et J.Géhu 1987 p.p. (B1.3)
Mediterranean and Mediterranean-Atlantic dune and foredune evergreen herb communities
- Ammophiletum arenariae Br.-Bl. 1933
- Ephedretum distachyae *Mullaj 1989*
- Sporoboletum *Mullaj 1989*

D) FRESHWATER AQUATIC VEGETATION

LEMNETEA MINORIS de Bolos et Masclans 1955
Free-floating duckweed communities of still, relatively nutrient-rich, fresh waters in more winter-warm regions of Europe
LEMNETALIA MINORIS Tx. 1955
Lemnion gibbae R. Tx. et Schwabe 1972 (C1.3)
Duckweed communities of more base-rich waters
- Lemnetum gibbae Miyawaki et J. Tx. 1960

Lemnion minoris Tx. 1955 (C1.3)
Duckweed communities of more eutrophic and hypertrophic waters
- Lemnetum minoris Soo 1947
- Lemno-Spirodeletum (W. Koch) Th. Muell. et Goers 1960

Lemnion trisulcae Den Hartog et Segal 1964 em.Tx. et Schwabe in Tx. 1974 (C1.3)
Duckweed and liverwort communities of shallow, more mesotrophic waters
- Lemnetum trisulcae Den Hartog 1964

CHARETEA FRAGILIS Fukarek ex Krausch 1964
Communities of submerged stoneworts

POTAMETEA Klika in Klika et Novak 1941
Communities of rooted, floating or submerged plants in mesotrophic and eutrophic fresh waters.
NUPHARO-POTAMETALIA Schaminée, Lanjouw et Schipper 1990

Nymphaeion Oberd.1957 (C1.3, C2.5)
Communities of rooted aquatics with floating leaves in sheltered and nutrient-rich fresh waters

- Myriophyllo-Nupharetum Koch ex Hueck 1931
- Nymphaeetum albae-luteae Karpati 1961
- Nymphoidetum peltatae (Allorge 1922) Bellot 1951
- Trapetum natantis (Karpati 1963) Th. Mueller & Goers 1960

Potamion pectinati (Koch 1926) Goers 1977 (C1.3)
Communities of submerged aquatics in shallower mesotrophic to eutrophic waters

- Ceratophyllo-Potametum crispi Horvatic et Micevski 1960
- Potamo-Najadetum Horvatic et Micevski 1960
- Potametum pectinati *Mersinllari 1994*
- Potametum perfoliati *Mersinllari 1994*
- Potametum natantis *Auct.*

Hydrocharition morsus-ranae Rübel 1933 em. Westhoff et Den Held 1969 (C1.3)
Communities of free floating macrophytes in fairly nutrient-rich waters

E) SPRINGS, SHORELINE AND SWAMP VEGETATION

MONTIO-CARDAMINETEA Br.-Bl. et Tx. ex Klika 1948
Vegetation of cold springs, commonly dominated by bryophytes
MONTIO-CARDAMINETALIA Pawlowski in Pawlowski et al. 1928

Cardamino-Montion Br.-Bl. 1926 em. Zechmeister 1993 (C2.3)
Spring vegetation of base-poor waters

ISOETO-LITTORELLETEA Br.-Bl. et Vlieger 1937
Hairgrass swards and related communities in nutrient-poor, standing or slow-flowing waters, sometimes fluctuating, and with sandy, gravel or peat substrates
UTRICULARIETALIA Den Hartog et Segal 1964 (C1.3)
Bladderwort and bog-moss communities of dystrophic or more lime-rich peaty waters

ISOETO-NANOJUNCETEA Br.-Bl. et Tx. ex. Westhoff, Dijk et Passchier 1946
Pioneer ephemeral vegetation of dwarf cyperaceous plants and therophytes on bare periodically flooded ground
NANOCYPERETALIA Klika 1953

Radiolion linoidis (Rivas Goday 1961) Pietsch 1965 (B1.8)
Communities maintained by atmospheric moisture in humid seasons or in temporary-flooded situations

- Junco-Radioletum linoidis *Pignatti 1994*

PHRAGMITI-MAGNOCARICETEA Klika in Klika et Novak 1941
Swamp, fen and marginal vegetation of fresh or brackish waters dominated by graminoids, sedges and forbs in open-water transitions
BOLBOSCHOENETALIA MARITIMI Heiny in Holub et al. 1967
Graminoid and sedge vegetation of slighty salty waters

Bolboschoenion maritimi Dahl et Hadac 1941 (C3.5)
Brackish water reed beds and related communities.
- Bolboschoenetum maritimi Eggler 1933

NASTURTIO-GLYCERIETALIA Pignatti 1953
Vegetation dominated by mixtures of small grasses and herbs along fresh water stream and ditch banks

Oenanthion aquaticae Hejny 1948 (C3.5)
Vegetation of smaller emergent herbs in the shallows of streams and ponds
- Sagitario-Sparganietum Tx. 1953

Phalaridion arundinaceae Kopecky 1961 (C3.2)
Reed canary grass vegetation of water-margins, often with fluctuation
- Phalaridietum arundinaceae Libbert 1931

Sparganio-Glycerion Br.-Bl. et Sissigh in Boer 1942 nom. inv.Oberd.1957 (C3.5)
Vegetation dominated by mixtures of small grasses and herbs along banks of streams and ditches
- Nasturtietum officinalis Seibert 1962
- Glycerietum plicatae Kulczynski 1928

PHRAGMITETALIA Koch 1926
Swamp and fen vegetation dominated by graminoids, bulky sedges and forbs, often species-poor

Magnocaricion elatae Koch 1926 em. Neuhäusl 1957 (C3.3, D2.3, D5.2)
Vegetation dominated by bulky sedges on peaty soils
- Caricetum elatae Koch 1926
- Hydrocotyle-Caricetum elatae Horvatic 1962

Cicution virosae Hejny 1960 em.Segal in Westhoff et Den Held 1969 (D2.3)
Vegetation with a floating raft of sedges and forbs in eutrophic waters

Phragmition australis Koch 1926 (C3.2, C3.5, D5.1, D5.2)
Vegetation dominated by tall graminoids in standing or gently-moving waters and winter-flooded fens
- Cladietum marisci Allorge 1922
- Scirpo-Phragmitetum Koch 1926
- Scirpetum lacustris Chouard 1924
- Typhetum angustifoliae Soo 1927
- Typhetum latifoliae Soo 1927

F) BOGS AND FENS

SCHEUCHZERIO-CARICETEA FUSCAE Tx. 1937
Bog pool, flush and mire vegetation dominated by small sedges and bryophytes

CARICETALIA DAVALLIANAE Br.-Bl.1949
Small-sedge rich-fen vegetation of oligo-mesotrophic calcareous peaty soils in springs and flushes

Caricion davallianae Klika 1934 (B1.8, D2.3, D4.1, D4.2, D5.2)
Small-sedge rich-fen vegetation of calcareous oligotrophic flushes, soligenous and dune slacks at low altitudes

CARICETALIA NIGRAE Koch 1926 em. Tx. 1937
Mires developing on mesotrophic and oligo-mesotrophic peats and peaty mineral soils

Caricion fuscae Koch 1926 em. Klika 1934 (B1.8, C1.1, D2.2, D2.3, D5.3)
Small sedge poor-fen vegetation of acid, oligotrophic flushes and soligenous mires

G) WEED COMMUNITIES

BIDENTETEA TRIPARITAE Tx., Lohm. et Preising in Tx. ex von Rochow 1950
Pioneer vegetation , mostly of nitrophilous summer annuals, on periodically flooded mud

BIDENTETALIA TRIPARTITAE Br.-Bl. et Tx. ex Klika et Hadac 1944

Bidention tripartitae Nordhagen 1940 em. Tx. in Poli et J. Tx. 1960 (C3.6)
Communities of enriched margins of still and sluggish waters and damp disturbed places

ORYZETEA SATIVAE Miyawaki 1960
Weed communities of rice fields
CYPERO DIFFORMIS-ECHINOCHLOETALIA ORYZOIDIS de Bolos et Masclans 1955
Communities of exotic weeds in rice fields of Mediterranean countries

Oryzae sativae-Echinochloion oryzoidis de Bolos et Masclans 1955
Communities of exotic weeds in rice fields in Spain, Northern Italy and Albania

STELLARIETEA MEDIAE Tx., Lohm. et Preising in Tx. ex von Rochow 1950Y*Weed communities of agricultural crops, gardens and waste places*

ATRIPLICI CHENOPODIETALIA ALBI (Tx. 1937) Nordhagen 1950
Weed communities of arable crops, gardens and waste places

Panico-Setarion Sissingh in Westhoff et al. 1946 (I1.3, I1.5, I2.4)
Weed communities of root, bulb and summer cereal crops mostly dominated by graminoids

Polygono-Chenopodion polyspermi Koch 1926 em. Sissingh. in Westhoff. *et al.* 1946 (I1.3, I1.5, I2.4)
Weed communities of root crops and summer cereals dominated by Chenopodiaceae and Polygonaceae

- Panico-Polygonetum lapathifolii *Topuzi 198?*

BROMETALIA RUBENTI-TECTORUM (Rivas Goday et Rivas-Mart. 1963) Rivas-Mart. et Izco 1977

Overgrazed vegetation of abandoned fields on nutrient-poor soils in the Mediterranean area

Hordeion leporini Br.-Bl. 1947 (E1.6, E1.9, J2.6)
Mediterranean ruderal communities rich in winter-annual grasses

- Geranio-Sylibetum mariani Oberd. 1952
- Hordeetum leporini Br.-Bl. 1936
- Hordeetum murini Libbert 1932
- Hordeo-Sisymbrietum officinalis Oberd. 1952

CHENOPODIETALIA MURALIS Br.-Bl. in Br.-Bl. et al 1936 em. Rivas-Mart. 1977
Nitrophilous communities on substrates with

Chenopodion muralis Br.-Bl. in Br.-Bl. et al. 1936 ((I1.3, I1.5, I2.4)
Mediterranean ruderal communities of semi-shaded, nutrient-rich places

- Amarantho-Atriplicetum tataricae Oberd. 1954
- Bromo-Erigeretum canadensis (Knapp)1961 Gutte 1965
- Chenopodietum muralis Br.-Bl.1936
- Urtico-Ecballietum Oberd. 1954

Sylibo-Urticion Sissingh 1950 (E1.C)
Tall thistle vegetation of the central Mediterranean

ERAGROSTIETALIA J.Tx. ex Poli 1966
Thermophilous ruderal vegetation on dry sandy substrates

Amarantho-Chenopodion Morariu 1943 (I1.3, I1.5, I2.4)
Pannonian and south Balkan weed communities of maize, melon and tobacco crops on sandy soils

SISYMBRIETALIA J.Tx., Lohmeyer et al.1962
European ruderal vegetation of humus-rich substrates such as compost and dung heaps, as well as of dry waste places

Sisymbrion officinalis Tx., Lohm. et Preising in Tx. 1950 (H3.2, J2.6)
Weed communities of compost and dung heaps, tracksides and recreation areas

POLYGONO ARENASTRI-POETEA ANNUAE Rivas-Mart. 1975 corr. Rivas-Mart. et al. 1991
Ephemeral communities of trampled ground

POLYGONO ARENASTRI POETALIA ANNUA Tx. in Géhu et al. 1972 corr. Rivas-Mart. et al. 1991
Vegetation, mostly of rosette and creeping hemicryptophytes in moderately disturbed or trampled habitats

Matricario matricarioidis-Polygonion arenastri Rivas-Mart. 1975 corr. Rivas-Mart. et al. 1991
Weed communities of drier trampled places

- Catapodio-Coronopidetum procumbentis Ubrizsy G. und Penzes A. 1960
- Eragrostidi (minor)-Polygonetum avicularis Oberd. 1954
- Polygonetum avicularis Knapp 1945

Lolio-Plantaginion Tx. 1955

Grass communities of short-term leys, recreational swards, gateways and tracksides

- Cichorietum intybus *Auct.*
- Lolio-Plantaginetum majoris Beger 1930
- Poa annua-Plantago major community *Auct.*
- Tussilaginetum *Auct.*

AGROSTIETALIA STOLONIFERAE Oberd. in Oberd. et al. 1967
Natural and anthropogenous communities of unstable habitats, periodically wettened and drying out or alternating brackish and fresh

Elymo-Rumicion crispi
Nordhagen 1940 em.Tx. 1950 p.p. (B1.8, C1.2, E2.1, E2.7, E3.4)

ARTEMISIETEA VULGARIS Lohm., Preising et Tx. ex von Rochow 1951
Perennial and thistle-rich (sub-)xerophilous ruderal communities of temperate and Mediterranean regions

ONOPORDETALIA ACANTHII Br.-Bl. et Tx. 1943 em.Goers 1966
Xero-mesophilous ruderal communities of biennials on nutrient rich-soils

Arction lappae Tx. 1937 em. Gutte 1972 (H3.2, J2.6)
Mesophytic communities of moister soils in cooler climates

- Balloto-Chenopodietum boni-henrici Th. Mueller in Seybold & Th. Mueller 1972
- Echio-Melilotetum Tx.1947
- Geranium lucidum-Sedum cepaeae Oberd. 1954
- Leonuro-Arctietum Lohmeier 1951
- Marrubium peregrinum-Pulicaria dysanterica community Ubrizsy G. et Penzes A. 1960
- Rumex patientia-Conium maculatum community Ubrizsy G. et Penzes A. 1960
- Sambuco ebuli-Pteridietum aquilini Ubrizsy G. et Penzes A. 1960
- Urtico-Parietarietum officinalis Segal

Dauco-Melilotion Goers 1966 (H3.2, J2.6)
Xero-mesophilous weed communities of biennials on nutrient-rich soils

- Dauco-Picridietum hieracioidis Goers 1966

Onopordion acanthi Br.-Bl.1926 (H3.2, J2.6)
Xero-mesophilous weed communities of tall biennials, usually with thorns, on nutrient-rich soils

- Onopordetum acanthii Br.-Bl. 1923

GALIO-URTICETEA Passarge et Kopecky 1969
Nitrophilous perennial weed communities of woodlands and riparian fringes

CONVOLVULETALIA SEPIUM Tx.1950 emend Mucina 1993
Semi-natural and natural nitrophilous communities of tall and scrambling perennials on river banks and shallows

Senecionion fluviatilis Tx. 1950 (E3.6)

Communities of tall herbaceous nitrophiles around eutrophic lakes and ditches

- Amorpho-Rubetum nemorosi Karpati 1960

LAMIO ALBI-CHENOPODIETALIA BONI-HENRICI Kopecky 1969

Weed and semi-natural communities of tall mesophyllous and nitrophilous perennials

Aegopodion podagrariae Tx.1967 (E3.6)

Communities of sunny and semi-shaded margins and clearings of woody vegetation

- Sambucetum ebuli Felfoeldi 1942

Galio-Alliarion (Oberdorf.1957) Lohm. et Oberd. in Oberd. et al. 1967 (E3.6)

Thermophilous semi-natural communities of nitrophilous perennials of sunny ecotones between forests and meadows

URTICO-SCROPHULARIETALIA PEREGRINAE Brullo in Brullo & Marceno 1985 (E1.6)

Central and East Mediterranean agrestal, heliophilous and nitrophilous winter-annual communities

Veronico-Urticion urentis Brullo in Brullo et Marceno 1985 et Marceno 1985 (E1.6)

Central and East Mediterranean agrestal, heliophilous and nitrophilous winter-annual communities

EPILOBIETEA ANGUSTIFOLII Tx. et Priesing in Tx. ex von Rochow 1951

Species-poor vegetation of damp fertile soils in woodland margins, clearings and burned places

ATROPETALIA Vlieger 1937

Tall-herbs fringes of margins of deciduous woodlands

Atropion Br.-Bl. ex Aichinger 1933

Communities usually associated with or replacing Querco-Fagetea woodlands

Epilobion angustifolii Soo 1933 em. Tx. 1950 (E1.7)

Communities usually associated with or replacing Quercetea woodlands

H) TEMPERATE GRASSLANDS AND HEATHS

MOLINIO-ARRHENATHERETEA Tx. 1937 em. Tx.1970

Anthropogenic pastures and meadows on deeper, more or less fertile mineral and peaty soils in lowland regions

ARRHENATHERETALIA Tx.1931

Pastures and meadows on well-drained, relatively fertile mineral soils

Arrhenatherion elatioris Koch 1926 (E2.1, E2.2)

Meadows on well drained, relatively fertile mineral soils at lower altitudes

- Poa bulbosa community *Markgraf 1932*

Cynosurion cristati Tx.1947 (E2.1, E2.2, E2.7)

Pastures on relatively well-drained, fertile mineral soils at lower altitudes

- Cynosurus cristatus-Trifolium pratense community *Buzo 1990*

- Lolio-Cynosuretum Br.-Bl. et De Leew1936 nom.inv.
- Lolium perenne-Trifolium resupinatum community *Buzo 1990*

Polygono-Trisetion Br.-Bl. et Tx. ex Marschall 1947 nom. invers. (E2.2, E2.3)
Meadows of well-drained, relatively fertile mineral soils in montane regions

- Trisetum flavescens-Cynosurus cristatus community *Buzo 1990*

MOLINIETALIA Koch 1926
Meadows and pastures of moister soils, often peaty

Agrostio stoloniferae-Beckmanion eruciformis Mirkin in Barabash et al.1989
Meadows and pastures of moist or wet slighty saline soils in the floodplains of rivers in steppe zones

- Beckmanietum eruciformis Jovanovic 1958

Calthion palustris Tx. 1937 em. Bal.-Tul. 1978 (E2.1, E3.4)
Meadows and pastures of fertile, moist mineral and peaty soils, often manured, in more continental parts of Europe

- Trollius europaeus-Caltha palustris community *Buzo 199*

Deschampsion caespitosae Horvatic 1930 (E3.4)
Meadows of moist mineral soils dominated by Deschampsia cespitosa
Molinion caeruleae Koch 1926 (E3.4, E3.5)
Meadows of moist but fresh soils in Central Europe, traditionally mown for litter but unmanured

- Molinia coerulea-Sanguisorba officinalis community *Buzo 1990*
- Sanguisorba officinalis-Silaus silaus community *Buzo 1990*
- Succisa pratensis-Trifolium pallescens community *Buzo 1990*

TRIFOLIO-HORDEETALIA Horvatic 1936
Meadows of montane endorhoeic basins (polje) and other periodically-flooded ground on Karstic landscapes in south-east Europe

Trifolion resupinati Micevski 1957 (E3.3)
Flooded meadows of slightly saline ground in Macedonia

FESTUCO-BROMETEA Br.-Bl. et Tx. in Br.-Bl. 1949
Grasslands and steppes of infertile calcareous or sandy soils, often drought-prone, in temperate and sub-boreal regions

BROMETALIA ERECTI Br.-Bl. 1936
Suboceanic, more or less arid swards

Bromion erecti Koch 1926 (B1.4, E1.2)
Swards of less arid soils in hemi-oceanic parts of Europe

- Bromus erectus-Stipa pennata community *Buzo 1990*

Xerobromion (Br.-Bl. et Moor 1938) Moravec in Holub et al. 1967 (E1.2)
Swards of more arid soils, often open and with a prominent contigent of ephemeral plants, on stable rocky slopes in sunny situations in hemi-oceanic parts of Europe

SCORZONERO-CHRYSOPOGONETALIA Horvat, Glavac & Ellenberg 1974
Steppic grasslands of south-east Europe

Chrysopogono-Koelerion splendentis (E1.5)
Steppic vegetation with tall grasses
- Stipo-Salvietum officinalis *Buzo 1990*
- Asphodelo-Chrysopogonetum grylli *Horvat, Glavac & Ellenberg 1974*
- Chrysopogonetum grylli *Buzo 1990*
- Phlomis fruticosa-Asphodelus aestivus community *Buzo 1990*
- Phlomis fruticosa-Urginea maritima community *Buzo 1990*
- Salvia officinalis-Saturcja montana community *Buzo 1990*
- Salvietum trilobae *Hoda 1990*
- Salvio-Phlomidetum fruticosae Barbagallo, Brullo et Fagotto 1979
- Saturejo montanae-Stipetum pinnatae *Buzo 1990*

FESTUCETALIA VAGINATAE Soo 1957
European Continental steppes and dry meadows on sandy soils
Polygonion albanici *Pignatti 1994*

BRACHYPODIETALIA PHOENICOIDIS Br.-Bl. ex Molinier 1934
Mediterranean and sub-Mediterranean vegetation on abandoned fields
Brachypodion phoenicoidis Br.-Bl. ex Molinier 1934 (E1.2, E1.C)
Arid meadows on abandoned fields
- Trifolium nigrescens association *Markgraf 1932, Buzo 1991*

CALLUNO-ULICETEA Br.-Bl. et Tx. ex Westhoff, Passchier et Dijk 1946
Grasslands and dwarf-shrub heaths of acidic, nutrient- poor mineral soils and peats in lowland and mountain regions
NARDETALIA STRICTAE Oberd. ex Preising 1949
Poor matgrass swards
Violion caninae Schwickerath 1944 (E1.7)
Unfertilized mat-grass pastures at lower altitudes

I) MEDITERRANEAN GRASSLANDS, MATORRAL, MAQUIS AND FORESTS

LYGEO SPARTI-STIPETEA TENACISSIMAE Rivas Mart.1978
Mediterranean pseudo-steppes and related perennial grasslands

CYMBOPOGONI-BRACHYPODIETALIA Horvatic 1958
East Mediterranean pseudosteppes dominated by tufted perennial grasses
Cymbopogoni-Brachypodion ramosi Horvatic 1958
Pseudosteppes on limestone in coastal areas of the Balkan Peninsula (E1.C,E1.3, F2.2)
- Cymbopogoni-Brachypodietum ramosi Horvatic 1958

HYPARRHENIETALIA HIRTAE Rivas Mart. 1978
Mediterranean tall tufted steppic grasslands
Saturejo-Hyparrhenion hirtae de Bolos 1962

Mediterranean tall tufted grasslands on exposed cliffs mainly on coasts

- Hyparrhenietum hirtae *Buzo 1990*

LYGEO SPARTI-STIPETALIA TENACISSIMAE Br.-Bl. et de Bolos 1958 em. Rivas Mart. 1978

Mediterranean short steppic grassland

Thero-Brachypodion ramosi Br.-Bl.1925 (E1.3)

Mediterranean garrigues and steppes on calcareous substrates

- Andropogonetum distachyi *Buzo 1990*

CISTO-LAVANDULETEA Br.-Bl. in Br.-Bl., Molinier et Wagner 1940

Low-growing Mediterranean scrub on siliceous and ultramafic substrates.

Note that in Albania, the character species Cistus ladaniferi, C. laurifolii are replaced by such plants as Cistus incanus, C. salviefolius, C.albanicus, over siliceous substrata

CISTO-MICROMERIETEA JULIANAE Oberd. 1954

Hedgehog-heaths and low-growing broom phryganas of the eastern Mediterranean

CISTO - MICROMERETALIA Oberd. 1954

Low-growing broom phryganas of the eastern Mediterranean

Corydothimion Oberd. 1954 (F5.3, F6.3)

Low shrubs with scattered spiny species

Micromerion Oberd. 1954 (F6.3, F6.4)

Phrygana of hemispheric spiny fruticose species

Cistion orientale Oberd. 1954 (F5.3)

Eastern Mediterranean xeric and moderately acidophilous shrub communities

- Ericetum manipuliflorae Oberd. 1954

ROSMARINETEA OFFICINALIS Rivas Mart. et al. 1991

Low growing calcicolous Mediterranean scrub

CISTO ERICETALIA Horvatic 1958

Sclerophyllous scrub on red soils and limestone in Balkans and Southern Italy

Cisto-Ericion Horvatic 1958 (F2.1)

- Cisto-Anthyllidetum montanae *Buzo 1985*
- Cisto-Ericetum arboreae Horvatic 1958

QUERCETEA ILICIS Br.-Bl. ex A.de Bolos y Vayreda 1950

Mediterranean maquis

PISTACIO LENTISCI-RHAMNETALIA ALATERNI Rivas Mart. 1975

Low maquis and matorral in the thermo-Mediterranean area

Ericion arborea e Rivas-Mart. (1975) 1987 (F2.1, F2.2, F5.3, F6.1)

Sclerophyllous evergreen scrub surrounding Mediterranean woodland

- Andrachno-Quercetum ilicis Oberd. 48
- Arbutus unedo-Erica arborea community *Hoda 1992*
- Cisto-Pinetum halepensis *Mersinllari & Hoda 1985*

- Ericetum manipuliflorae *Markgraf 1932*
- Pinus halepensis-Erica manipuliflora community, *in Wendelberger 1963*

Oleo-Ceratonion siliquae Br.-Bl. ex Guinochet et Drouineau 1944 em. Rivas-Mart.1975 (B1.6, F2.2, G2.1, G2.4, G3.7, G3.9)

East Mediterranean maquis, matorral and thermophilous pine woodlands

- Myrtus communis-Pinus halepensis community *Krause et al. 1963*
- Oleo-Euphorbietum dendroides Trinajstic 1973 (1984)
- Oleo-Lentiscetum Molinier 1954 var.adriaticum Trinajstic 1977
- Pistacio-Euphorbietum dendroides Trinajstic 1984
- Pistacio-Pinetum halepensis De Marco et al. 1984

QUERCETALIA ILICIS Br.-Bl. ex Molinier 1934 em. Rivas Mart.1975

Evergreen broadleaf forests and maquis in humid Mediterranean areas

Quercion ilicis Br.-Bl. ex Molinier 1934 em. Rivas Mart.1975 (F5.2, F5.3, G2.1, G2.2, G2.5, G2.6, G3.1, G3.7, G3.9)

Evergreen broadleaf forest along the north Mediterranean coasts

- Orno-Quercetum ilicis Horvatic 1958
- Orno-Quercetum cocciferae Horvatic 1958
- Quercetum ilicis lauretosum ?

NERIO-TAMARICETEA Br.-Bl. et de Bolos 1958

Mediterranean riparian gallery forests and riverine scrub

TAMARICETALIA AFRICANAE Br.-Bl.et de Bolos 1958 emend. Izco, Fern.-Gonz. et Molina 1984

Communities of west and south Mediterranean

Tamaricion parviflorae (G1.3)

Tamarisk scrub of the south-west Balkans

- Nerio-Salicetum purpureae Karpati 1962
- Tamarici- Salicetum purpureae Karpati 1962
- Vitici-Tamaricetum dalmaticae *Ruci et al. 1995*

PLATANETALIA ORIENTALIS Knapp 1959

Riparian gallery forests in the eastern and central Mediterranean

Platanion orientalis J. et V. Karpati1961 (G1.3)

- Juglando-Platanetum orientalis Em et Dekov 1961
- Nerio-Platanetum orientalis Karpati 1962
- Petasiti-Platanetum orientalis Karpati 1962
- Platanetum orientalis balcanicum Karpati 1962

J) OROMEDITERRANEAN GRASSLANDS AND SCRUB

DAPHNO- FESTUCETEA Quézel 1964

Greek and Aegean oromediterranean calcicolous grasslands and phrygana

DAPHNO-FESTUCETALIA Quézel 1964

Eryngio-Bromion Quézel 1964 (F6.4)

Grasslands with a discontinuous herb layer, zonal on limestone in the alpine belt

- Cardamine glauca-Bornmuellera baldacci community *Buzo 1990*
- Festucetum adamovici community *Buzo 1990*

Astragalo-Seslerion Quézel 1964 (F6.4)
Thorny cushion vegetation in step-shaped scarps on limestone

- Astragalo-Brachypodietum community *Buzo 1990*

K) TEMPERATE WOODLAND FRINGE, SCRUB AND BROADLEAF FOREST

TRIFOLIO-GERANIETEA T. Mueller 1962
Thermophilous fringe vegetation on woodland and scrub margins
ORIGANETALIA VULGARIS T. Mueller 1962
Herbaceous vegetation of woodland margins and rides on calcareous soils
Geranion sanguinei T. Mueller 1962 (B1.4, E1.A)
Drought-tolerant communities in sunny woodland edges
Trifolion medii T. Mueller 1962 (E1.A)
Zig-zag clover fringe communities

RHAMNO-PRUNETEA Rivas Goday et Borja Carbonell 1961
Sub-scrub and scrub vegetation , seral to natural broadleaved woodland or along margins of woods and hedges
PRUNETALIA SPINOSAE Tx.1952
Berberidion vulgaris Tx.1952 (F1.3, F2.5)
Thermophilous scrub on sunny, stony slopes in southern Europe
Prunion fruticosae Tx. 1952 (F2.5)
Shrub communities of moister, loamy soils in central Europe

QUERCO-FAGETEA Br.-Bl. et Vlieger in Vlieger 1937
Mixed broadleaf woodland of temperate climates in central and western Europe

FAGETALIA SYLVATICAE Pawlowski in Pawlowski, Sokolowski et Wallisch 1928
Broadleaf woodland of more fertile soils
Fagion sylvaticae Luquet 1926 (G1.6, G1.9, G1.C, G2.6, G3.1, G3.5, G3.9)
Beech and mixed beech woodlands of sub-alpine regions of Europe

- Aceri obtusati-Fagetum Fabijanic, Fukarek et Stefanovic 1963
- Aceri (pseudoplatani)-Fagetum Bartsch 1940
- Allium ursinum-Fagetum *Mersinllari 1989*
- Erico herbaceae-Fagetum *Markgraf 1932*
- Pinus nigra-Fagus sylvatica community *Hoda 1989*

Carpinion betuli Issler 1931 em. Mayer 1937 (F1.3, F2.1, G1.2, G1.4, G1.6, G1.9, G1.A, G1.B, G2.6)
Broadleaved woodlands rich in hornbeam on lime-rich and neutral mull soils

- Carpino (betuli)- Aceretum obtusati community *Markgraf 1932*

Cephalanthero-Fagion Tx. 1955 (G1.6)

Thermophilous beech forests mostly on limestone

- Seslerio -Fagetum Moor 1952

Erythronio-Carpinion (Horvat 1958) Marincek in Wallnöfer et al. 1993 (G1.B)
Illyrian hornbeam forests
Galio rotundifolii-Abietion
Mixed silver-fir woods

- Pinus nigra-Abies alba community *Hoda 1989*
- Abieti-Fagetum *Fukarek 1958*
- Galio rotundifolii-Abietetum Wraber 1955

QUERCETALIA ROBORIS Tx. 1931
Oak and oak-birch woods on acid soils in central and western Europe
Luzulo-Fagion Lohm. et Tx. in Tx. 1954 (G1.6, G1.9)
Beech forest of acid soils

- Luzulo-Fagetum *Wraber 1955*

POPULETALIA ALBAE Br.-Bl. 1931
Mediterranean and sub-Mediterranean humid woodlands
Fraxinion angustifoliae Pedrotti 1970 (G1.3)
Ash woodlands of swamps and fens

- Alno-Fraxinetum oxycarpae Tchou 1946
- Echinodoro- Fraxinetum oxycarpae Karpati 1962
- Junco (acuti)-Fraxinetum oxycarpae Karpati 1962
- Lauro-Fraxinetum oxycarpae(angustifoliae) Karpati 1962
- Leucojo-Fraxinetum angustifoliae Glavac 1959

Populion albae Br.-Bl. 1931 (G1.3)
Poplar and willow woodlands of swamps and fens

- Populetum albae Karpati 1962

QUERCETEA PUBESCENTIS Doing-Kraft ex Scamoni et Passarge 1959
Thermophilous woodlands with deciduous oaks

QUERCETALIA PUBESCENTIS-SESSILIFLORAE Klika 1933
European xero-thermophilous forests
Aceri tatarici-Quercion Zolyomi et Jakucs 1957 (G1.7)
Quercion petraeae Zolyomi et Jakucs 1957 (G1.7, G1.9, G1.B, G3.4)

- Quercetum petraeae Auct.
- Castaneo-Quercetum petraeae Auct.
- Castaneo-Quercetum cerris Oberd. 1948
- Quercetum frainetto-cerris Horvat 1959
- Pinus nigra-Buxetum sempervirens *Hoda 1989*
- Pinus nigra-Cotinetum coggygrya *Hoda 1989*
- Pinus nigra-Quercetum cocciferae *Hoda 1989*
- Salvio (ringenti)-Buxetum sempervirentis Jakucs 19

Abietion cephalonicae Knapp 1965 (G1.C, G3.1, G3.5)
Thermophilous fir forests of Balkan mountains
Ostryo-Carpinion orientalis Horvat 1954 - incl. *Carpinion orientalis*

Grebenshchikow et al. (1990)
1991 (F2.3, G1.3, G1.7, G1.B)
Hornbeam woodlands in the Balkans

- Aesculus hippocastanum-Juglans regia-Fraxinus excelsior *Horvat, Glavac et Ellenberg 1974*
- Cynancho(albanici)-Ostryetum carpinifoliae *Lakusic 19*
- Ostryo-Carpinetum orientalis *Markgraf 1932*
- Pino nigrae-Coryletum avellanae *Hoda 1989*
- Staehelina uniflosculosa-Pinus nigra community *Grebenshchikow mscr. ex Horvat, Glavac et Ellenberg 1974*
- Anemoni apenninae-Carpinetum orientalis *Markgraf 1932*
- Carpinetum orientalis Horvatic 1939
- Carpinus orientalis-Quercus cerris Oberd. 1945

ORNO-COTINETALIA Jakucs 1961
Thermophilous shrub communities in south-east Europe

Paliurion adriaticum Trinajstic 1978 (F2.5, F5.1, F5.3)
Sub-Mediterranean xerophilous shrub vegetation in the Balkans and Italy

- Paliuretum australis Horvatic 1963
- Punicetum community *Hoda 1989*
- Rhuetum coriariae *Hoda 1995*

SALICETEA PURPUREAE Moor 1958
Willow scrub and woodland of flood-plains in mountain and lowland rivers
SALICETALIA PURPUREAE Moor 1958
Salicion albae Soo 1930 (G1.1, G1.3)
Willow scrub and woodland of submontane and lowland river shoals and terraces

- Salicetum purpureae-incanae *Markgraf 1932*
- Salicetum albae(-fragilis) albanicum Karpati 1962
- Salicetum triandrae (balcanicum) Malcuit 1929

Salicion eleagno-daphnoidis (Moor 1958) Grass in Mucina et al. 1993 (G1.1)
Willow scrub of mountain river and stream sides

ALNETEA GLUTINOSAE Br. et Tx. ex Westhoff, Dijk et Passchier 1946
Alder and willow woodlands of swamps, fens and wet pastures
ALNETALIA GLUTINOSAE Tx. 1937
Alder woodlands of swamps, fens and wet pastures
Alnion glutinosae Malcuit 1929 (G1.4)

Alno-Quercion roboris *Horvat, Glavac, Ellenberg 1974*

- Quercetum roboris *Vangjeli 199?*

Ulmo-Fraxion oxycarpae

- Ulmo-Fraxinetum *Markgraf 1932*

L) TEMPERATE AND BOREAL CONIFEROUS FOREST

ERICO-PINETEA Horvat 1959
Oro- to sub-Mediterranean montane pine-woods on limestone
ERICO PINETALIA Horvat 1959

Erico-Pinion Br.-Bl. 1961 (G1.C, G3.2, G3.3, G3.5)
Alpine and south-east European Pinus sylvestris woods on limestone

Orno-Ericion Horvat 1959 (G1.C, G3.4)
Balkan Pinus nigra/sylvestris and Quercus petraea woods on serpentine

- Erico-Pinetum nigrae *Hoda 1989*

Orno-Pinion (1972) 1978 (G1.C, G3.4, G3.5)
Balkan open Pinus nigra woods on basic substrates

- Forsythio-Pinetum nigrae *Hoda 1989*
- Pinus nigra-Euphorbietum spinosae *Hoda 1989*

Pinion leucodermis Horvat 1946 (G1.C, G3.6)
Balkan open Pinus leucodermis woods, mostly on limestone or serpentine
(list of communities probably belonging to several associations)

- Fago-Pinetum heldreichii Jankovic 1958
- Festucopsis-Pinetum leucodermis *Vangjeli 1984*
- Fritillario-Pinetum leucodermis *Vangjeli 1984*
- Genista-Pinetum leucodermis *Vangjeli 1984*
- Gentiana lutea-Pinetum peucis *Em 1960*
- Pinetum leucodermis typicum *Vangjeli 1984*
- Pinetum leucodermis-Geranium macrorrhizum *Vangjeli 1984*
- Pinetum leucodermis-Picea abies *Vangjeli 1984*
- Pinetum nigrae-leucodermis *Vangjeli 1984*
- Pinetum peuce-leucodermis *Vangjeli 1984*
- Senecioni-Pinetum leucodermis *Vangjeli 1984*
- Seslerio-Pinetum leucodermis *Vangjeli 1984*
- Thalictro-Pinetum leucodermis *Vangjeli 1984*

VACCINIO-PICEETEA Br.-Bl. in Br.-Bl., Sissingh et Vlieger 1939
Coniferous forest vegetation of more acidic soils

PICEETALIA EXCELSAE Pawlowski in Pawlowski, Sokolowski et Wallisch 1928
European coniferous forests of nutrient-poor acidic soils

Rhodoro-Vaccinion Br.-Bl. 1926

- Vaccinio-Chamaecytisetum hirsuti *Buzo 1990*

Piceion excelsae Pawlowski in Pawlowski et al.1928 (G1.9, G1.A, G3.1, G3.2, G3.A)
Spruce and birch related woodland communities

- Junipero-Piceetum abietis

Erico-Pinion mugo Leibundgut 1943 nom.invers. (F1.2)
Southeast European Pinus mugo scrub on limestone

- Mugo-Pinetum leucodermis *Vangjeli 199?*

Pinion mugi Pawlowski in Pawlowski, Sokolowski et Wallisch 1928 (F1.2)
European montane dwarf-shrub communities at the upper limit of the forest belt

- Pinetum mugi Horvat 1938

JUNIPERO SABINAE-PINETEA Rivas Mart. 1964 nom.invers.
Oro-Mediterranean dry juniper-pine woods and inner-alpine steppic pine woods and related scrub
PINO-JUNIPERIETALIA Rivas Mart. *et al.* 1964
Pine woodlands in Mediterranean-montane climate
Juniperion nanae Br.-Bl. in Br.Bl., Sissingh et Vlieger 1939 (F1.1, F3.2, G3.3)
Alpine dwarf shrub heaths of windswept places
- Junipero-Arctostaphyletum Br.-Bl. Ex Haffter in Br.-Bl. et al. 1939
- Juniperetum nanae *Buzo* 1990

ASPLENIETEA TRICHOMANIS (Br.-Bl. in Meier et Br.-Br. 1934) Oberd. 1977
Open chasmophytic vegetation with ferns and mosses in rock and wall crevices

ANDROSACETALIA MULTIFLORAE Br.-Bl. in Meier et Br.-Bl. 1934
Open vegetation of silicate rocks
Androsacion multiflorae Br.-Bl. in Br.-Bl. & Jenny 1926
Open vegetation of silicate rocks in the alpine and nival belt
- Androsacetum villosae *Vangjeli 1985*

POTENTILLETALIA CAULESCENTIS Br.-Bl. in Br.-Bl. et Jenny 1926
High-altitude rupicolous communities on carbonate bedrocks
Ramondion nathaliae Horvat ex Simon 1958 (H3.2, H3.4)
- Leontopodietum alpini *Hoda 1985 ?*
- Ramondietum serbicae *Hoda 1989*
- Moltkietum petraeae Blecic 1958
- Potentillo-Hieracietum pannosi *Vangjeli 1985*

POTENTILLETALIA SPECIOSAE Quézel 1964
High-altitude rupicolous communities on carbonate and serpentine rocks in Greece
Galion degeni Quézel 1967 (H3.2)
Rock-cliff communities on calcareous and ultramafic substrates

ONOSMETALIA FRUTESCENTIS Quézel 1964
Open vegetation of sunny situations on limestone rocks in the Southern Adriatic
Campanulion versicoloris Quézel 1964 (H3.2)
- Sideritis roeseri-Alkanna graeca community Quézel 1964

TORTULO-CYMBALARIETALIA Segal 1969
Wall crevice vegetation of sunny situations at lower altitudes
Centrantho-Parietarion Rivas Mart.1960 nom. invers. (H3.2)
Wall crevice vegetation of sunny situations
- Parietarietum diffusae *Ubrizsy G. und Penzes A. 1960*

Cymbalario-Asplenion Segal 1969 em. Mucina 1993 (H3.2)
Communities of calcareous rocks in sunny situations
- Cymbalarietum muralis Goers 1966

THLASPIETEA ROTUNDIFOLII Br.-Bl. 1948
Vegetation of scree, rubble and spoil
ANDROSACETALIA ALPINAE Br.-Bl. in Br.-Bl. et Jenny 1926
Communities of siliceous screes
Androsacion alpinae Br.-Bl. in Br.-Bl. et Jenny 1926 (H2.3)
Communities of siliceous to neutral screes and moraines
- Luzuletum campestris *Vangjeli 1985*

DRYPETALIA SPINOSAE Quézel 1964
East Mediterranean and South Balkan Oro-Mediterranean scree communities
Campanulion hawkinsianae Quézel 1967 (H2.8)
Balkan montane serpentine and flysch scree communities
- Alyssum balcanicum-Alyssum bertoloni community *Markgraf 1932*

Silenion caesiae Quézel 1964 (H2.8)
Balkan Oro-Mediterranean to alpine limestone scree communities
- Geranium macrorrhizum-Rumex scutatus community Quézel 1964

Peltarion alliaceae Horvatic (1956) 1958 (H2.6)
Balkan montane limestone scree communities

THLASPIETALIA ROTUNDIFOLII Br.-Bl. in Br.-Bl. et Jenny 1926
Alpine/subalpine base-rich scree communities
Thlaspion rotundifolii Jenny-Lips 1930 (E4.6, H2.4)
Communities of alpine calcareous screes

GALIO-PARIETARIETALIA OFFICINALIS Boscaiu et al. 1966
Eurosiberian thermophilous calcareous scree communities
Stipion calamagrostidis Jenny-Lips ex Br.-Bl. et al. 1952 H2.6)
- Stipetum calamagrostidis *Vangjeli 1985*

N) MONTANE GRASSLANDS, HEATHS, TALL-HERB AND SNOW-BED VEGETATION

JUNCETEA TRIFIDI Hadac 1946
Pastures, rush-heaths and fjell-field on lime-poor soils in alpine and sub-alpine zones

SESLERIETALIA COMOSAE Simon 1957
Alpine and sub-alpine swards in the Balkans
Jasionion orbiculatae Lakusic 1966 (E4.2)
Swards on relatively acidic soils of sheltered habitats
- Festucetum paniculatae Horvat 1936
- Festuca paniculata-Lilium albanicum community *Buzo 1985*

TRIFOLIETALIA PARNASSI Quézel 1964
Trifolion parnassi Quézel 1964 (E4.2)
- Alopecuretum gerardii *Buzo 1985*
- Bellardiochloetum violaceae *Buzo 1985*

CARICETALIA CURVULAE Br.-Bl. in Br.-Bl. et Jenny 1926
Swards of lime-poor impoverished humic soils in the alpine and sub-alpine zone
Nardion strictae Br.-B. in Br.-Bl. et Jenny 1926 (E4.2)
Natural and semi-natural mat-grass pastures of the sub-alpine belt
- Nardetum strictae Br.-Bl. 1949 em. Oberd. 1950

ELYNO-SESLERIETEA Br.-Bl. 1948
Alpine and subalpine grasslands and dwarf-shrub heaths on lime-rich soils

CREPIDETALIA DINARICAE
West Balkan montane and alti-montane endemic calciphilous grasslands
Campanulion albanicae Lakusic 1966 (E4.3)
Mediterranean-montane grasslands on sunny slopes

ONOBRYCHI-SESLERIETALIA Horvat 1939
Balkan montane and Mediterranean alti-montane calciphilous grasslands
Edraiantho-Seslerion Horvat 1960 (E4.3)
Mediterranean altimontane open grasslands on limestone

SESLERIETALIA TENUIFOLIAE
Open calciphilous grasslands on north-east Mediterranean mountains
Seslerion tenuifoliae Horvat 1960 (E4.3, F3.2, F6.4)
Mediterranean altimontane calciphilous grasslands on wind-exposed sites
- Seslerio-Caricetum sempervirentis *Vangjeli 1985*

MULGEDIO-ACONITETEA Hadac et Klika 1948 *
Scrub and tall-herb vegetation on ungrazed ledges, hollows and gulleys in sub-alpine and alpine zones, moistened and fertilized by percolating waters

ADENOSTYLETALIA ALLARIAE G. et J. Br.-Br. 1931
Tall-herb and scrub communities of more fertile and lime-rich soils
Adenostylion alliariae Br.-Bl. 1926 (E4.5, F1.1)
Tall-herb communities of more nutrient and lime-rich soils

CALAMAGROSTIETALIA VILLOSAE Pawlowski et al. 1928
Grassy tall-herb vegetation on acid and more impoverished soils of siliceous rocks in Europe
Calamagrostion arundinaceae Oberd. 1950 (E4.5)
Floristically-richer tall-herb communities on somewhat drier soils in the upper forest and sub-alpine belts

SALICETEA HERBACEAE
Vegetation of more long-lasting snow-beds and slopes irrigated by melt waters

ARABIDETALIA COERULEAE Rübel 1933
Dwarf willow and herb-dominated communities of snow-beds over calcareous rocks and soils

Arabidion coeruleae Br.-Bl. 1926 (E4.1)
Dwarf willow and herb-dominated communities of snow-beds over calcareous rocks and soils

- Arabidetum caucasicae *Vangjeli 1985*
- Polytrichetum piliferi *Markgraf 1932*

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