

CONSPECTUS OF CLASSES OF EUROPEAN VEGETATION

Ladislav Mucina

Department of Plant Chorology and Vegetation Science, Institute of Botany, University of Vienna, Rennweg 14, A-1030 Wien, Austria; Present address: Department of Botany, University of Pretoria, 0002 Pretoria, Republic of South Africa; fax +27 12 43 2184, E-mail mucina@scientia.up.ac.za

Keywords: Braun-Blanquet approach, Diagnostic species, Nomenclature, Syntaxonomy

Abstract: This is a first approximation to a Conspectus of classes of European vegetation. European vegetation consists, according to the present scheme, of 73 classes. An attempt was made to compile all available names of classes which have ever appeared in European phytosociological literature. The names were checked for nomenclatural accuracy. Lists of synonyms and related names are given. The classes are characterised by a brief diagnosis, a comprehensive list of diagnostic species, and a list of basic references. Several syntaxonomic problems are discussed in the form of short notes.

INTRODUCTION

This paper is primarily a catalogue of all classes (a high-rank syntaxon in the terminology of the Braun-Blanquet approach; BRAUN-BLANQUET 1964, DIERSCHKE 1994) ever described and/or used in European phytosociological literature. The major motivations for the compilation of such a list were:

- (a) to present a proposal for the structure of European vegetation based on broadly accepted classes;
- (b) to standardise the nomenclature of the classes following the Code of phytosociological nomenclature (further CPN; BARKMAN et al. 1986).

Syntaxonomy

The concept of class is one of the most ambiguous categories of the hierarchical system as used by the practitioners of the floristic-sociologic approach. The major problems emerge from the weighting of classification characters as one moves from lower ranks (association) toward higher ranks (class). Apparently floristic criteria lose their value, whilst the physiognomic (incl. life-form, stratification), and synecologic (operating on a large-scale) traits become more prominent (MUCINA 1982). Many authors have recognised this ill-balanced approach and attempted to formulate a definition of the class as a syntaxonomic category (PIGNATTI et al. 1995). Since vegetation encompasses a very broad scale of synecologically and structurally very distinct types (tundra, aquatic vegetation, weed vegetation, woodlands, etc.), attempts to coin a universal definition of class valid throughout the vegetation are doomed to failure. Still, in my opinion, a uniform application of the concept of class is possible within borders of ecologically and structurally similar groups of vegetation types.

The present system of classes, as encountered in any available national vegetation survey, is just such a mixture of narrowly and broadly conceived classes. Delimitation of some of

the classes was motivated by floristic similarity/dissimilarity; others equally frequently by similarity in life-forms present, or stratification of stands. Staying on a road fork of further development I think it is only fair to admit this inconsistency. There are three possible routes the development of syntaxonomy (at the level of class) can follow:

- (1) either we stay with the present mixed (euphemistically called “pragmatic”) system, or
- (2) we strictly apply physiognomy as the major criterion (as done recently by THEURILLAT et al. 1995), or
- (3) we weight floristic resemblance as the leading criterion through all levels of syntaxonomic hierarchy, as preached by classical phytosociology.

The present Conspectus is not, and cannot be, an authoritative account of the syntaxonomy of European classes. Syntaxonomically, an attempt is made here to create a system of broadly-conceived, but floristically clearly separable classes. Many readers may (and will) certainly disagree with some of the proposals. Clearly, the concept of floristic resemblance is not, and cannot be, defined operationally and consistently over all types of vegetation known in Europe. There are a number of problematic classes within this account – they are identified as such and the syntaxonomic problem is briefly commented on, where appropriate. Better solutions or indisputable separation or combination of classes have to be supported by still pending syntaxonomic revisions.

The groupings of classes into larger categories such as “Aquatic and semiaquatic natural vegetation” have no syntaxonomic meaning and it is not intended to create any new system of Divisions. I find making these categories formal rather useless, besides their not being handled by the CPN.

Nomenclature

Although I remain critical of the present CPN, I still adhere to it. The CPN has some serious weak points (MUCINA, submitted), which might lead to conflicting interpretations. Therefore, let me leave some margin for error in the application of the CPN, although suggestions are most welcome for corrections to the proposed system.

Structure of the conspectus

Each class is an independent item and its description consists of several parts, namely (1) correct name, (2) brief intensive definition of syntaxon (characteristics), (3) list of synonyms and other nomenclatural items, (4) list of diagnostic species, (5) optional notes on syntaxonomic or nomenclatural characters, and (6) a list of relevant literature sources.

Name, synonymy and nomenclatural notes

The name used is supposed to be the correct name according to the CPN. In some cases the literature sources were impossible to locate, therefore some names are included but pending nomenclatural revision. These are marked by an asterisk (*). The items in the list of synonyms are as a norm followed by an indication of the CPN article(s), which lead to the delegation of a name into synonymy. In some cases of nomenclatural novelties or unusual or unexpected solutions, a short nomenclatural note can be found below each class characteristic.

Brief characteristics, syntaxonomic notes and diagnostic species

The brief characteristics of each class, placed directly below the correct name, usually provide synecological, chorological and, in places, symmorphological information on the group of communities summarised within the class in question. Several syntaxonomic notes comment on problematic cases and raise questions on the delimitation of poorly known classes.

Table 1 summarises the information on dominant life-forms, major ecological factors structuring the patterns within the classes (such as substrate, water, disturbance, stress), as well as information on the biogeography of the classes and their bioclimatic range.

National vegetation surveys (WESTHOFF et al. 1946, OBERDORFER 1957, WESTHOFF & DEN HELD 1969, OBERDORFER 1977-1992, PEINADO LORCA & RIVAS-MARTÍNEZ 1987, PREISING et al. 1990a, b, FREMSTAD & ELVEN 1991, RODWELL 1991-1996, KOROTKOV et al. 1991, DONIȚA et al. 1992, JULVE 1993, MUCINA et al. 1993, MORAVEC et al. 1995, POTT 1995, SCHAMINÉE et al. 1995, SOLOMAKHA 1995, VALACHOVIČ et al. 1995), trans-regional monographs (HORVAT et al. 1974, ELLENBERG 1986, DIERSSEN 1996) and many important local monographs (see also below) were used as sources for the lists of diagnostic species.

The lists of species are selections of the major taxa characteristic of the class as well as its subordinated units. The most common (dominating) taxa with broad distributions, but also rarities (endemics) typical of the class, were chosen. The asterisk (*) indicates species which under different geographic conditions may show affinity to another class as well.

The nomenclature of the phanerogam taxa basically follows Flora europaea (TUTIN et al. 1964-1993, 1st edition for volumes 2-5 and 2nd edition for volume 1). Furthermore, the corrections and changes in published volumes of Atlas florae europaeae (JALAS & SUOMINEN 1972-1994) were accepted. The nomenclatural basis of the Flora and Atlas were further adjusted according to published volumes of Med-Checklist (GREUTER et al. 1984-1989). Several deviations were a result of nomenclatural changes from "Die Pflanzengesellschaften Österreichs" (MUCINA et al. 1993). The nomenclature of diagnostic species of the *Daphno-Festucetea* (an endemic Greek class) follows the Mountain flora of Greece (STRID 1986, STRID & KIT TAN 1991). The names of pteridophytes and mosses follow the latest edition of the "Kryptogamen-Flora" by FREY et al. (1995). The nomenclature of lichens follows POELT (1969), and POELT & VĚZDA (1977, 1984). The nomenclature of plants of Macaronesia (Canary Islands, Azores, Madeira) basically follows HANSEN & SUNDING (1985). Adjustments follow the latest taxonomic and nomenclatural knowledge of Dr. Arnoldo Santos Guerra (Puerto de la Cruz, Tenerife). The nomenclature of the ferns and bryophytes of Macaronesia follows FREY et al. (1995).

Relevant literature

The majority of important literature sources were used in reconstructing the bibliographic history of each class. Major local monographs as well as large-scale syntaxonomic revisions of the communities of the class in question are listed here. For the sake of conserving space the national vegetation surveys (see above) were not usually cited in these reference lists, although these should be consulted as well.

SYNOPSIS

Contents

Aquatic vegetation	121	Temperate heathlands and grasslands	138
<i>Lemnetea</i>	121	<i>Calluno-Ulicetea</i>	138
<i>Charetea fragilis</i>	121	<i>Kolerio-Corynepherea</i>	139
<i>Potametea</i>	121	<i>Molinio-Arrhenatheretea</i>	140
<i>Ruppiaetea maritima</i>	122	<i>Trifolio-Geranietea</i>	141
<i>Zosteretea</i>	122	<i>Festuco-Brometea</i>	141
		<i>Puccinellio-Salicornietea</i>	143
Vegetation of fresh-water marshes and fens	122	Temperate and boreal woodlands and scrub	144
<i>Isoëto-Littorelletea</i>	122	<i>Rhamno-Prunetea</i>	144
<i>Isoëto-Nanojuncetea</i>	122	<i>Salicetea purpureae</i>	144
<i>Montio-Cardaminetea</i>	123	<i>Alnetea glutinosae</i>	144
<i>Phragmito-Magnocaricetea</i>	123	<i>Quercu-Fagetea</i>	145
<i>Scheuchzerio-Caricetea fuscae</i>	123	<i>Quercetea pubescentis</i>	146
<i>Oxycocco-Sphagnetea</i>	124	<i>Erico-Pinetea</i>	146
		<i>Pulsatillo-Pinetea sylvestris</i>	147
Coastal vegetation	125	<i>Junipero sabiniae-Pinetea</i>	147
<i>Cakiletea maritima</i>	125	<i>Vaccinio-Piceetea</i>	147
<i>Saginetea maritima</i>	125		
<i>Crithmo-Staticetea</i>	126	Oromediterranean grasslands and scrub	148
<i>Thero-Salicornietea</i>	127	<i>Festucetea indigestae</i>	148
<i>Spartinetea maritima</i>	127	<i>Saginetea piliferae</i>	148
<i>Salicornietea fruticosae</i>	127	<i>Festuco hystricis-Ononidetea striatae</i>	148
<i>Juncetea maritimi</i>	127	<i>Carici-Genistetea lobelii</i>	148
<i>Honckenyo-Elymetea</i>	128	<i>Rumici-Astragaletea siculi</i>	149
<i>Ammophiletea</i>	128	<i>Daphno-Festucetea</i>	149
Chasmophytic vegetation	128	Mediterranean vegetation	150
<i>Asplenietea trichomanis</i>	128	<i>Thero-Brachypodietea</i>	150
<i>Adiantetea</i>	130	<i>Lygeo sparti-Stipetea tenacissimae</i>	150
<i>Thlaspietea rotundifolii</i>	130	<i>Cytisetea scopario-striati</i>	151
		<i>Cisto-Levanduletea</i>	151
Arctic and alpine vegetation	132	<i>Cisto-Micromerietea julianae</i>	151
<i>Loiseleurio-Vaccinietea</i>	132	<i>Nerio-Tamaricetea</i>	152
<i>Salicetea herbaceae</i>	132	<i>Quercetea ilicis</i>	152
<i>Juncetea trifidi</i>	132		
<i>Carici rupestris-Kobresietea bellardii</i>	133	Semideserts	153
<i>Elyno-Seslerietea</i>	133	<i>Pegano harmulae-Salsoletea vermiculatae</i>	153
<i>Mulgedio-Aconitetea</i>	134	<i>Artemisietea lerchianae</i>	153
Synanthropic vegetation	135	Classes of the Macaronesian vegetation	154
<i>Oryzetea sativae</i>	135	<i>Zygophyllo fontanesii-Polycarpetea niveae</i>	154
<i>Bidentetea tripartiti</i>	135	<i>Kleinio neriifoliae-Euphorbietea canariensis</i>	154
<i>Polygono arenastri-Poëtea annuae</i>	135	<i>Oleo cerasiformis-Rhamnietea crenulatae</i>	155
<i>Stellarietea mediae</i>	135	<i>Pruno hixae-Lauretea azoricae</i>	155
<i>Artemisietea vulgaris</i>	137	<i>Cytiso-Pinetea canariensis</i>	156
<i>Galio-Urticetea</i>	138	<i>Spartocytisetea supranubii</i>	157
<i>Epilobietea angustifolii</i>	138	<i>Aeonio-Greenovietea</i>	157

Aquatic vegetation

Lemnetea O. de BOLÒS et MASCLANS 1955

Communities of floating cormophytes (pleustophytes)

Lemnetea R. TX. 1955 (art. 8)

Lemnetea KOCH et R. TX. in OBERD. 1957 (art. 31)

Hydrocharito-Lemnetea SOÓ 1968 (art. 8)

Hydrocharitetea OBERD. et al. 1967 (art. 3b, 8)

Ceratophylletea DEN HARTOG et SEGAL 1964 (art. 8)

Stratiotetea DEN HELD et SEGAL 1964 (syntax. syn.)

Lemno-Potametea DE LANGE 1972*

Utriculario-Stratiotetea GÉHU et BOURNIQUE 1987 (art. 8)

Species: *Azolla* (*caroliniana*, *filiculoides*), *Lemna* (*gibba*, *minor*, *minuta*, *perpusilla*, *trisolca*, *valdiviana*), *Riccia* (*fluitans*, *rhenana*), *Ricciocarpos natans*, *Salvinia natans*, *Spirodela polyrhiza*, *Wolffia arrhiza*.

Note: The *Ceratophylletea* is not validly published (DEN HARTOG & SEGAL 1964, p. 383) as the order *Ceratophylletalia* is not validly published because the only alliance (*Ceratophyllion*) is also not validly published. Both associations assigned to the alliance (the *Ceratophylletum demersi* and *Ceratophylletum submersi*) are suggested as new in this paper, but, without any relevés, tables or bibliographic references, these remain invalidly published.

Lit.: DE BOLÒS & MASCLANS (1955), DEN HARTOG & SEGAL (1964), SCHWABE-BRAUN & TÜXEN (1981), SCOPPOLA (1983).

Charetea fragilis FUKAREK ex KRAUSCH 1964

Communities of submerged ramificated macroalgae

Charetea fragilis FUKAREK 1961 (art. 8)

Charo-Potametea KĘPCZYŃSKI et CEYNOWA-GIELDON 1972 p.p.*

Species: *Chara* (*aculeolata*, *aspera*, *baltica*, *braunii*, *canescens*, *connivens*, *contraria*, *globularis*, *hispida*, *jubata*, *major*, *strigosa*, *tomentosa*, *vulgaris*), *Lamprothamnium* (*hanseni*, *papulosum*), *Nitella* (*batrachosperma*, *flexilis*, *gracilis*, *hyalina*, *opaca*, *syncarpa*, *tenuissima*, *translucens*), *Nitellopsis obtusa*, *Tolypella* (*glomerata*, *intricata*, *nidifica*, *prolifera*), *Vaucheria dichotoma*.

Lit.: KRAUSCH (1964, 1968), SCHAMINÉE et al. (1995).

Potametea KLIKA in KLIKA et NOVÁK 1941

Communities of fresh-water radican submerged and floating macrophytes

"*Potametales*" KLIKA in KLIKA et NOVÁK 1941 (original form)

Potametea R. TX. et PREISING 1942 (art. 8)

Nymphaetea KLIKA in KLIKA et HADAČ 1944 (art. 29)

Potametea R. TX. et PREISING ex OBERD. 1957 (art. 31)

Charo-Potametea KĘPCZYŃSKI et CEYNOWA-GIELDON 1972 p.p.*

Lemno-Potametea DE LANGE 1972*

Species: *Callitriche* (*hamulata*, *obtusangula*, *platycarpa*), *Ceratophyllum* (*demersum*, *submersum*), *Elodea* (*canadensis*, *ernstiae*, *nuttalii*), *Groenlandia densa*, *Hottonia palustris*, *Hydrocharis morsus-ranae*, *Myriophyllum* (*alterniflorum*, *spicatum*, *verticillatum*), *Najas* (*marina*, *minor*), *Nuphar* (*lutea*, *pumila*), *Nymphaea* (*alba*, *candida*), *Nymphoides peltata*, *Persicaria amphibia* var. *natans*, *Potamogeton* (*acutifolius*, *alpinus*, *berchtoldii*, *coloratus*, *compressus*, *crispus*, *filiformis*, *friesii*, *gramineus*, *lucens*, *natans*, *nodosus*, *obtusifolius*, *pectinatus*, *perfoliatus*, *praelongus*, *pusillus*, *trichoides*), *Ranunculus* (*aquatilis*, *circinatus*, *fluitans*, *hederaceus*, *peltatus*, *penicillatus*, *rionii*), *Stratiodes aloides*, *Trapa natans*, *Utricularia vulgaris*, *Zannichellia palustris*.

Note: The oldest valid name for the *Potametalia* is the "*Potametales*" suggested by KLIKA (in KLIKA & NOVÁK 1941: 58). The name *Nymphaetea* coined also by KLIKA (in KLIKA & HADAČ 1944) is also validly published (having validly published *Potametalia* with the author's citation as the automatic holotype), however, it is a superfluous nomen novum, thus illegitimate.

Lit.: KLIKA & NOVÁK (1941), KLIKA & HADAČ (1944), SCHAMINÉE et al. (1990).

Ruppiaetea maritimae J. Tx. 1960

Communities of radican submerged macrophytes of brackish waters

Eleocharitetea parvulae SEGAL 1968 (art. 3a)

Species: *Athenia filiformis*, *Eleocharis parvula*, *Ranunculus peltatus* subsp. *baudotii*, *Ruppia (cirrhosa, maritima, spiralis)*.

Note: The name *Eleocharitetea parvulae* was suggested by SEGAL (1968) as a synonym (in brackets) of the *Eleocharitetalia parvulae*, thus invalidly published according to art. 3a of the CPN.

Lit.: TÜXEN (1960), SEGAL (1968), DEN HARTOG (1983), VERHOEVEN (1980), GÉHU (1994).

Zosteretea S. PIGNATTI 1953

Communities of radican submerged macrophytes of shallow seas

Halodulo-Thalassietea DEN HARTOG 1976*

Posidonietea DEN HARTOG 1976*

Halophilo-Cymodoceeta KNAPP 1968*

Species: *Cymodocea nodosa*, *Halophila stipulacea*, *Posidonia oceanica*, *Zostera (marina, noltii)*.

Lit.: PIGNATTI (1953), DEN HARTOG (1983), GÉHU (1994).

Vegetation of fresh-water marshes and fens**Isoëto-Littorelletea BR.-BL. et VIEGER in VIEGER 1937**

Dwarf amphibious vegetation of oligotrophic water-bodies, dystrophic lakes and bog hollows

"*Isoëto-Littorelletales*" BR.-BL. et VIEGER in VIEGER 1937 (original form)

Littorelletea BR.-BL. et R. TX. 1943 (art. 8)

Littorelletea BR.-BL. et R. TX. ex WESTHOFF et al. 1946 (syntax. syn.)

Utricularietea DEN HARTOG & SEGAL 1964 (syntax. syn.)

Utricularietea intermedio-minoris PIETSCH 1965*

Isoëtetea PIETSCH 1966 p.p.*

Juncetea bulbosi R. TX. et DIERSSEN 1972 (syntax. syn.)

Species: *Apium inundatum*, *Baldellia (ranunculoides, repens)*, *Callitriche brutia*, *Deschampsia setacea*, *Elatine hydropiper*, *Eleocharis (acicularis, multicaulis)*, *Eriocaulon aquaticum*, *Hypericum elodes*, *Isoëtes (azorica, boryana, brochonii, echinospora, lacustris)*, *Juncus (bulbosus, heterophyllus)*, *Littorella uniflora*, *Lobelia dortmanna*, *Luronium natans*, *Marsilea quadrifolia*, *Myosotis rehsteineri*, *Pilularia globulifera*, *Potamogeton (gramineus, polygonifolius)*, *Ranunculus (hyperboreus, ololeucos, omiophyllus)*, *Scirpus fluitans*, *Sparganium (angustifolium, hyperboreum, minimum, natans)*, *Subularia aquatica*, *Utricularia (bremii, ochroleuca)*.

Lit.: VIEGER (1937), DEN HARTOG & SEGAL (1964), DIERSSEN (1975), PIETSCH (1977), SCHAMINÉE et al. (1992).

Isoëto-Nanojuncetea BR.-BL. et R. TX. ex WESTHOFF et al. 1946

Dwarf amphibious vegetation of banks and bottoms of mesotrophic (and eutrophic) temporary water-bodies

Isoëto-Nanojuncetea BR.-BL. et R. TX. 1943 (art. 8)

Isoëtetea velatae DE FOUCAULT 1988 (syntax. syn.)

Juncetea bufonii DE FOUCAULT 1988 (art. 29)

Species: *Agrostis pourretii*, *Anthoceros punctatus*, *Blackstonia acuminata*, *Botrydium granulatum*, *Carex bohemica*, *Centaurium pulchellum*, *Centunculus minimus*, *Cerastium dubium*, *Cicendia filiformis*, *Coleanthus subtilis*, *Corrigiola littoralis*, *Crassula (tillaea, vaillantii)*, *Crypsis (alopecuroides, schoenoides)*, *Cyperus (flavescens, fuscus, glomeratus, michelianus, pannonicus)*, *Damasonium alisma*, *Elatine (alsinastrum, hexandra, macropoda, triandra)*, *Eleocharis (carniolica, obtusa, olivacea, ovata)*, *Eryngium (corniculatum, galioides)*, *Exaculum pusillum*, *Fimbristylis annua*, *Fossombronina wondracekii*, *Glinus lotoides*, *Glyceria declinata*, *Gnaphalium uliginosum*, *Gypsophila muralis*, *Heliotropium supinum*, *Hypericum humifusum*, *Illecebrum verticillatum*, *Isoëtes (durieui, histrix, velata)*, *Isolepis setacea*, *Juncus (articulatus*, bufonius, capitatus, hybridus, minutulus, pygmaeus, ranarius, sphaerocarpus, tenageia)*, *Limosella aquatica*, *Lindernia*

(*dubia**, *procumbens*), *Lotus* (*angustissimus*, *conimbricensis*), *Lythrum* (*borysthenticum*, *hyssopifolia*, *portula*, *thymifolia*, *tribracteatum*), *Marsilea* (*aegyptiaca*, *strigosa*), *Mentha* (*cervina*, *pulegium*), *Myosotis sicula*, *Myosurus minimus*, *Ophioglossum lusitanicum*, *Phaeoceros laevis*, *Phyla nodiflora*, *Physcomitrella patens*, *Physcomitrium sphaericum*, *Pilularia minuta*, *Pleuroidium alternifolium*, *Pseudognaphalium luteoalbum*, *Radiola linoides*, *Ranunculus* (*lateriflorus*, *relivieri*), *Riccia bifurca*, *Sagina nodosa*, *Scirpus* (*cernuus*, *supinus**), *Solenopsis* (*laurentia*, *minuta*), *Trifolium cernuum*, *Verbena supina*, *Veronica acinifolia*.

Lit.: DIEMONT et al. (1940), DEN HARTOG & SEGAL (1964), PIETSCH (1973), DE FOUCAULT (1988).

Montio-Cardaminetea BR.-BL. et R. TX. ex KLIKA 1948

Moss- and herb-rich vegetation of springs and edges of fast-running high-mountain rapids

Montio-Cardaminetea BR.-BL. et R. TX. 1943 (art. 8)

Montio-Cardaminetea BR.-BL. et R. TX. ex KLIKA et HADAČ 1944 (art. 8)

Aconito-Cardaminetea HADAČ 1956 (art. 29)

Species: *Alchemilla glomerulans*, *Arabis soyeri* subsp. *subcoriacea*, *Blindia acuta*, *Brachythecium* (*glaciale*, *rivulare*), *Bryum* (*cryophilum*, *schleicheri*, *weigeli*), *Cardamine* (*amara* subsp. *amara* and subsp. *opicii*, *flexuosa*, *pratensis* subsp. *polemonioides*, *raphanifolia*), *Catoscopium nigratum*, *Chrysosplenium* (*alternifolium*, *dubium*, *oppositifolium*), *Cinclidotus fontinaloides*, *Cratoneuron* (*commutatum**, *decipiens*, *filicinum**), *Dermatocarpon rivulorum*, *Dicranella palustris*, *Epilobium* (*alsinifolium*, *davuricum*, *hornemannii*, *nutans*, *obscurum*), *Eucladium verticillatum**, *Hygrohypnum* (*luridum*, *smithii*), *Hymenostylium recurvirostre*, *Juncus biglumis*, *Jungermannia* (*exertifolia*, *obovata*), *Koenigia islandica*, *Lereschia thomassii*, *Marsupella* (*emarginata*, *sphacelata*), *Montia fontana*, *Myosotis soleirolii*, *Nardia compressa*, *Pellia epiphylla*, *Philonotis* (*calcarea*, *fontana*, *seriata*, *tomentella*), *Poa alpigena*, *Pohlia* (*ludwigii*, *wahlenbergii*), *Ranunculus marschlinsii*, *Saxifraga* (*aizoides**, *aquatica*, *hirculus*, *stellaris*), *Scapania* (*paludosa*, *uliginosa*, *undulata*), *Sedum villosum*, *Sibthorpia europaea*, *Silene* (*pudibunda*, *pusilla*), *Soldanella* (*calabra*, *villosa*), *Trichocolea tomentella*, *Veronica montana*.

Lit.: KLIKA & HADAČ (1944), KLIKA (1948), MAAS (1959), HADAČ (1981, 1983), DIERSSEN (1992), ZECHMEISTER & MUCINA (1994).

Phragmito-Magnocaricetea KLIKA in KLIKA et NOVÁK 1941

Vegetation of reeds and sedge-dominated fresh-water and brackish swamps

"*Phragmitato-Magnocaricetales*" KLIKA in KLIKA et NOVÁK 1941 (original form)

Phragmitetea R. TX. et PREISING 1942 (syntax. syn.)

Bolboschoenetea maritimi R. TX. et VICHEREK in R. TX. et HÜLBUSCH 1971 (syntax. syn.)

Nasturtietea officinalis ZOHARY 1973 (art. 8)

Glycerio-Nasturtietea officinalis GÉHU et GÉHU-FRANCK 1987 (art. 8)

"*Phragmiti australis-Caricetea elatae* KLIKA 1941" sensu JULVE 1993 (phantom)

Species: *Acorus calamus*, *Alisma* (*gramineum*, *lanceolatum*, *plantago-aquatica*), *Apium nodiflorum*, *Barbarea stricta*, *Berula erecta*, *Bolboschoenus maritimus*, *Butomus umbellatus*, *Calamagrostis* (*canescens*, *pseudophragmites*), *Calla palustris*, *Carex* (*acuta**, *acutiformis*, *appropinquata*, *aquatilis*, *circumalpina*, *elata*, *gracilis*, *oenensis*, *otrubae*, *paniculata**, *pseudocyperus*, *rhynchophysa*, *riparia*, *vesicaria*, *vulpina**), *Cicuta virosa*, *Cladium mariscus*, *Eleocharis* (*uniglumis*, *palustris*), *Equisetum fluviatile*, *Galium palustre**, *Glyceria* (*fluitans*, *maxima*), *Iris pseudacorus*, *Juncus subulatus*, *Leersia oryzoides*, *Lycopus europaeus*, *Lysimachia thyrsiflora*, *Myosotis palustris**, *Oenanthe* (*aquatica*, *fistulosa*), *Peucedanum palustre*, *Phalaris arundinacea*, *Phragmites australis*, *Poa palustris*, *Ranunculus lingua*, *Rorippa* (*amphibia*, *microphylla*, *nasturtium-aquaticum*, *palustris*), *Rumex* (*aquaticus*, *hydrolapathum*), *Sagittaria sagittifolia*, *Scirpus* (*lacustris*, *radicans*, *tabernaemontani*, *triqueter*), *Scrophularia umbrosa**, *Scutellaria galericulata*, *Sparganium* (*emersum*, *erectum*), *Typha* (*angustifolia*, *domingensis*, *latifolia*, *laxmannii*), *Veronica* (*anagallis-aquatica*, *beccabunga*, *catenata*).

Lit.: KLIKA & NOVÁK (1941), TÜXEN & PREISING (1942), TÜXEN & HÜLBUSCH (1971).

Scheuchzerio-Caricetea fuscae R. TX. 1937

Vegetation of transitional mires, fens and bog hollows

"*Caricetales uliginosae*" BR.-BL. et VIEGIER in VIEGIER 1937 (art. 34)

Sphagno-Caricetea fuscae DUVIGNEAUD 1943 (art. 29)

Sphagno-Drepanocladetea DU RIETZ 1954 (art. 29)

Caricetea limosae MALMER 1968 (syntax. syn.)

Scorpidietea MALMER 1968 (syntax. syn.)

Tofieldietea MALMER 1968 (art. 8)

Parvocaricetea WESTHOFF in WESTHOFF et DEN HELD 1969 (art. 35)

Scheuchzerietea palustris DEN HELD et al. in WESTHOFF et DEN HELD 1969 (art. 35)

Trichophoretea TRASS 1963*

Caricetea nigrae sensu auct. (art. 29)

Scheuchzerio-Caricetea nigrae sensu auct. (art. 30)

Species: *Agrostis canina*, *Blysmus compressus*, *Bryum pseudotriquetrum*, *Calycocorsus stipitatus*, *Calliergon* (*giganteum*, *sarmentosum*, *stramineum*, *trifarium*), *Calliergonella cuspidata*, *Campylium* (*polygamum*, *stellatum*), *Carex* (*aquatilis*, *atrofusca*, *bicolor*, *chordorrhiza*, *curta*, *dacica*, *davalliana*, *diandra*, *dioica*, *disticha*, *flava*, *frigida*, *fusca*, *hartmanii*, *heleonastes*, *hostiana*, *lasiocarpa*, *laxa*, *lepidocarpa*, *limosa*, *livida*, *magellanica* subsp. *irrigua*, *microglochis*, *nigra*, *panicea*, *parallela*, *pulicaris*, *rostrata**, *saxatilis*, *stellulata*, *trinervis*), *Cinclidium stygium*, *Cladopodiella fluitans*, *Dactylorhiza* (*incarnata*, *majalis*, *traunsteinerii* subsp. *curvifolia*), *Drepanocladus* (*exannulatus*, *fluitans**, *lycopodioides*, *revolvens*), *Drosera anglica*, *Eleocharis quinqueflora**, *Epilobium palustre*, *Epipactis palustris*, *Equisetum variegatum*, *Eriophorum* (*angustifolium*, *gracile*, *latifolium*, *scheuchzeri*), *Euphrasia frigida*, *Fissidens* (*adanthoides*, *osmundioides*), *Gentianella amarella* subsp. *uliginosa*, *Hammarbya paludosa*, *Hypocotyle vulgaris*, *Juncus* (*anceps*, *arcticus*, *articulatus**, *castaneus*, *filiformis*, *stygium*, *subnodulosus*), *Kobresia simpliciuscula*, *Liparis loeselii*, *Menyanthes trifoliata*, *Narthecium scardicum*, *Pallavicinia lyellii*, *Parnassia palustris*, *Pedicularis* (*palustris*, *sceptrum-carolinum*), *Pinguicula* (*balcanica*, *leptoceras*, *vulgaris*), *Potentilla palustris*, *Primula* (*auriculata*, *deorum*, *farinosa*, *stricta*), *Pseudorchis frivaldii*, *Ranunculus* (*cordiger*, *flammula*), *Rhynchospora* (*alba*, *fusca*), *Riccardia* (*chamaedryfolia*, *multifida*), *Salix rosmarinifolia*, *Scheuchzeria palustris*, *Schoenus* (*ferrugineus*, *nigricans**), *Scirpus cespitosus* subsp. *germanicus*, *Sesleria uliginosa*, *Silene asterias*, *Sphagnum* (*balticum*, *cuspidatum*, *denticulatum*, *fallax*, *fimbriatum*, *inundatum*, *lindbergii*, *majus*, *obtusum*, *riparium*, *squarrosus**, *subfulvum*, *subsecundum*, *teres*, *warnstorffii*), *Thalictrum alpinum*, *Tofieldia* (*calyculata*, *pusilla*), *Triglochin palustris*, *Typha* (*minima*, *shuttleworthii*), *Valeriana* (*dioica*, *simpliciuscula*), *Viola palustris*.

Lit.: TÜXEN (1937), DU RIETZ (1954), MALMER (1968), SUCCOW (1974), DIERSSEN (1982, 1992).

Oxycocco-Sphagnetetea BR.-BL. et R. TX. ex WESTHOFF et al. 1946

Vegetation of ombrogenic raised bogs and wooded boreal bogs

Oxycocco-Sphagnetetea BR.-BL. et R. TX. 1943 (art. 8)

Vaginato-Sphagnetetea DUVIGNEAUD 1949 (art. 29)

Ombrosphagnetetea DU RIETZ 1954 (art. 29)

Vaccinietea uliginosi LOHMEYER et R. TX. in R. TX. 1955 (art. 8)

Vaccinio uliginosi-Pinetea PASSARGE et HOFMANN 1968 (syntax. syn.)

Molinio-Betuletea pubescentis PASSARGE et HOFMANN 1968 (syntax. syn.)

Eriophoro-Betuletea PASSARGE 1973*

Species: *Andromeda polifolia*, *Aulacomnium palustre**, *Betula* (*humilis*, *nana**, *pubescens* subsp. *carpatica* and subsp. *pubescens*), *Calypogeia sphagnicola*, *Carex pauciflora*, *Cephalozia connivens*, *Chamaedaphne calyculata*, *Drosera rotundifolia*, *Erica tetralix*, *Eriophorum vaginatum*, *Gymnocolea inflata*, *Juncus squarrosus**, *Kurzia pauciflora*, *Ledum palustre*, *Lophozia laxa*, *Lycopodiella inundata*, *Mylia anomala*, *Odontoschisma sphagni*, *Oxycoccus* (*microcarpus*, *palustris*), *Pinguicula villosa*, *Pinus rotundata*, *Polytrichum strictum*, *Rubus chamaemorus*, *Sphagnum* (*angustifolium*, *balticum*, *compactum*, *fuscum*, *magellanicum*, *molle*, *papillosum*, *rubellum*, *tenellum*), *Vaccinium uliginosum*.

Lit.: DUVIGNEAUD (1949), DU RIETZ (1954), MOORE (1968), PASSARGE & HOFMANN (1968), DIERSSEN (1980, 1982), TÜXEN (1980a, b).

Coastal vegetation

Note (relating to *Thero-Salicornietea*, *Salicornietea fruticosae* and *Juncetea maritimi*): the name “*Salicornietea*” was suggested by BRAUN-BLANQUET & TÜXEN (1943), but is, however, like the two orders (*Salicornietalia* and *Juncetalia maritimi*) classified in this paper within the *Salicornietea*, invalidly published (art. 8: no author citation is given and there is also no references list to be consulted for a valid diagnosis of all the syntaxa mentioned above). The validation of “*Salicornietea*” was performed by BRAUN-BLANQUET et al. (1952: 101) who attributed the name to BRAUN-BLANQUET and R. TÜXEN. Here also the order *Juncetalia maritimi* was validated. The name *Salicornietalia* was validated earlier by BRAUN-BLANQUET (1933). In the latter work, as well as in BRAUN-BLANQUET et al. (1952), it is still heterogeneous as it contains the “*Thero-Suaedion*” (recte: *Thero-Salicornion* BR.-BL. 1933) comprising therophyte-dominated communities, and the *Salicornion fruticosae* BR.-BL. 1933 comprising salt-marshes dominated by perennial (shrubby) *Salicornia* (subgenus *Sarcocornia*) and *Arthrocnemum* species. TÜXEN & OBERDORFER (1958) divided the *Salicornietea* into the *Thero-Salicornietea* and coined the name “*Salicornietea fruticosae* (BR.-BL.)” for the remainder of the former “*Salicornietea*”. The name of the class of the salt-marsh perennial (shrubby) vegetation (“*Salicornietea fruticosi* BR.-BL. et R. TX. in BR.-BL., ROUSSINE et NÈGRE 1952”) is often used in unsanctioned (art. 30), mutated forms such as “*Arthrocnemetea fruticosi*” or “*Sarcocornietea fruticosae*”. The author’s citation of “R. TÜXEN 1954” as the author of the name “*Thero-Salicornietea*”, as done for instance by TÜXEN & OBERDORFER (1958) or by BEEFTINK (1962: 330) lacks any bibliographic justification. It merely means R. TÜXEN might have suggested that name in 1954 in verbal or other ineffectively published form.

The *Salicornietea fruticosae*, as understood by BRAUN-BLANQUET et al. (1952), underwent further changes by including the order *Juncetalia maritimi* within the “*Juncetea maritimi* BR.-BL. 1931” by TÜXEN & OBERDORFER (1958: 98). The citation of BRAUN-BLANQUET as the author of the *Juncetea maritimi* is unjustified as there is no name of a class used in his 1931 list of syntaxa. The valid name of the class (if syntaxonically accepted on its own) should be “*Juncetea maritimi* R. TX. et OBERD. 1958”. The next step was the creation of the class of *Asteretea tripolii* by WESTHOFF and BEEFTINK (in BEEFTINK 1962: 334) containing (in the original description) only one order – the “*Glauceto-Puccinellietalia*”, which was explicitly non-identified with the “*Juncetalia maritimi* BR.-BL. 1931”. Still, the “*Juncetea maritimi* BR.-BL. 1931” was equalised (in p.p. extend) with the *Asteretea tripolii*. This implicitly means that the *Juncetea maritimi* and *Asteretea tripolii* are synonymous and at least for priority reasons the *Juncetea maritimi* should be used if both Atlantic and Mediterranean salt-meadows are meant.

***Cakiletea maritimae* R. TX. et PREISING ex BR.-BL. et R. TX. 1952**

Strandline-dwelling, short-lived nitrophilous vegetation

Cakiletea maritimae R. TX. et PREISING in R. TX. 1950 (art. 8)

“*Cakileto-Therosalicornietea*” S. PIGNATTI 1953 p.p.

Thero-Suaedetea RIVAS-MARTÍNEZ 1972*

Cakiletea integrifoliae R. TX. et PREISING in R. TX. 1950 corr. RIVAS-MARTÍNEZ et al. 1992 (corr. illeg., art. 43)

Species: *Atriplex (calotheca, deltoidea, glabriuscula, laciniata, longipes, prostrata*, tatarica*)*, *Bassia hirsuta*, *Beta vulgaris* subsp. *maritima**, *Cakile (edendula* subsp. *islandica, maritima* subsp. *aegyptiaca*, subsp. *baltica*, subsp. *euxina* and subsp. *maritima*), *Cenchrus incertus*, *Centaurea (seridis* subsp. *maritima, sphaerocephala* subsp. *polyacantha)*, *Chamaesyce (peplis, polygonifolia)*, *Crambe maritima*, *Cressa cretica*, *Echinops spinosissimus**, *Glaucium flavum*, *Lepidium latifolium*, *Matthiola tricuspidata**, *Mertensia maritima*, *Polygonum (maritimum, oxyspermum* subsp. *raii)*, *Raphanus raphanistrum* (subsp. *landra*, subsp. *maritimus*), *Salsola kali* (subsp. *kali* and subsp. *tragiun, soda)*, *Suaeda splendens*, *Tripleurospermum maritimum*, *Xanthium italicum*.

Lit.: TÜXEN (1950), BRAUN-BLANQUET & TÜXEN (1952), HADAĆ (1970), GÉHU (1994).

***Saginetea maritimae* WESTHOFF et al. 1962**

Dwarf pioneer vegetation populating loamy and sandy soils in habitats under salt-spray influence

Frankenietea pulverulenta RIVAS-MARTÍNEZ in RIVAS-MARTÍNEZ et COSTA 1976*

Species: *Aizoon hispanicum**, *Anthemis rigida**, *Catapodium marinum*, *Chenopodium chenopodioides**, *Cochlearia danica*, *Crypsis aculeata**, *Evax rotundata*, *Frankenia (hirsuta, pulverulenta)*, *Hordeum (hystrix*, marinum)*, *Hymenolobus procumbens*, *Isoplepis cernua*, *Limonium (avei, grosii)*, *Medicago ciliata*, *Mesembryanthemum (crystallinum*, nodiflorum*)*, *Parapholis (filiformis, incurva, strigosa)*, *Plantago (coronopus*, weldenii)*, *Polygogon subspathaceum*, *Romulea columnae* subsp. *rollii*, *Sagina maritima*, *Sedum litoreum**, *Spergularia (bocconii, heldreichii)*, *Sphaenopus divaricatus*, *Suaeda splendens**, *Tortella flavovirens**, *Valantia muralis**.

Lit.: WESTHOFF et al. (1962), TÜXEN et al. (1963), GÉHU (1994).

***Agropyretea pungentis* J.-M. GÉHU 1968**

Coastal, salt-sprayed grasslands on soft rocks and related vegetation of inland salt-laden heavy loamy soils
Agropyretea pungentis J.-M. GÉHU et J. GÉHU-FRANCK 1969 (art. 31)

Species: *Beta vulgaris* subsp. *maritima**, *Crithmum maritimum**, *Daucus carota* subsp. *maximus**, *Elymus athericus**, *Scorzonera cana**.

Note 1: The *Agropyretea pungentis* is floristically a very poorly defined class mediating between the *Crithmo-Staticetea* and *Cakiletea maritimae*. None of the diagnostic species listed above is exclusively found in the communities of this problematic class.

Note 2: This class was suggested as new in two different papers in 1968 by GÉHU and in 1969 by GÉHU & GÉHU. The former source should be recognised as the original description for priority purposes.

Lit.: GÉHU (1968, 1994), GÉHU & GÉHU (1969).

***Crithmo-Staticetea* BR.-BL. in BR.-BL. et al. 1952**

Chasmophytic coastal vegetation under salt-spray influence

Crithmo-Staticetea BR.-BL. in BR.-BL. et al. 1947 (art. 8)

Crithmo-Limonietea sensu auct. (art. 30)

Species: *Allium (commutatum*, cornutum, horvatii)*, *Anthyllis (aegaea, barba-jovis)*, *Arenaria leptoclados* subsp. *peloponnesiaca*, *Argyranthemum frutescens* subsp. *succulentum*, *Armeria (ruscinonensis, soleirolii)*, *Asperula staliana*, *Asplenium maritimum*, *Asteriscus maritimus*, *Astydamia latifolia*, *Aurinia leucadea*, *Azorina vidali*, *Beta patula*, *Brassica (botteri, cazzae, oleracea* subsp. *oleracea* and subsp. *robertiana)*, *Carlina tragacanthifolia*, *Caralluma europaea* subsp. *europaea*, *Centaurea (cineraria, crithmifolia, dalmatica, diomedeae, friderici* subsp. *jakubensis, paxorum, spinosa)*, *Chiliadenus lopadusanum*, *Cichorium spinosum*, *Crithmum maritimum*, *Crucianella rupestris*, *Daucus carota* (subsp. *drepanensis, hispanicus)*, *Dianthus multinervis*, *Dorycnium fulgurans*, *Echinops spinosus*, *Elymus farctus* subsp. *rechingeri*, *Erodium corsicum*, *Euphorbia (pithyusa, segetalis* subsp. *pineae)*, *Femeniasia balearica*, *Frankenia ericifolia*, *Goniolimon collinum*, *Helichrysum (decumbens, litoreum, saxatile* subsp. *errerae)*, *Hymenolobus procumbens* subsp. *revelieri*, *Hypericum aegypticum*, *Kunkeiella subsuculentia*, *Launaea cervicornis*, *Lavatera bryonifolia*, *Limonium (album, ampuriense, anfractum, antipaxorum, apulum, arcuatum, articulatum, balearicum, biflorum, binervosum, bocconei, bolsii, bosanum, calabrum, cancellatum, capraiense, carpathum, carregadorese, cephalonicum, circaei, connivens, contortiramei, cordatum, coronense, corsicum, cosyrense, creticum, cumanum, damboldtianum, diomedea, dodartii, ebusitanum, escairei, florentinum, gougetianum, graecum (subsp. graecum, subsp. divaricatum), gymnesticum, hierapetrae, imbricatum, inarimense, ithacense, jagypicum, kardamylii, lacinium, lausianum, lopadusanum, majoricum, marisoli, merxmulleri, meyeri, minutum, multiforme, obtusifolium, occidentalis, ocyimifolium, ovalifolium* subsp. *pyramidatum, ovalifolius, papillatum, patrimoniense, pectinatum (var. corculum, var. divaricatum, var. solandri), phitosianum, pontium, pseudebusitanum, pseudoarticulatum, pseudodictyocladon, pylium, remotispiculum, runemarkii, saracinatum, sieberi, sommerianum, strictissimum, tenuiculum, tharrosianum, tremolsii, vestitum, virgatum*, zacynthium)*, *Lotus (cytisoides*, loweanus, maculatus, tenella)*, *Matthiola (incana, maderensis)*, *Parietaria cretica*, *Plantago macrorrhiza*, *Reichardia crystallina*, *Scilla dimartinoi*, *Senecio (cineraria, leucanthemifolius*, rodriguezii)*, *Seseli praecox*, *Silene (sedoides, thyrrhenia)*, *Sonchus radicans*, *Spergularia (azorica, macrorrhiza, rupicola)*, *Teucrium polium* subsp. *aureum*, *Zygophyllum album*.

Lit.: BRAUN-BLANQUET et al. (1952), BARTOLO et al. (1988), BARTOLO & BRULLO (1993), GÉHU (1994), GÉHU & BIONDI (1994), MAYER (1995).

Thero-Salicornietea (S. PIGNATTI 1953) R. TX. in R. TX. et OBERD. 1958

Vegetation of maritime salt-marshes dominated by annual succulents

“*Therosalicornietea*” S. PIGNATTI 1953 (as subclass)

Cakileto-Therosalicornietea S. PIGNATTI 1953 p.p.*

Species: *Haloplepis amplexicaulis*, *Microcnemum coralloides*, *Salicornia europaea* group (*brachystachya*, *europaea*, *obscura*, *patula*, *prostrata*, *pusilla*, *ramosissima*, *simonkaiana*, *stricta*), *Salicornia procumbens* group (*dolichostachya*, *emerici*, *fragilis*, *lutescens*, *nites*, *veneta*), *Suaeda maritima* (subsp. *maritima*, subsp. *salsa*).

Lit.: PIGNATTI (1953), TÜXEN & OBERDORFER (1958), GÉHU (1994).

Spartinetea maritimae R. TX. in BEEFTINK 1962

Maritime pioneer salt-marsh swards dominated by *Spartina*

Spartinetea R. TX. 1961 (art. 1)

Coeno-Spartinetea R. TX. 1964 (art. 29)

Species: *Spartina* (*alterniflora*, *anglica*, *densiflora*, *maritima*, *townsendii*, *versicolor*).

Note: All forms of the name *Spartinetea* containing authors' citation such as “R. TX. 1961” or “BEEFTINK, GÉHU, OHBA, TÜXEN 1971” are phantoms. The date 1961 originated on the basis of a manuscript submitted by R. TÜXEN at the 1961 Rinteln symposium for discussion – it was published later (in a changed form) by LOHMEYER et al. (1962) in the journal *Melhoramento*. Here “*Spartinetea*” is suggested as a name, but it is invalidly published (art. 8). The actual validation of the name *Spartinetea* was done by BEEFTINK in 1962.

Lit.: BEEFTINK (1962, 1968), BEEFTINK & GÉHU (1973), GÉHU (1994).

Salicornietea fruticosae BR.-BL. et R. TX. ex A. DE BOLÒS Y VAYREDA 1950

Mediterranean and thermo-atlantic perennial salt-marsh scrub

Salicornietea fruticosae BR.-BL. et R. TX. 1943 (art. 8)

Salicornietea BR.-BL. et R. TX. in BR.-BL. et al. 1952 (art. 31)

Arthrocnemetea fruticosi sensu auct. (art. 30)

Sarcocornietea fruticosae sensu auct. (art. 30)

Species: *Aeluropus lagopoides*, *Artemisia caerulescens* subsp. *gallica*, *Arthrocnemum macrostachyum*, *Atriplex* (*portulacoides**, *verrucifera*), *Bupleurum gracile*, *Cistanche phelypaea*, *Frankenia corymbosa*, *Gypsophila perfoliata*, *Halocnemum strobilaceum*, *Lepidium cardamines*, *Limoniastrum monopetalum*, *Limonium* (*auriculae-ursifolium*, *bellidifolium*, *brevipetiolatum*, *caesium*, *catalaunicum*, *compactyonis*, *costae*, *delicatulum* (subsp. *delicatulum*, subsp. *angustibracteatum*), *densissimum*, *dichotomum*, *diffusum*, *erectum*, *etruscum*, *ferulaceum*, *formenterae*, *furfuraceum*, *gerardianum*, *gibertii*, *intermedium*, *latibracteatum*, *legrandii*, *ramosissimum* subsp. *siculum*, *retusum*, *ruizii*, *supinum*, *viciosoi*, *virgatum**), *Petrosimonia* (*brachiata**, *oppositifolia**), *Puccinellia festuciformis* (subsp. *convoluta*, subsp. *festuciformis*), *Salicornia* (*fruticosa*, *perennis* subsp. *perennis* and subsp. *alpini*), *Senecio auricula*, *Suaeda vera**.

Lit.: DE BOLÒS Y VAYREDA (1950), BRAUN-BLANQUET et al. (1952), RIVAS-MARTÍNEZ et al. (1984), RIVAS-MARTÍNEZ & COSTA (1984), GÉHU (1994).

Juncetea maritimi R. TX. et OBERD. 1958

Perennial maritime meadows and related herb-rich salt-marshes

Astero-Salicornietea DIJK et al. 1942 (art. 1, 3c)

“*Puccinellio-Salicornietea*” sensu WESTHOFF et al. 1946 non TOPA 1939 (pseudonym)

Asteretea tripolii WESTHOFF et BEEFTINK in BEEFTINK 1962 (art. 29)

Plantagini-Triglochinetea GÉHU et R. TX. ex J.-M. GÉHU et GÉHU-FRANCK 1992 (art. 29)

Species: *Aeluropus littoralis*, *Armeria maritima*, *Artemisia* (*caerulescens*, *maritima*), *Aster tripolium**, *Blysmus rufus*, *Carex* (*divisa**, *extensa*, *halophila*, *mackenziei*, *paleacea*, *salina*, *subspathacea*, *ursina*, *vacillans*), *Elymus elongatus*, *Erianthus ravennae*, *Frankenia laevis*, *Gentianella detonsa*, *Glaux maritima**, *Imperata cylindrica**, *Juncus* (*acutus*, *gerardii**, *heldreichianus*, *littoralis*, *maritimus*), *Limbarda crithmoides**, *Limonium* (*densiflorum*, *dictyocladum*, *humile*, *latifolium*, *lychnidifolium*, *narbonense*, *serotinum*, *sinuatum*, *vulgare*), *Plantago crassifolia*, *Poa subcaerulea*, *Potentilla anserina* subsp. *egedii*, *Primula nutans*, *Puccinellia* (*distans* subsp. *borealis*, *festuciformis**, *maritima*, *phryganodes*), *Schoenus nigricans**, *Scirpoides holoschoenus**, *Sonchus maritimus*, *Spergularia marina*, *Stellaria humifusa*, *Triglochin* (*barrelieri*, *maritima*).

Note: Especially Dutch authors (e.g. J.H.J. SCHAMINÉE, pers. comm.) suggest separation of the Atlantic *Asteretea tripolii* and the Mediterranean *Juncetea maritimi* as classes of their own right. This question is pending a large-scale syntaxonomic revision.

Lit.: TÜXEN & OBERDORFER (1958), BEEFTINK (1962, 1968), TÜXEN (1991), GÉHU & GÉHU-FRANCK (1992), GÉHU (1994), GÉHU & BIONDI (1994).

Honckenyo-Elymetea R. TX. 1966

Vegetation of embryonic shifting dunes of Atlantic, North Sea and Baltic coasts

Elymetea arenarii GÉHU 1964 (art. 8)

Honckenyo-Leymetea arenarii (R. TX. 1966) JULVE 1993 (art. 30)

Species: *Crambe maritima**, *Elymus farctus* subsp. *boreali-atlanticus*, *Festuca richardsonii*, *Honckenya peploides*, *Lathyrus japonicus*, *Leymus arenarius*, *Petasites spurius*, *Silene maritima* subsp. *islandica*.

Note: Some authors (e.g. POTT 1995) doubt the status of this class, in particular for the plant communities of the German coasts. The concept in its original form (TÜXEN 1966) can probably hold only for the coasts of Boreal and Arctic Europe (as well as North America and Japan).

Lit.: TÜXEN (1966), HADAČ (1970), GÉHU (1994).

Ammophiletea BR.-BL. et R. TX. ex WESTHOFF et al. 1946

Vegetation of white and grey coastal sand dunes of Atlantic-Mediterranean distribution

Ammophiletea R. TX. in KNAPP 1943 (art. 1)

Ammophiletea BR.-BL. et R. TX. 1943 (art. 8)

Helichryso-Crucianelletea maritimae J.-M. GÉHU et al. in BON et J.-M. GÉHU 1973*

Helichryso-Crucianelletea maritimae J.-M. GÉHU et al. in J.-M. GÉHU 1975*

Euphorbio-Ammophiletea arundinaceae J.-M. GÉHU et J. GÉHU 1988 (art. 29)

Species: *Aetheorhiza bulbosa**, *Ammocalamagrostis baltica*, *Ammophila* (*arenaria* subsp. *arenaria**, *arundinacea*), *Androcymbium rechingeri*, *Anthemis peregrina**, *Armeria pungens*, *Artemisia campestris* subsp. *maritima*, *Astrodaucus littoralis*, *Aurinia uechtritiziana*, *Calystegia soldanella*, *Carex* (*arenaria**, *ligerica*), *Centaurea* (*arenaria*, *kilaea*, *megalophila*, *pumilio*, *sonchifolia*, *sphaerocephala*), *Crucianella latifolia*, *Cyperus capitatus*, *Echinophora spinosa*, *Elymus* (*farctus* subsp. *farctus*, *repens* subsp. *elongatiformis*), *Ephedra distachya**, *Eryngium maritimum*, *Euphorbia paralias*, *Helichrysum* (*italicum**, *stoechas**), *Iberis procumbens*, *Ipomoea stolonifera*, *Leymus racemosus* (subsp. *racemosus*, subsp. *sabulosus*), *Lobularia maritima**, *Lygos raetam* subsp. *gussonei*, *Medicago marina*, *Ononis* (*crispa*, *natrix* subsp. *ramosissima*, *variegata*), *Otanthus maritimus*, *Pancreatium* (*illyricum*, *maritimum*), *Pycnocomon rutifolium*, *Rouya polygama*, *Scrophularia ramosissima*, *Silene* (*succulenta* subsp. *corsica*, *thymifolia*), *Sporobolus pungens*, *Stachys* (*maritima*, *spinosa*).

Lit.: WESTHOFF et al. (1946), GÉHU (1994), GÉHU & BIONDI (1994).

Chasmophytic vegetation

Asplenietea trichomanis (BR.-BL. in MEIER et BR.-BL. 1934) OBERD. 1977

Chasmophytic vegetation of rock faces, fissures and ledges

Asplenietea rupestris BR.-BL. in MEIER et BR.-BL. 1934 (art. 34)

Parietarienea muralis RIVAS-MARTÍNEZ et RIVAS GODAY et al. 1954 (art. 34)

Parietarietea rupestris RIVAS GODAY 1955 (art. 34)

Polypodietea JURKO et PECIAR 1963 (art. 8)

Parietarietea RIVAS-MARTÍNEZ ex RIVAS GODAY 1964 (syntax. syn.)

Cymbalario-Parietarietea diffusae OBERD. in OBERD. et al. 1967 (art. 8)

"*Asplenietea septentrionalis* GAMS 1933" sensu SCHUMACKER 1971 (phantom)

Phagnalo saxatilis-Rumicetea indurati (RIVAS GODAY et ESTEVE 1972) RIVAS-MARTÍNEZ et al. 1973 (syntax. syn.)

Anomodonto-Polypodietea RIVAS-MARTÍNEZ 1975 (syntax. syn.)

Parietarietea judaicae (OBERD. in OBERD. et al. 1967) OBERD. 1977 (art. 29)

Petromaruletea pinnatae ZAFFRAN 1990 (art. 5, 8)

Rupicapro-Cheilanthea maderensis LACOURT in J.-M. GÉHU 1992 (art. 5, 8)

Umbilico-Cheilanthea LOVRIC 1994 (art. 3c, 5, 8)

Species: *Achillea* (*abrotanoides*, *ageratifolia*, *fraasii*, *lucana*, *oxyloba* subsp. *mucronulata*), *Allium bourgeaui*, *Alyssoides utriculata*, *Amphoricarpus neumayeri* (subsp. *murkeckii*, subsp. *neumayeri*), *Androsace* (*hausmannii*, *helvetica*, *lactea*, *vandellii*), *Andryala ragusina**, *Anogramma leptophylla*, *Anthirrhinum* (*siculum*, *hispanicum*, *majus*, *sempervirens*), *Aquilegia* (*dinarica*, *ottonis*), *Arabis* (*bryoides*, *hornungiana*, *stellulata*), *Arenaria* (*balearica*, *gracilis*, *halacsyi*, *humifusa*, *huteri*), *Artemisia eriantha*, *Asperula* (*baldaccii*, *calabra*, *capitata*, *doerfleri*, *gussonii*, *rupestris*, *scutellaris*), *Asplenium* (*adiantum-nigrum*, *aegaeum*, *ceterach* subsp. *bivalens* and subsp. *ceterach*, *creticum*, *fontanum*, *jahandiezii*, *lepidum* subsp. *haussknechii* and subsp. *lepidum*, *majoricum*, *obovatum* subsp. *lanceolatum* and subsp. *obovatum*, *petrarchae*, *ruta-muraria* subsp. *dolomiticum* and subsp. *ruta-muraria*, *scolopendrium*, *seelosii* subsp. *glabrum* and subsp. *seelosii*, *septentrionale*, *toreziense*, *trichomanes*, *viride*), *Astragalus rupifragus*, *Athamanta* (*hispanica*, *macedonica*, *sicula*), *Aubreta* (*deltoides*, *columnae*, *gracilis*), *Aurinia saxatilis* subsp. *orientalis*, *Ballota rupestris*, *Bellium bellidioides*, *Bolanus graecus*, *Brassica* (*cretica*, *incana*, *macrocarpa*), *Bupleurum* (*dianthifolium*, *petraeum*, *stellatum*), *Campanula* (*carnica*, *cespitosa*, *fenestrellata* subsp. *fenestrellata* and subsp. *istriaca*, *fragilis* subsp. *cavolinii*, *garganica*, *herzegovina*, *hispanica*, *lingulata*, *morettiana*, *pollinensis*, *poscharskyana*, *praesignis*, *pyramidalis*, *raineri*, *scheuchzeri*, *tanfani*, *thessala*, *velebitica*, *zoysii*), *Capparis spinosa* (subsp. *rupestris*, subsp. *spinosa*), *Carex* (*brachystachys*, *ornithopodioides**), *Centaurea* (*alba* subsp. *caliacrae*, *cuspidata*, *incompta*, *nicolai*, *ornata* subsp. *saxicola*, *ragusina*, *rechargingeri*), *Centranthus ruber* (subsp. *sibthorpii*, subsp. *ruber*), *Cerastium thomasii*, *Cerintho tristis*, *Cheanarrhinum organifolium* subsp. *organifolium*, *Cheilanthes* (*acrostica*, *catanensis*, *guanchica*, *hispanica*, *maderensis*, *persica*, *pulchella*, *tinei*), *Convolvulus cneorum*, *Cosentinia vellea*, *Crepis* (*jacquinii*, *triasii*), *Cryptogramma stelleri*, *Cymbalaria* (*aequitriloba*, *muralis*, *pallida*), *Cystopteris* (*alpina*, *dickieana*, *fragilis*), *Daphne* (*alpina* subsp. *scopoliana*, *malyana*), *Dethawia tenuifolia*, *Dianthus* (*fruticosus*, *knappii*, *lusitanicus*, *rupicola*), *Draba* (*dedeana*, *dubia*, *incana*, *sauteri*, *tomentosa*), *Edraianthus* (*dinaricus*, *pumilio*, *serpyllifolius*, *wettsteinii*), *Epilobium collinum*, *Erigeron* (*gaudinii*, *karwinskianus*), *Erinus alpinus*, *Eritrichium nanum*, *Erodium reichardii*, *Erysimum* (*cheiri*, *corinthium*, *raeticum*), *Festuca* (*alpina*, *stenantha*), *Fibigia triquetra*, *Frangula rupestris*, *Galium firmum*, *Haberlea rhodopensis*, *Helichrysum* (*nebrodicense*, *rupestre**), *Hieracium* (*amplexicaule*, *bupleuroides*, *humile*, *montenegrinum*, *plumosum*, *portanum*, *symphytifolium*), *Hippocrepis balearica*, *Hylotelephium maximum*, *Hymenophyllum tunbringense*, *Hyoscyamus aureus*, *Hypericum* (*amplexicaule*, *hircinum*), *Iberis semperflorans*, *Inula verbascifolia* (subsp. *aschersoniana*, subsp. *heterolepis*, subsp. *methanea*, subsp. *verbascifolia*), *Iris* (*illyrica*, *reichenbachii*), *Jankea heldreichii*, *Jasione foliosa*, *Jovibarba heuffelii*, *Kernera saxatilis* (subsp. *boissieri*, subsp. *saxatilis*), *Lafuentea rotundifolia*, *Lapiedra martiniezii*, *Leucanthemum chloroticum*, *Limonium todraroanum*, *Linum montanum*, *Lithodora rosmarinifolia*, *Lomelosia crenata* subsp. *dallaportae*, *Melica minuta*, *Micromeria* (*cristata*, *filiformis*, *kernerii*, *microphylla*), *Minuartia* (*cherlerioides*, *graminifolia* subsp. *clandestina* and subsp. *graminifolia*, *saxifraga*), *Moehringia* (*bavarica*, *dielsiana*, *diversifolia*, *glauco-virens*, *markgrafii*, *muscosa*, *papulosa*, *villosa*), *Moltkia petraea*, *Mucizonia hispida*, *Murbeckiella boryi*, *Naufraga balearica*, *Notholaena marantae*, *Onosma frutescens*, *Parietaria* (*judaica*, *lusitanica*, *mauretanica*), *Petrocallis pyrenaica*, *Petrocoptis* (*crassifolia*, *grandiflora*, *pyrenaica* subsp. *glaucofolia*), *Phagnalon* (*saxatilis* subsp. *graecus* and subsp. *saxatilis*, *sordidum*), *Physoplexis comosa*, *Phyteuma scheuchzeri*, *Picris hispidissima*, *Polygonum icaricum*, *Polypodium* (*cambricum*, *interjectum*, *macaronesticum*, *vulgare*), *Portenschlagiella ramosissima*, *Potentilla* (*alchimilloidis*, *apennina* subsp. *apennina* and subsp. *stojanovii*, *caulescens*, *clusiana*, *doerfleri*, *haynaldiana*, *nitida*, *speciosa*, *visianii*), *Primula* (*hirsuta*, *kitabeliana*, *tyrolensis*, *villosa*), *Pseudofumaria lutea*, *Ptilostemon* (*chamaepeuce*, *gnaphaloides*), *Ptychotis saxifraga*, *Putoria calabrica*, *Ranonda* (*myconi*, *nathaliae*, *serbica*), *Ranunculus spicatus*, *Rhamnus* (*intermedia*, *orbiculata*, *pumila*), *Sarcocapnos* (*crassifolia*, *enneaphylla*), *Saxifraga* (*arachnoidea*, *burseriana*, *callosa* subsp. *callosa*, *canaliculata*, *continentalis*, *corsica* subsp. *corsica* and subsp. *cossoniana*, *corymbosa*, *cotyledon*, *crustata*, *cuneata*, *exarata* subsp. *ampullacea*, *facchinii*, *federici-augusti* subsp. *federici-augusti* and subsp. *grisebachii*, *juniperifolia*, *marginata*, *media*, *mutata* subsp. *demissa*, *nevadensis*, *paradoxa*, *pentadactylis* subsp. *willkommiana*, *porophylla*, *presolanensis*, *sancta*, *spruneri*, *squarrosa*, *stribnyi*, *tombaenensis*, *trifurcata*, *trifurcata*, *vandellii*), *Scabiosa limonifolia*, *Scilla hughii*, *Sedum* (*dasyphyllum*, *hispanicum*), *Seseli* (*bocconii*, *gummiferum*), *Sibthorpia africana*, *Silene* (*fruticosa*, *lerchenfeldiana*, *macrantha*, *parnassica*, *rupestris*, *saxifraga*, *veselskyi*), *Spiraea decumbens* subsp. *tomentosa*, *Stachys canescens*, *Streptorhamphus tuberosus*, *Tanacetum cinerariifolium*, *Teucrium buxifolium*, *Thymus*

richardii subsp. *nitidus*, *Trinia crithmifolia*, *Trisetum (alpestre, bertolonii, velutinum)*, *Umbilicus (chloranthus, gaditanus, horizontalis, rupestris)*, *Valeriana (saxatilis, tripteris)*, *Viola kosaninii*, *Woodsia (alpina, ilvensis, pulchella)*, *Wulfenia baldaccii*, *Xerolekia speciosissima*.

Note: The name "*Onosmetea frutescens*" cited by QUÉZEL (1964: 299 & 305) should be considered a misspelling as the author uses the rank order with that name. He uses this name in correct form (*Onosmetalia frutescens*) on p. 311 of the same paper.

Lit: MEIER & BRAUN-BLANQUET (1934), JURKO & PECIAR (1963), QUÉZEL (1964), RIVAS-MARTÍNEZ (1978a), DIERSSEN (1992), VALACHOVIČ et al. (1995), DIMOPOULOS et al. (1997).

Adiantetea BR.-BL. 1948

Chasmophytic, fern- and moss-rich communities of water-sprayed and water-flushed rocky surfaces of Mediterranean Europe

Adiantetea BR.-BL. et R. TX. 1943 (art. 8)

Adiantetea BR.-BL. et al. 1947 (art. 8)

Adiantetea LEBRUN et al. 1949 (art. 8)

Adiantetea BR.-BL. ex BR.-BL. et al. 1952 (art. 31)

Species: *Adiantum (capillus-veneris, reniforme)*, *Asplenium (sagittatum, scolopendrium*)*, *Calyptogeia fissa*, *Cardamine caldeirarum*, *Conocephalum conicum**, *Cratoneuron (commutatum*, filicinum*)*, *Didymodon tophaceus*, *Eucladium verticillatum**, *Homalia lusitanica*, *Hydrogonium ehrenbergii*, *Hypericum nummularium*, *Lithodora oleifolia*, *Lyperia canariensis*, *Pellia endiviifolia*, *Pinguicula (coenocantabrica, longifolia*, vallisneriifolia)*, *Pohlia wahlenbergii* var. *calcarea*, *Pteris vittata*, *Samolus valerandi**, *Soleirolia soleirolii*, *Thamnobryum alopecurum*, *Woodwardia radicans**.

Lit.: BRAUN-BLANQUET (1948), BRAUN-BLANQUET et al. (1952), BRULLO et al. (1989).

Thlaspietea rotundifolii BR.-BL. 1948

Vegetation of screes, gravel river-banks and related habitats

Seslerio-Arabidetea alpinae HADAČ et KLIKA in KLIKA et HADAČ 1944 nom. ambig. propos. (art. 36)

"*Thlaspietea rotundifolii*" BR.-BL. in BR.-BL. et al. 1947 (art. 8)

Myricario-Thlaspietea rotundifolii OBERD. 1949 (art. 8)

Epilobio-Thlaspietea MOOR 1958 (art. 29)

Violetea calaminariae R. TX. in LOHMEYER et al. 1962 (art. 8)

Drypetea spinosae QUÉZEL 1964 (syntax. syn.)

Salicetea retusae-serpyllifoliae LAKUŠIĆ 1968*

Galeopsio-Achnatheretea calamagrostis LACOURT in J.-M. GÉHU 1992 (art. 5, 8)

Epilobieteae dodonaei-fleischeri LACOURT in J.-M. GÉHU 1992 (art. 5, 8)

Species: *Achillea (abrotanoides, atrata, chamaemelifolia, clusiana, erba-rotta* subsp. *moschata, nana, oxyloba* subsp. *mucronulata* and subsp. *oxyloba*, subsp. *schurii*), *Achnatherum calamagrostis*, *Adenostyles alpina*, *Adonis distorta*, *Aethionema (saxatile* subsp. *oreophilum* and subsp. *saxatile, thomasianum)*, *Alchemilla (decumbens, incisa)*, *Allium (narcissiflorum, palentinum)*, *Alopecurus alpinus**, *Alyssum (bertolonii* subsp. *bertolonii* and subsp. *scutarinum, cuneifolium, diffusum, handelii, lapeyrousianum, ovirense, repens, scardicum, wulfenianum)*, *Anarrhinum bellidifolium*, *Androsace (alpina, ciliata, pubescens, wulfeniana)*, *Andryala ragusina*, *Anemone baldensis*, *Anthemis carpatica* subsp. *pyrethriiformis*, *Anthriscus fumarioides*, *Aquilegia (bertolonii, einseleana, pyrenaica* subsp. *guarensis* and subsp. *pyrenaica)*, *Arabis alpina* subsp. *alpina* and subsp. *caucasica, caerulea, ferdinandi-coburgi)*, *Arenaria (bertolonii, ciliata* subsp. *pseudofrigida, conferta* subsp. *conferta* and subsp. *serpentini, grandiflora*, norvegica, rotundifolia)*, *Arrhenatherum elatius* subsp. *sardoum**, *Artemisia (genipi, norvegica)*, *Asperula muscosa*, *Asplenium fissum*, *Athamanta cretensis*, *Berardia subacaulis*, *Biscutella (flexuosa, intermedia)*, *Borderea pyrenaica*, *Brassica repanda* subsp. *repanda*, *Braya (alpina, linearis, purpurascens)*, *Bunium (alpinum* subsp. *macuca, montanum)*, *Calamagrostis pseudophragmites**, *Calamintha nepeta* subsp. *glandulosa*, *Campanula (albanica* subsp. *albanica, alpestris, carpatica, cenisia, cochlearifolia*, hawkinsiana, pulla, speciosa, velebitica, willkommii)*, *Cardamine (bellidifolia, glauca, maritima, resedifolia)*, *Carduus (aurosicus, carlinoides)*, *Carex parviflora*, *Carum heldreichii*, *Centaurea (parlatoris* subsp. *nigra, prolongi, rupestris* subsp. *ceratophylla)*, *Centranthus (angustifolius, lecoqii, longiflorus* subsp. *kellereri)*, *Cerastium (alpinum, arvense* subsp. *glandulosum, subsp.*

lerchenfeldianum and subsp. *molle*, *carinthiacum*, *dinaricum*, *illyricum*, *latifolium*, *nigrescens* subsp. *arcticus*, *pedunculatum*, *thomasii*, *tomentosum*, *uniflorum*), *Chaenarrhinum glareosum*, *Chlorocrepis staticifolia*, *Chondrilla chondrilloides*, *Chrysosplenium tetrandrum*, *Cirsium glabrum*, *Cochlearia aragonensis*, *Coincya recurvata* subsp. *nevadensis*, *Conopodium bunioides*, *Crambe filiformis*, *Crepis (aurea, pygmaea* subsp. *pygmaea, terglouensis)*, *Cryptogramma crispa*, *Cystopteris montana*, *Degenia velebitica*, *Delphinium oxysepalum*, *Dianthus (integer* subsp. *minutiflorus, waldsteinii)*, *Doronicum (carpetanum, columnae, glaciale, grandiflorum)*, *Draba (dovrensis, fladnizensis, glabella, hoppeana, incana, nivalis)*, *Dryopteris (expansa, oreades, submontana, tyrrhena, villarii)*, *Drypis (jacquiniana, spinosa)*, *Echium albicans*, *Epilobium (dodonaei, fleischeri, lanceolatum, latifolium)*, *Erigeron acer* subsp. *angulosus*, *Erucastrum nasturtiifolium*, *Eryngium glaciale*, *Erysimum humile*, *Euphorbia (capitulata, deflexa, myrsinites, rigida, spinosa)*, *Euphrasia lapponica*, *Festuca (alpina* subsp. *briquetii, borderi, dimorpha, glacialis, intercedens, laxa, pulchella* subsp. *jurana, pyrenaica, spectabilis)*, *Galeopsis (angustifolia, ladanum, pyrenaica, segetum)*, *Galium (baldense, cespitosum, cometerhizon, cyllenicum, fleurotii, magellense, megalospermum, noricum, obliquum, pyrenaicum, stajanovii, timeroy, truniacum)*, *Gentiana frigida*, *Geranium (aristatum, dalmaticum, macrorrhizum)*, *Geum reptans*, *Gnaphalium (hoppeanum, pichleri)*, *Grafia golaka*, *Gymnocarpium robertianum*, *Gypsophila repens*, *Heracleum sphondylium* (subsp. *alpinum, subsp. orsinii, subsp. pyrenaicum*), *Herniaria alpina*, *Hieracium porrifolium*, *Holcus caespitosus*, *Hypochaeris robertia**, *Iberis (aurosica, bernardiana, ciliata, linifolia* subsp. *linifolia* and subsp. *violetii, spathulata* subsp. *spathulata)*, *Isatis (allionii, tinctoria)*, *Lactuca graeca*, *Lamium garganicum**, *Laserpitium gallicum*, *Leontodon (berinii, carpetanus, montaniformis, montanus)*, *Leucanthemum (atratum* subsp. *ceratophylloides* and subsp. *halleri, laciniatum)*, *Ligusticum (albanicum, ferulaceum)*, *Linaria (alpina, badalii, faucicola, glacialis, glauca* subsp. *bubanii, propinqua, purpurea, repens, saxatilis, simplex, supina)*, *Lomelosia crenata* subsp. *crenata*, *Microrrhinum minus*, *Minuartia (austriaca, biflora, cerastifolia, rubella)*, *Moehringia ciliata*, *Murbeckiella pinnatifida*, *Myosotis (ambigens, suaveolens)*, *Myricaria germanica**, *Nepeta nepetella*, *Onosma stellulata*, *Oxyria digyna*, *Papaver (alpinum – all subsp., lapeyrousianum, radicatum)*, *Paronychia polygonifolia*, *Pedicularis asplenifolia*, *Peltaria alliacea*, *Petasites paradoxus*, *Pimpinella tragium*, *Platycapnos saxicola*, *Poa cenisia* subsp. *cenisia*, subsp. *contracta* and subsp. *sardoa, flexuosa, laxa, minor, pirinica, psychrophila)*, *Polemonium boreale*, *Polygonum alpinum*, *Polystichum lonchitii**, *Potentilla (brauniana, hyparctica)*, *Pritzelago alpina* (subsp. *alpina, subsp. auerswaldii, subsp. brevicaulis)*, *Pseudofumaria alba* subsp. *leiosperma*, *Ptilostemon (afer, niveus)*, *Ptychotis saxifraga*, *Ranunculus (alpestris* subsp. *alpestris* and subsp. *traunfellneri, brevifolius, carinthiacus, glacialis, gouanii, hayekii, oreophilus, parnasifolius* subsp. *favargerii* and subsp. *heterocarpus, sequieri* subsp. *montenegrinus* and subsp. *sequieri)*, *Reseda (complicata, glauca, gredensis)*, *Rhodiola rosea**, *Rumex (nivalis, scutulus, suffruticosus)*, *Sagina saginoides* subsp. *nevadensis*, *Salix (reticulata, retusa)*, *Santolina oblongifolia*, *Saponaria calabrica*, *Satureja cuneifolia*, *Saussurea alpina* subsp. *depressa*, *Saxifraga (androsacea, aphylla, biflora, blavii, bryoides, carpatica, cernua, cespitosa, depressa, exarata* subsp. *exarata, glabella, hirsuta* subsp. *paucicrenata, hypnoides, oppositifolia* subsp. *blepharophylla, subsp. oppositifolia, subsp. rudolphiana* and subsp. *speciosa, pedemontana* subsp. *cymosa, praetermissa, pubescens* subsp. *iratiana, rivularis, rosacea* subsp. *sponhemica, sedoides* subsp. *hohenwartii, subsp. prenja* and subsp. *sedoides, sequieri, spathularis, tenuis, wahlenbergii)*, *Scrophularia (canina* subsp. *bicolor, subsp. canina* and subsp. *hoppii, crithmifolia, heterophylla* subsp. *laciniata, myriophylla)*, *Sedum (atratum, grisebachii* subsp. *flexuosum, magellense)*, *Senecio (ambiguus, carpetanus, leucophyllus, pyrenaicum, rupestris, sículus, thapsoides)*, *Seseli malyi*, *Sesleria (ovata*, robusta*, tenerrima*)*, *Silene (caesia, foetida, hausknechtii, herminii, inaperta, multicaulis, tatarica, uniflora* subsp. *glareosa* and subsp. *prostrata)*, *Soldanella (alpina* subsp. *pyrolaeifolia, austriaca)*, *Spergula viscosa*, *Taraxacum pacherii*, *Teesdaliopsis conferta*, *Teucrium botrys*, *Thlaspi (bellidifolium, cepaeifolium, rotundifolium* subsp. *minimum* and subsp. *rotundifolium, stytosum)*, *Thymus (comosus, pulcherrimus, serpyllum* subsp. *tanaensis)*, *Trifolium (palescens, saxatile, wetsteinii)*, *Trisetum (argenteum, distichophyllum, hispidum, spicatum)*, *Valeriana (bertisceae, elongata, montana, saliunca, saxatilis* subsp. *panicii)*, *Veronica (aragonensis, baumgartenii, mampodrensis, nummularia, saturooides)*, *Vincetoxicum hirundinaria* (subsp. *lusitanicum, subsp. hirundinaria**), *Viola (calcarata* subsp. *zoysii, cenisia, crassiuscula, diversifolia, dubyana, grisebachiana, magellensis)*, *Vitaliana primuliflora*, *Xatardia scabra*.

Lit: BRAUN-BLANQUET (1948), QUÉZEL (1964), RIVAS-MARTÍNEZ et al. (1991), DIERSSEN (1992), DIMOPOULOS et al. (1997), VALACHOVIČ et al. (1997).

Arctic and alpine vegetation

***Loiseleurio-Vaccinietea* EGGLER ex SCHUBERT 1960**

Dwarf-shrub alpine and subalpine heathland of boreal and arctic Europe

Loiseleurio-Vaccinietea EGGLER 1952 (art. 8)

Loiseleurio-Cetrarietea SUZUKI-TOKIO et UMEZU in SUZUKI-TOKIO 1964 (syntax. syn.)

Vaccinio-Juniperetea communis PASSARGE et HOFFMANN 1968 (art. 8)

Salici-Betuletea nanae KHUSAINOV in KHUSAINOV et al. 1989 (art 1)

Calluno-Vaccinietea myrtilli DE FOUCAULT 1990 p.p. (art. 5, 8)

Roso pendulinae-Pinetea mugo THEURILLAT 1994 (art. 3b, 5, 8)

Roso pendulinae-Pinetea mugo THEURILLAT in THEURILLAT et al. 1985 p.p. (syntax. syn.)

Species: *Alectoria ochroleuca**, *Arctostaphylos alpina*, *Betula nana**, *Bruckenthalia spiculifolia*, *Cetraria nivalis**, *Cladonia (bellidiflora*, carneola, stellaris*, uncialis*)*, *Diapensia lapponica*, *Dicranum fuscescens*, *Empetrum (hermaphroditum, nigrum*)*, *Gymnomitrium concinatum**, *Hieracium (alpinum*, intybaecum)*, *Hierochloë alpina**, *Loiseleuria procumbens*, *Lycopodium clavatum* subsp. *monostachyum*, *Nephroma arcticum*, *Ochrolechia frigida**, *Pedicularis lapponica*, *Phyllodoce caerulea*, *Pinus mugo**, *Rhododendron (ferrugineum, myrtifolium)*, *Salix (glaucosericea, helvetica, laggeri)*, *Sempervivum wulfenii*, *Sphaerophorus globosus*, *Stereocaulon paschale*, *Tetralophozia setiformis*, *Thamnozia vermicularis**, *Vaccinium gaultherioides*.

Note 1: The publication of the *Loiseleurio-Vaccinietea* by EGGLER (1952) is invalid as the author has not provided bibliographic references to any of the subordinate syntaxa (*Loiseleurio-Vaccinietalia* and 9 alliances).

Note 2: DIERSSEN (1992: 221-223) suggested placing the *Phyllodoce-Vaccinion* NORDHAGEN 1936 – an alliance of chionophilous scrub of the montane to lower alpine belts of southern Scandinavia – into the *Vaccinio-Piceetea*.

Lit.: EGGLER (1952), SCHUBERT (1960), SUZUKI-TOKIO (1964), HADAČ (1972), GUNNLAUGSDÓTTIR (1985), DIERSSEN (1992), THEURILLAT et al. (1995), KOROLEVA (1994), DIERSSEN (1996).

***Salicetea herbaceae* BR.-BL. 1948**

Snow-bed communities on siliceous substrates

Salicetea herbaceae BR.-BL. et al. 1947 (art. 8)

Species: *Alchemilla pentaphyllea*, *Alopecurus alpinus*, *Anthelia juratzkana*, *Arenaria biflora*, *Athalamia hyalina*, *Cardamine bellidifolia* (subsp. *alpina*, subsp. *bellidifolia*), *Carex (foetida, pyrenaica, rufina)*, *Cassiope hypnoides*, *Cephalozia ambigua*, *Cerastium (cerastioides, nigrescens* subsp. *arcticum, regelii)*, *Conostomum tetragonum*, *Deschampsia cespitosa* subsp. *alpina*, *Draba (alpina, corymbosa, lactea)*, *Gentianella albanica*, *Gnaphalium supinum**, *Gymnomitrium coralloides**, *Kiaeria (falcata, starkei)*, *Luzula (alpinopilosa*, arctica, arcuata, confusa)*, *Marsupella brevissima*, *Minuartia rossii*, *Moerckia blyttii*, *Plantago gentianoides*, *Pleurocladula albescens*, *Poa (arctica, granitica* subsp. *disparis)*, *Pohlia drummondii*, *Polytrichum sexangulare*, *Psilopilum cavifolium*, *Racomitrium sudeticum**, *Ranunculus (acris* subsp. *borealis, crenatus, glacialis, nivalis, pygmaeus, sulphureus)*, *Sagina cespitosa*, *Salix (herbacea, polaris)*, *Sauteria alpina*, *Saxifraga (flagellaris, nivalis, rivularis)*, *Sedum alpestre*, *Sibbaldia procumbens*, *Soldanella (carpatica, pusilla)*, *Solorina crocea*, *Stellaria crassipes*, *Taraxacum croceum*, *Viola alpina*.

Lit.: BRAUN-BLANQUET (1948), DIERSSEN (1992), KOROLEVA (1994).

***Juncetea trifidi* HADAČ 1946**

Siliceous alpine and boreal grasslands

Juncetea trifidi HADAČ et KLIKA in KLIKA et HADAČ 1944 (art. 8)

Caricetea curvulae BR.-BL. in BR.-BL. et al. 1947 (art. 8)

Caricetea curvulae BR.-BL. 1948 (syntax. syn.)

Species: *Agrostis (mertensii, rupestris, schraderiana)*, *Alchemilla alpina*, *Alopecurus gerardii**, *Androsace (carnea, obtusifolia)*, *Anthemis carpathica**, *Asperula aristata* subsp. *condensata*, *Avenula versicolor*, *Barbilophozia binsteadii*, *Bellardiocloa violacea*, *Bupleurum stellatum*, *Campanula (alpina, barbata, ficaroides, radicata, spathulata* subsp. *spathulata*)*, *Carex (aterrima, bigelowii, brunnescens, curvula* subsp. *curvula, fuliginosa, sempervirens*)*, *Centaurea uniflora* subsp. *nervosa*, *Cetraria delisei*, *Cladonia (bellidiflora*, ecmocyna)*, *Convolvulus libanoticus*, *Crocus (sieberi*, veluchensis)*, *Dianthus (glacialis* subsp.

gelidus, multinervis, scardicus), *Diaphasiastrum alpinum*, *Erigeron alpinus*, *Euphrasia minima*, *Festuca* (*eskia, halleri* subsp. *halleri* and subsp. *riloënsis*, *nigricans*, *paniculata*, *picturata*, *pseudodura*, *supina*, *varia*, *versicolor* subsp. *versicolor*), *Gentiana* (*acaulis*, *alpina*, *punctata*, *purpurea*), *Geum montanum*, *Herniaria parnassica* subsp. *parnassica*, *Hieracium* (*glanduliferum*, *piliferum*), *Hypochaeris uniflora*, *Jasione laevis* subsp. *orbiculata*, *Juncus trifidus*, *Koeleria hirsuta*, *Laserpitium halleri*, *Leontodon* (*croceus* subsp. *rilaënsis*, *pyrenaicus* subsp. *helveticus* and subsp. *pyrenaicus*), *Leucanthemopsis alpina*, *Luzula* (*alpina*, *lutea*, *nutans*), *Lychnis alpina*, *Minuartia* (*recurva*, *sedoides*), *Oreochloa disticha*, *Paradisea liliastrum*, *Pedicularis* (*kernerii*, *pyrenaica*, *recutita*, *tuberosa*), *Phyteuma* (*betonicifolium*, *confusum*, *hemisphaericum*), *Plantago serpentina*, *Poa media*, *Potentilla* (*aurea* subsp. *aurea* and subsp. *chrysocraspeda*, *frigida*, *grandiflora*), *Primula* (*daonensis*, *integrifolia*, *minima**), *Pulsatilla* (*alba*, *alpina* subsp. *apüfolia*, *vernalis*), *Ranunculus pyrenaicus*, *Saponaria pumila*, *Scleranthus perennis* subsp. *marginatus*, *Senecio* (*abrotanifolius* subsp. *carpaticus*, *incanus* subsp. *carniolicus*), *Sesleria* (*oederi*), *Silene* (*roemerii*, *ventricosa*), *Trifolium* (*alpinum*, *ottonis*, *parnassi*), *Valeriana celtica*, *Veronica* (*bellidioides*, *kindlii*).

Lit.: KLIKA & HADAČ (1944), HADAČ (1946, 1972), QUÉZEL (1964), DE FOUCAULT (1994), DIERSSEN (1996).

Carici rupestris-Kobresietea bellardii OHBA 1974

Circumpolar cold-steppe and fjeld vegetation, and alpine wind-swept *Kobresia* grasslands

Kobresio-Elynetea OBERD. 1957 (art. 3b)

Species: *Antennaria carpatica*, *Arenaria ciliata*, *Astragalus* (*alpinus*, *australis*, *norvegicus*), *Campanula uniflora*, *Carex* (*atrata*, *capillaris*, *curvula* subsp. *rosae*, *fuliginosa* subsp. *misandra*, *glacialis*, *nardina*, *parviflora*, *rupestris*, *scirpoidea*), *Cassiope tetragona*, *Chamorchis alpina**, *Comastoma tenellum*, *Dianthus glacialis*, *Draba siliquosa*, *Dryas octopetala*, *Erigeron uniflorus*, *Festuca pumila*, *Gentiana brachyphylla* subsp. *brachyphylla* and subsp. *favratii*, *nivalis*, *prostrata*), *Kobresia bellardii*, *Ligusticum mutellinoides*, *Lloydia serotina*, *Lomatogonium carinthiacum*, *Oxytropis* (*campestris* subsp. *tirolensis*, *halleri*, *lapponica*, *triflora*), *Pedicularis flammea*, *oederi**), *Poa arctica**, *Potentilla* (*nivea*, *prostrata* subsp. *floccosa*), *Rhododendron lapponicum*, *Salix serpyllifolia*, *Saussurea alpina*, *Silene uralensis*, *Viola rupestris* subsp. *relicta*.

Lit.: OBERDORFER (1957), OHBA (1974), DIERSSEN (1992, 1996).

Elyno-Seslerietea BR.-BL. 1948

Alpine and subalpine calcareous grasslands

Elyno-Seslerietea BR.-BL. in BR.-BL. et al. 1947 (art. 8)

Festuco-Seslerietea BARBERO et BONIN 1969 (syntax. syn.)

Seslerietea variae OBERD. 1978 (art. 29)

Seslerietea albicantis OBERD. 1978 corr. 1990 (corr. superfl.; art. 29)

Species: *Achillea* (*clavenae*, *fraasii*, *holosericea*, *oxyloba*), *Acinus alpinus* subsp. *alpinus**, *Alchemilla* (*anisiaca*, *hoppeana*, *nitida*, *pallens*, *plicatula*), *Allium* (*ericetorum*, *insubricum*), *Alyssum scardicum*, *Androsace* (*chamaejasme*, *villosa*), *Anemone* (*baldensis*, *narcissiflora*), *Anthyllis* (*aurea*, *vulneraria* subsp. *alpestris*), *Arabis ciliata*, *Arenaria gracilis*, *Artemisia nitida*, *Asperula* (*aristata* subsp. *aristata*, *capitata*, *wettsteinii*), *Aster* (*alpinus**, *bellidiastrum*), *Astragalus* (*alpinus*, *frigidus*, *penduliflorus*, *sempervirens* subsp. *gussonei*), *Astrantia bavarica*, *Athamanta turbiith* subsp. *hungarica*, *Bartsia alpina*, *Betonica alopecuroides*, *Biscutella laevigata**, *Bupthalmum salicifolium*, *Bupleurum* (*longifolium*, *ranunculoides*), *Calamagrostis varia*, *Callianthemum kernerianum*, *Campanula* (*scheuchzeri**, *thyrsoides*), *Carduus* (*crassifolius*, *defloratus*, *kernerii*), *Carex* (*austroalpina*, *baldensis*, *ferruginea*, *firma*, *kitaibeliana*, *macrolepis*, *mucronata*, *ornithopoda*, *sempervirens**), *Centaurea* (*atropurpurea*, *haynaldii*, *kotschyana*, *pinnatifida*, *scabiosa* subsp. *alpestris*), *Cerastium transsilvanicum*, *Coeloglossum viride*, *Crepis* (*mollis*, *pontana*, *praemorsa* subsp. *incarnata*), *Cytisus emeriflorus*, *Daphne striata*, *Dianthus* (*alpinus*, *arrostii*, *freyunii*, *giganteus* subsp. *croaticus*, *haematocalyx* subsp. *pindicola*, *petraeus* subsp. *orbelicus*, *spiculifolius*, *sternbergii*), *Edraianthus graminifolius*, *Erigeron* (*atticus*, *candidus*, *glabratus*), *Eryngium spinaalba*, *Euphorbia variabilis*, *Euphrasia salisburgensis**, *Festuca* (*alpestris*, *bosniaca* subsp. *bosniaca* and subsp. *pirinica*, *calva*, *gautieri*, *nigricans*, *nitida* subsp. *flaccida*, *norica*, *panciciana*, *pulchella* subsp. *pulchella*, *quadriflora*, *rupicola* subsp. *saxatilis*, *versicolor* subsp. *brachystachys*, subsp. *dominii* and subsp. *pallidula*, *xanthina*), *Fritillaria tubiformis*, *Galium* (*anisophyllum*, *fatrense*), *Genista* (*holopetala*, *radiata*), *Gentiana* (*clusii*, *dinarica*, *froelichii*, *laevicalyx*, *terglouensis*,

utriculosa, *vena*), *Gentianella* (*anisodonta*, *aspera*, *crispata*), *Geranium cinereum* subsp. *subcaulescens*, *Globularia* (*cordifolia*, *nudicaulis*, *repens*), *Gymnadenia* (*conopsea*, *odoratissima*), *Helianthemum* (*nummularium* subsp. *glabrum* and subsp. *grandiflorum*, *oelandicum* subsp. *alpestre* and subsp. *rupifragum*), *Helictotrichon* (*decorum*, *parlatorei*, *petzense*, *sedense*, *sempervirens*), *Heracleum austriacum* (subsp. *austriacum*, subsp. *siifolium*), *Hieracium* (*pilosum*, *villosum*), *Homogyne discolor*, *Horminium pyrenaicum*, *Hypericum richeri* subsp. *grisebachii*, *Iris reichenbachii*, *Juncus monanthos*, *Knautia* (*baldensis*, *velutina*), *Koeleria eriostachya*, *Laserpitium* (*nitidum*, *peucedanoides*), *Lathyrus laevigatus*, *Leontopodium alpinum* subsp. *nivale*, *Leucanthemum* (*adustum*, *atratum*, *heterophyllum*), *Leuzea centaureoides*, *Ligusticum lucidum*, *Lilium* (*carniolicum*, *pomponium*), *Linaria peloponnesiaca*, *Linum* (*capitatum*, *perenne* subsp. *alpinum* and subsp. *extraaxillare*), *Luzula glabrata*, *Minuartia* (*baldaccii*, *gerardii**, *langii*), *Molinia arundinacea**, *Nigritella* (*archiducis-joannis*, *lithopolitana*, *nigra* subsp. *austriaca*, *rubra*, *stiriaca*, *widderi*), *Onobrychis montana* (subsp. *montana*, subsp. *scardica*), *Oxytropis campestris* subsp. *campestris*, *carpatica*, *halleri*, *jacquinii*, *prenja*, *pyrenaica*, *urumovii*), *Pedicularis* (*ascendens*, *brachyodonta*, *elegans*, *elongata*, *foliosa*, *gyroflexa*, *hoermanniana*, *julica*, *leucodon*, *oederi*, *portenschlagii*, *pyrenaica*, *rosea*, *rostratocapitata*, *rostratospicata*), *Peucedanum verticillare*, *Phleum hirsutum*, *Phyteuma* (*orbiculare*, *sieberi*), *Plantago atrata*, *Poa* (*molinieri**, *rehmannii*), *Polygala alpestris*, *Potentilla* (*crantzii* subsp. *crantzii*, *thuringiaca*), *Primula* (*clusiana*, *glaucescens*, *spectabilis*, *wulfeniana*), *Pulsatilla alpina* subsp. *alpina*, *Ranunculus* (*gouanii*, *hybridus*, *thora*), *Rhinanthus glacialis*, *Salix pyrenaica*, *Saussurea* (*alpina*, *pygmaea*), *Saxifraga* (*caesia*, *discolor*, *ferdinandi-coburgi*, *paniculata* subsp. *paniculata* and subsp. *stabiana*, *tenella*), *Scabiosa* (*columbaria* subsp. *portae*, *silenifolia*, *vestita*), *Scorzonera* (*aristata*, *purpurea* subsp. *rosea*), *Selaginella selaginoides*, *Senecio abrotanifolius*, *Senecio* (*doronicum* subsp. *doronicum* and subsp. *gerardii*, *papposus* subsp. *wagneri*), *Serratula nudicaulis*, *Sesleria* (*albicans*, *argentea*, *bielzii*, *coeruleans*, *korabensis*, *sphaerocephala*, *tenerrima*, *tenuifolia* subsp. *tenuifolia*, *wettsteinii*), *Silene* (*balcanica*, *sendtneri*), *Stachys albanica*, *Thesium* (*alpinum*, *kerneranum*), *Thlaspi dacicum*, *Traunsteinera globosa*, *Trifolium* (*badium*, *noricum*, *thalii*), *Tulipa sylvestris* subsp. *australis*, *Veronica* (*aphylla*, *fruticans**), *Viola jooi*.

Lit.: BRAUN-BLANQUET (1948), BARBERO & BONIN (1969).

Mulgedio-Aconitetea HADAČ et KLIKA in KLIKA 1948

Subarctic-subalpine to alpine tall-grass and tall-herb grasslands and related krummholz

Adenostyletea KNAPP 1943 (art. 1)

Betulo-Adenostyletea BR.-BL. et R. TX. 1943 (art. 8)

Mulgedio-Aconitetea HADAČ et KLIKA in KLIKA et HADAČ 1944 (art. 8)

"*Mugo-Alnetea viridis*" EGGLEER 1952 (art. 8)

Aconito-Cardaminetea HADAČ 1956 (art. 29)

Stellario nemorum-Geranietea sylvatici NIEMANN et al. 1973 p.p.max. (art. 3b, 29)

Betulo carpaticae-Alnetea viridis REJMÁNEK in HUML et al. 1979 (syntax. syn.)

Nardo-Calamagrostiotea villosae JENÍK et al. 1980 p.p. (art. 29)

Species: *Achillea* (*distans*, *macrophylla*, *millefolium* subsp. *sudetica*), *Aconitum* (*lycoctonum* subsp. *lycoctonum*, *napellus* subsp. *napellus* and subsp. *tauricum*, *toxicum*, *variegatum* subsp. *paniculatum* and subsp. *variegatum*), *Adenostyles* (*alliariae* subsp. *alliariae** and subsp. *hybrida*, *briquetii*), *Alchemilla* (*acutiloba*, *glabra*, *subcrenata*), *Allium victorialis*, *Alnus alnobetula* (subsp. *alnobetula*, subsp. *suaveolens*), *Angelica archangelica* subsp. *archangelica*, *Aquilegia aurea*, *Astrantia major*, *Athyrium distentifolium*, *Betonica jacquinii*, *Calamagrostis* (*arundinacea**, *purpurea*, *villosa*), *Carduus* (*carduelis*, *personata*), *Carex vaginata*, *Centaurea montana*, *Cephalaria alpina**, *Cerinthe glabra*, *Chaerophyllum* (*elegans*, *hirsutum**, *villarsii*), *Cicerbita* (*alpina*, *panicum*, *plumieri*), *Cirsium* (*carniolicum*, *spinossissimum*, *tenoreanum*, *tympeum*, *waldsteini*), *Conioselinum tataricum*, *Cortusa matthioli*, *Crepis pyrenaica**, *Dactylis glomerata* subsp. *slovenica*, *Delphinium* (*dubium*, *elatum*, *fissum*), *Doronicum* (*austriacum*, *cataractarum*, *corsicum*, *grandiflorum*), *Epilobium* (*alpestre*, *lactiflorum*), *Eryngium alpinum*, *Euphorbia austriaca*, *Festuca* (*carpatica*, *porcii*, *pratensis* subsp. *apennina*), *Gagea fistulosa*, *Gentiana lutea* (subsp. *symphyandra*, subsp. *vardjanii*), *Geranium sylvaticum**, *Geum* (*bulgaricum*, *coccineum*, *molle*, *rivale*), *Heracleum* (*carpaticum*, *sphondylium* subsp. *elegans*, subsp. *ternatum* and subsp. *transsilvanicum*), *Hieracium prenanthoides*, *Hugueninia tanacetifolia*, *Hypericum maculatum**, *Knautia maxima*, *Lactuca sibirica**, *Laserpitium archangelica*, *Linaria peloponnesiaca*, *Luzula* (*desvauxii*, *parviflora*), *Milium effusum**, *Oreopteris limbosperma*, *Petasites doerfleri*,

Peucedanum ostruthium, *Phyteuma (ovatum, zahlbruckneri)*, *Poa hybrida*, *Polemonium acutiflorum, caeruleum*, *Potentilla montenegrina*, *Pulmonaria (mollis subsp. alpigena, rubra)*, *Ranunculus platanifolius*, *Rhodiola rosea**, *Ribes (alpinum, petraeum, spicatum)*, *Rosa pendulina*, *Rumex (acetosa subsp. lapponica, alpestris, alpinus)*, *Salix (appendiculata, bicolor, caesia, daphnoides, foetida, glabra, glauca, hegetschweileri, meilichhoferi, waldsteiniana)*, *Saxifraga rotundifolia subsp. rotundifolia**, *Scrophularia scopoli**, *Senecio (cacaliaster, cordatus, subalpinus)*, *Sesleria tatrae*, *Silene dioica**, *Sorbus (chamaemespilus, mougeotii)*, *Stellaria (borealis, nemorum subsp. nemorum*)*, *Streptopus amplexifolius*, *Tanacetum clusii*, *Thalictrum aquilegifolium*, *Tozzia alpina*, *Valeriana (pyrenaica, sambucifolia)*, *Veratrum (album, lobelianum)*, *Verbascum longifolium*, *Viola (biflora*, selkirkii)*, *Wulfenia carinthiaca*.

Lit.: KLIKA & HADAČ (1944), KLIKA (1948), EGGLER (1952), HADAČ (1956), NIEMANN et al. (1973), HUML et al. (1979), JENÍK et al. (1980).

Synanthropic vegetation

***Oryzetea sativae* MIYAWAKI 1960**

Weed communities of rice fields

Species: *Ammania (auriculata, baccifera, coccinea, verticillata)*, *Cyperus (difformis, serotinus)*, *Echinochloa (colona, crus-galli*, oryzoides)*, *Fimbristylis bisumbellata*, *Heteranthera reniformis*, *Lindera dubia**, *Monochoria korsakowii*, *Rotala (filiformis, indica)*, *Scirpus (mucronatus, supinus*)*.

Lit.: DE BOLÒS & MASCLANS (1955), MIYAWAKI (1960).

***Bidentetea tripartiti* R. TX. et al. ex VON ROCHOW 1951**

Annual ruderal communities of periodically flooded, nutrient-rich riparian and related synanthropic habitats

Ruderali-Secalietae cerealis BR.-BL. in BR.-BL. et al. 1936 p.p.min. (art. 3f, 36)

Bidentetea tripartiti R. TX. et al. in R. TX. 1950 (art. 8)

Species: *Alopecurus aequalis*, *Bidens (cernuus, connatus, frondosus, radiatus, tripartitus)*, *Chenopodium (ficifolium, glaucum, rubrum)*, *Corrigiola litoralis*, *Persicaria (dubia, foliosa, hydropiper, lapathifolia subsp. brittingeri and lapathifolia, minor)*, *Potentilla supina*, *Pulicaria vulgaris*, *Ranunculus sceleratus*, *Rorippa palustris*, *Rumex (maritimus, palustris)*, *Tephrosia palustris*, *Xanthium (albidum, ripicola, saccharatum)*.

Lit.: TÜXEN (1950, 1979), VON ROCHOW (1951), POLI & TÜXEN (1960), WISSKIRCHEN (1995).

***Polygono arenastris-Poëtea annuae* RIVAS-MARTÍNEZ 1975 corr. RIVAS-MARTÍNEZ et al. 1991**

Short-lived, trampled ruderal plant communities

Coronopodo-Polygonetea avicularis LOHMEYER 1970 (art. 8)

Polygono avicularis-Poëtea annuae RIVAS-MARTÍNEZ 1975 (art. 43)

Plantaginea majoris sensu auct. (pseudonym)

Species: *Bryum argenteum**, *Coronopus (didymus, squamatus)*, *Gymnostyles stolonifera*, *Herniaria glabra**, *Matricaria (aurea, discoidea)*, *Plantago major**, *Poa (anuua, infirma)*, *Polycarpon tetraphyllum*, *Polygonum arenastrum*, *Sagina (apetala, procumbens)*, *Sclerochloa dura*, *Spergularia rubra**, *Trifolium suffocatum*.

Lit.: LOHMEYER (1970), RIVAS-MARTÍNEZ (1975c), RIVAS-MARTÍNEZ et al. (1991).

***Stellarietea mediae* R. TX. et al. ex VON ROCHOW 1951**

Annual, herb-rich ruderal and agrestal communities

Ruderali-Secalietae cerealis BR.-BL. in BR.-BL. et al. 1936 p.p. (art. 3f, 36)

Stellarietea mediae R. TX. et al. in R. TX. 1950 (art. 8)

Chenopodietea BR.-BL. 1951 (art. 8)

Secalietae BR.-BL. 1951 (art. 8)

Chenopodietea BR.-BL. in BR.-BL. et al. 1952 (syntax. syn.)

Secalietae BR.-BL. in BR.-BL. et al. 1952 (syntax. syn.)

Onopordo-Sisymbrietea GÖRS 1966 (art. 3b)

"*Rudereto-Manihotetea pantropicalia*" sensu O. DE BOLÒS 1967 non LÉONARD in TATON 1949 (pseudonym)

Sisymbrietea GUTTE et HILBIG 1975 (syntax. syn.)

Chenopodietea albi RADKE 1980 (art. 5, 8)

Capselletea bursae-pastoris RADKE 1980 (art. 3c, 5, 8)

Species: *Adonis* (*aestivalis*, *annua*, *flammula*, *microcarpa*), *Aegilops* (*geniculata*, *neglecta*, *ventricosa*), *Aethusa cynapium* (subsp. *agrestis*, subsp. *cynapium*, subsp. *cynapioides*), *Agrostemma githago*, *Ajuga* (*chamaepitys*, *iva*), *Allium* (*nigrum*, *oleraceum*, *triquetrum*, *vineale*), *Alopecurus myosuroides*, *Althaea hirsuta*, *Alyssum* (*granatense*, *minus*), *Amaranthus* (*albus*, *blitoides*, *blitum*, *crispus*, *deflexus*, *graecizans*, *hybridus*, *muricatus*, *powellii*, *retroflexus*, *viridis*), *Ambrosia* (*artemisiifolia*, *trifida*), *Ammi majus*, *Anacyclus* (*clavatus*, *radiatus*, *valentinus*), *Anagallis arvensis* (subsp. *arvensis*, subsp. *latifolia*), *Anchusa arvensis*, *Andryala* (*arenaria*, *integrifolia*), *Anthemis* (*arvensis* subsp. *arvensis*, *austriaca*, *cotula*), *Anthoxanthum ovatum*, *Apera spica-venti*, *Aphanes* (*arvensis*, *australis*, *cornucopioides*), *Arctotheca calendula*, *Arenaria* (*cerastoides*, *hispanica*), *Arisarum vulgare**, *Arnoseris minima*, *Artemisia annua*, *Arum italicum* (subsp. *italicum*, subsp. *neglectum*), *Asperula arvensis*, *Asphodelus fistulosus*, *Astragalus hamosus*, *Atriplex* (*oblongifolia*, *patula*, *rosea*, *sagittata*, *tatarica**), *Avena* (*barbata*, *fatua*, *nuda*, *sterilis*), *Bartsia trixago*, *Bassia scoparia*, *Bifora* (*radialis*, *testiculata*), *Biscutella auriculata*, *Borago officinalis*, *Brassica* (*barrelieri* subsp. *barrelieri* and subsp. *oxyrrhina*, *fruticulosa* subsp. *cossoniana* and subsp. *fruticulosa*, *nigra*, *rapa* subsp. *sylvestris*, *tournefortii*), *Bromus* (*arvensis*, *japonicus*, *lanceolatus*, *madritensis*, *rubens**, *secalinus*, *squarrosus*, *sterilis*, *tectorum**, *willdenowii*), *Buglossoides* (*arvensis*, *spligterberi*), *Bunias orientalis*, *Bunium bulbocastanum**, *Bupleurum* (*lancifolium*, *rotundifolium*), *Calendula* (*officinalis*, *tripterocarpa*), *Camelina* (*microcarpa*, *rumelica*, *sativa*), *Cannabis ruderalis*, *Capsella* (*bursa-pastoris*, *grandiflora*, *rubella*), *Cardamine hirsuta*, *Carduus* (*argyrea*, *australis*, *pycnocephalus*, *tenuiflorus*), *Carrichtera annua*, *Catananche lutea*, *Catapodium zwierleinii*, *Caucalis* (*bischoffii*, *platycarpus*), *Centaurea* (*cyanus*, *pullata*), *Centranthus* (*calcitrapae*, *macrospiphon*), *Cerastium* (*glomeratum*, *gracile*), *Ceratocarpus heterocarpa*, *Cerinthe* (*major*, *retorta*), *Chamaemelum fuscatum*, *Chamaesyce* (*canescens*, *humifusa*, *maculata*, *nutans*, *prostrata*, *serpens*), *Chenopodium* (*album* subsp. *album* and subsp. *borbasii*, *ambrosioides*, *botrys*, *giganteum*, *hybridum*, *murale*, *opulifolium*, *polyspermum*, *pumilio*, *schraderianum*, *strictum*, *suecicum*, *urbicum*, *vulvaria*), *Chrozophora tinctoria*, *Cirsium arvense**, *Coincya transtaganana*, *Conopodium capillifolium*, *Conringia orientalis*, *Consolida* (*ajacis*, *orientalis*, *pubescens*, *regalis*), *Convolvulus* (*arvensis**, *meonanthus*, *tricolor*), *Conyza* (*albida*, *bonariensis*, *canadensis*), *Corispermum* (*canescens*, *leptopterum*, *marschallii*, *nitidum*), *Coronilla scorpioides*, *Crepis* (*capillaris*, *pulchra*, *tectorum*, *vesicaria* subsp. *vesicaria*), *Cuscuta campestris*, *Cynodon dactylon**, *Cynoglossum* (*columnae*, *creticum*), *Cyperus* (*esculentus*, *longus*, *rotundus*), *Datura* (*metel*, *stramonium*), *Daucus muricatus*, *Delphinium staphisagria*, *Descurainia sophia*, *Digitaria* (*ischaemum*, *sanguinalis*), *Diploaxis* (*catholica*, *erucoides*, *harra* subsp. *lagascana*, *muralis*, *sitifolia*, *tenuifolia*, *viminea*, *virgata*), *Ecballium elaterium*, *Echinaria capitata*, *Echinochloa crus-galli**, *Echium* (*italicum*, *plantagineum*), *Eleusine indica*, *Emex spinosa*, *Eragrostis* (*barrelieri*, *cilianensis*, *minor*, *papposa*, *pilosa*), *Erodium* (*laciniatum*, *malacoides*), *Eruca sativa* (subsp. *sativa*, subsp. *vesicaria*), *Erysimum repandum*, *Euphorbia* (*dracunculoides*, *exigua*, *falcata*, *helioscopia*, *peplus* subsp. *peplus* and subsp. *peplodes*, *platyphyllos*, *segetalis*, *serrata*), *Evax carpetana*, *Fallopia convolvulus*, *Fedia* (*caput-jovis*, *cornucopiae*, *scorpioides*), *Filago congesta*, *Fumaria* (*agraria*, *bastardii*, *capreolata*, *densiflora*, *flabellata*, *gaillardotii*, *macrocarpa*, *macrosepala*, *officinalis* subsp. *officinalis* and subsp. *wirtgenii*, *parviflora*, *rostellata*, *schleicheri*, *sepium*, *vaillantii*), *Galactites tomentosa*, *Galeopsis bifida*, *Galinsoga* (*ciliata*, *parviflora*), *Galium* (*minutulum*, *parisiense*, *spurium*, *tricornutum*, *verrucosum*), *Gastridium ventricosum**, *Geranium* (*brutium*, *dissectum*, *molle*, *purpureum*, *pusillum*, *rotundifolium*, *tuberosum*), *Gladiolus italicus*, *Glaucium corniculatum*, *Glossopappus macrotus*, *Guaiaraoa arvensis*, *Halogeton sativus*, *Hedysarum coronarium*, *Heliotropium* (*curassavicum*, *dolosum*, *europaeum*), *Hibiscus trionum*, *Holcus mollis**, *Hordeum* (*leporinum*, *murinum*), *Hyoscyamus* (*albus*, *niger*), *Hypecoum* (*imberbe*, *pendulum*), *Hypericum triquetrifolium*, *Iberis amara*, *Iva xanthifolia*, *Kickxia* (*commutata*, *elatine*, *lanigera*, *spuria*), *Kundmannia sicula*, *Lactuca tatarica*, *Lamium* (*amplexicaule*, *purpureum*), *Lathyrus* (*angulatus*, *aphaca*, *cicera*, *clymenum*, *hirsutus*, *inconspicuus*, *ochrus*, *setifolius*, *tuberosus*), *Launaea nudicaulis*, *Lavatera* (*triloba*, *trimestris*), *Legousia* (*hybrida*, *speculum-veneris*), *Leontodon salzmannii*, *Lepidium* (*densiflorum*, *graminifolium*, *runderale*, *virginicum*), *Linaria* (*amethystea*, *arvensis*, *hirta*, *latifolia*, *micrantha*, *spartea*, *viscosa*), *Lobularia lybica*, *Lolium rigidum*, *Lophochloa salzmannii*, *Lotus* (*ornithopodioides*, *subbiflorus*, *tetragonolobus*), *Lupinus angustifolius*, *Malcolmia africana*, *Malope trifida*, *Malva* (*empedoclis*, *neglecta*, *nicaeensis*, *parviflora*, *pusilla*, *sylvestris*, *verticillata*), *Matricaria chamomilla**, *Medicago caput-medusae*, *Tanacetum microphyllum*, *Teesdalia coronopifolia*, *Teucrium spinosum*, *Theligonum cynocrambe**, *Thlaspi arvense*, *Thymelaea passerina*,

Torilis (arvensis subsp. arvensis, subsp. neglecta and subsp. purpurea, leptophylla, nodosa), Tragus racemosus, Tribulus terrestris, Trifolium (clusii, glomeratum, nigrescens, physodes, striatum, tomentosum), Trigonella (esculenta, polycerata), Triguera ambrosiaca, Tripleurospermum inodorum, Trisetum (ovatum, panicum), Tulipa sylvestris subsp. sylvestris, Turgenia latifolia, Urospermum (dalechampii, picroides), Urtica (membranacea, pilulifera, urens), Vaccaria hispanica, Valerianella (discoidea, coronata, microcarpa), Veronica (agrestis, arvensis, hederifolia, opaca, persica, polita, triloba), Vicia (benghalensis, hirsuta, hybrida, lutea, microphylla, monantha, pannonica subsp. pannonica and subsp. striata, peregrina, sicula, tetrasperma, villosa subsp. pseudovillosa, subsp. varia and subsp. villosa), Viola arvensis, Volutaria lippii, Vulpia (alopecurus, geniculata).*

Lit.: TÜXEN (1950), VON ROCHOW (1951), RIVAS-MARTÍNEZ & IZCO (1977), BRULLO & MARCENÓ (1985), NEZADAL (1989), SOLOMAKHA et al. (1992), HÜPPE & HOFMEISTER (1991), CANO CARMONA & GARCIA FUENTES (1994).

Artemisietea vulgaris LOHMEYER et al. ex VON ROCHOW 1951

Perennial and thistle-rich (sub)xerophilous ruderal communities of temperate and mediterranean regions

Ruderali-Scalietea cerealis BR.-BL. in BR.-BL. et al. 1936 p.p. (art. 3f, 36)

Artemisietea vulgaris LOHMEYER et al. in R. TX. 1950 (art. 8)

Onopordo-Sisymbrietea GÖRS 1966 p.p.min. (art. 3b)

Onopordetea BR.-BL. 1964 (art. 8)

Onopordetea acanthii FALIŃSKI 1965 (art. 8)

Onopordetea BR.-BL. 1967 (syntax. syn.)

Agropyretea repentis OBERD. et al. 1967 (art. 8)

Agropyretea intermedi-repentis MÜLLER et GÖRS 1969 (syntax. syn.)

Onopordetea acantho-nervosi RIVAS-MARTÍNEZ 1975 (art. 29)

Meliloto-Artemisietea absinthii ELIÁŠ 1981 (syntax. syn.)

Polygono-Artemisietea austriacae MIRKIN et al. 1986 (art. 5, 8)

Polygono-Artemisietea austriacae MIRKIN et al. in ISHBIRDIN et al. 1988 (syntax. syn.)

Polygono-Artemisietea austriacae MIRKIN et al. 1989 (art. 31)

Species: *Allium scorodoprasum, Anchusa (azurea, officinalis), Anthemis tinctoria, Arctium (lappa, minus, pubens, tomentosum), Armoracia rusticana, Artemisia (absinthium, austriaca*, scoparia*, verlotiorum, vulgaris), Astragalus cicer, Atractylis gummifera, Axyris amaranthoides, Ballota (hirsuta, nigra subsp. foetida, subsp. nigra and subsp. uncinata), Berteroa incana, Bonnania graeca, Bromus inermis, Cachrys sicula, Calamagrostis epigejos*, Cardaria draba*, Carduncellus caeruleus, Carduus (acanthoides, bourgeanus, candicans, hamulosus, nigrescens, nutans), Carthamus lanatus (subsp. baeticus, subsp. lanatus), Centaurea (aspera, calcitrapa, iberica, melitensis, orientalis, ornata), Ceratocephala (falcata, testiculata), Cerinthe minor, Chenopodium (bonus-henricus, foliosum), Chondrilla juncea*, Cichorium intybus*, Cirsium (decussatum, echinatum, eriophorum, furiens, italicum, odontolepis, richteranum, scabrum, tenoreanum, vallis-demonii*, vulgare), Conium maculatum, Crepis (foetida subsp. rhoeadifolia, setosa), Cynara (cardunculus, humilis), Cynoglossum (nebrodense, officinale), Daucus carota subsp. carota, Dipsacus fullonum, Dracocephalum thymifolium, Echinops (sphaerocephalus, strigosus), Echium (asperrimum, boissieri, pustulatum), Elymus (hispidus, repens*), Equisetum arvense*, Erigeron annuus (subsp. annuus, subsp. septentrionalis, subsp. strigosus), Falcaria vulgaris, Helminthotheca echoides, Hymenolobus pauciflorus, Krascheninnikovia ceratoides*, Lappula (deflexa, heteracantha, squarrosa), Lavatera thuringiaca, Leonurus (cardiaca, marrubiastrum), Linaria vulgaris, Linum tenue, Malva (moschata, sylvestris*), Mantisalca salmantica, Marrubium (incanum, peregrinum, vulgare), Medicago (lupulina, sativa, xvaria), Melica transsilvanica, Melilotus (albus, officinalis), Nepeta (apuleii, cataria), Notobasis syriaca, Odontites vulgaris, Oenothera (ammophila, biennis, erythrosepala, parviflora, rubricaulis, silesiaca), Onopordum (acanthium, acaule, corymbosum, illyricum subsp. horridum and subsp. illyricum, macracanthum, nervosum, tauricum), Orobanche picridis, Peucedanum alsaticum, Phlomis herba-venti, Phytolacca americana, Picnonom acarna, Picris hieracoides subsp. hieracioides, Poa compressa*, Potentilla norvegica, Reseda (lutea*, luteola), Rumex patientia, Salvia (aethiopsis, sclarea, verticillata), Saponaria officinalis, Scolymus (grandiflorus, hispanicus, maculatus), Senecio inaequidens, Silene latifolia subsp. alba, Silybum (eburneum, marianum), Sinapis pubescens, Stachys germanica, Tanacetum vulgare, Tragopogon dubius, Tussilago farfara, Tyrimnus*

leucographus, *Verbascum* (*densiflorum*, *macrurum*, *plumoides*, *pulverulentum*, *rotundifolium*, *speciosum*, *thapsus**), *Xeranthemum annuum*.

Lit.: TÜXEN (1950), VON ROCHOW (1951), BRAUN-BLANQUET (1967), OBERDORFER et al. (1967), GÖRS et MÜLLER (1969), RIVAS-MARTÍNEZ (1975a), BRULLO et MARCENÓ (1985), MIRKIN et al. (1985, 1986), ISHBIRDIN et al. (1988), KOROTKOV et al. (1991), SOLOMAKHA et al. (1992), LOIDI et al. (1996).

***Galio-Urticetea* PASSARGE ex KOPECKÝ 1969**

Nitrophilous synanthropic herb-rich communities of shaded woodland and riparian fringes, and *Robinia* dominated shrubbery and low-grown groves

Ruderali-Secalietea cerealis BR.-BL. in BR.-BL. et al. 1936 p.p. (art. 3f, 36)

Robinietea JURKO 1963 (art. 8)

Galio-Urticetea PASSARGE 1967 (art. 3b)

Stellario nemorum-Geranietea sylvatici NIEMANN et al. 1973 p.p. min. (art. 3b)

Robinietea JURKO ex HADAČ et SOFRON 1980 (syntax. syn.)

Filipendulo-Calystegietea sepium J.-M. GÉHU et GÉHU-FRANCK 1987 p.p.*

Aegopodietea podagrariae RADKE 1980 (art. 5, 8)

Species: *Aegopodium podagraria*, *Alliaria petiolata*, *Anthriscus* (*caucalis*, *nemorosa*, *nitida*, *trichosperma*), *Barbarea bracteosa*, *Bryonia alba*, *Calystegia sepium*, *Carduus crispus*, *Cephalaria pilosa*, *Chaerophyllum* (*aromaticum*, *aureum*, *bulbosum*, *temulum*), *Chelidonium majus*, *Cruciata laevipes*, *Cucubalus baccifer*, *Cuscuta europaea*, *Cynanchum acutum*, *Cynoglossum germanicum*, *Echinocystis lobata*, *Epilobium* (*hirsutum*, *parviflorum*), *Fallopia* (*aubertii*, *dumetorum*, *japonica*, *sachalinensis*), *Galium aparine*, *Geranium* (*pyrenaicum*, *robertianum*, *aleppicum*, *urbanum*), *Glechoma hederacea*, *Heracleum mantegazzianum*, *Humulus lupulus*, *Impatiens* (*glandulifera*, *noli-tangere*, *parviflora*), *Lamium* (*album*, *bifidum*, *maculatum*), *Lepidium hirtum* subsp. *nebrodense*, *Melilotus altissima*, *Myosoton aquaticum*, *Parietaria officinalis*, *Petasites* (*albus*, *hybridus**), *Robinia pseudacacia*, *Rubus caesius*, *Rudbeckia laciniata*, *Salvia glutinosa*, *Sambucus ebulus*, *Scrophularia umbrosa*, *Senecio sarracenicus*, *Sisymbrium strictissimum*, *Solenanthus apenninicus*, *Solidago* (*canadensis*, *gigantea*, *graminifolia*), *Sonchus palustris*, *Stachys sylvatica*, *Stellaria pallida*, *Taraxacum gasparrinii*, *Urtica dioica*, *Veronica sublobata*.

Lit.: JURKO (1963), PASSARGE (1967), KOPECKÝ (1969), HADAČ & SOFRON (1980).

***Epilobietea angustifolii* R. TX. et PREISING ex VON ROCHOW 1951**

Tall-herb and tall-grass communities of woodland clearings and related shrubbery

Epilobietea angustifolii R. TX. et PREISING in R. TX. 1950 (art. 8)

Salici-Sambucetea OBERD. in OBERD. et al. 1967 (art. 8)

Salicetea capreae RADKE 1980 (art. 5, 8)

Galeopsio-Senecionietea sylvatici PASSARGE 1981 (art. 3b)

Species: *Arctium nemorosum*, *Atropa bella-donna*, *Avenella flexuosa**, *Betula pendula**, *Calamagrostis epigejos**, *Centaureum erythraea* subsp. *erythraea*, *Ceratocarpus claviculata*, *Digitalis* (*grandiflora**, *purpurea*), *Epilobium angustifolium*, *Fragaria vesca*, *Galeopsis speciosa*, *Gentiana lutea* subsp. *montserratii*, *Orobancha rapum-genistae*, *Rubus* (*annobius*, *arrhenii*, *camprostachys*, *flexuosus*, *gratus*, *hypomalacus*, *idaeus*, *lamprocaulos*, *langei*, *pedemontanus*, *plicatus*, *pyramidalis*, *schleicheri*, *sciocharis*, *silvaticus*, *sprengelii*, *vulgaris*), *Salix caprea*, *Sambucus racemosa*, *Senecio* (*germanicus*, *ovatus*, *sylvaticus*), *Sorbus* (*aucuparia**, *meinichii*, *norvegica*).

Lit.: TÜXEN (1950), VON ROCHOW (1951).

Temperate heathlands and grasslands

***Calluno-Ulicetea* BR.-BL. et R. TX. ex WESTHOFF et al. 1946**

Temperate and boreal heathlands and related grasslands on nutrient-poor soils

Calluno-Ulicetea BR.-BL. et R. TX. ex KLIKA et HADAČ 1944 (art. 8)

"*Querceto-Ulicetea*" BR.-BL. in BR.-BL. et al. 1947 p.p. (art. 8)

Calluno-Ulicetea BR.-BL. et R. TX. ex KLIKA 1948 (art. 31)

Quercu-Ulicetea LEBRUN et al. 1949 p.p. (syntax. syn.)

Calluno-Vaccinietea myrtilli DE FOUCAULT 1990 p.p. (art. 5, 8)

Nardo-Callunetea PREISING 1949 (syntax. syn.)

Nardetea strictae RIVAS GODAY et BORJA CARBONELL 1961 (syntax. syn.)

Festucetea ovinae RADKE 1980 (art. 5, 8, 31)

Species: *Agrostis curtisii*, *Alchemilla wichurae*, *Antennaria dioica*, *Anthyllis vulneraria* subsp. *corbierei*, *Arnica montana*, *Calluna vulgaris*, *Campanula (recta, rotundifolia)*, *Carex (binervis, leporina, pallescens, pilulifera)*, *Centaurea nigra*, *Cladonia portentosa**, *Conopodium majus*, *Daboecia cantabrica*, *Danthonia decumbens*, *Dianthus (armeria, deltoides, seguieri)*, *Dicranum spurium*, *Erica (ciliaris, cinerea, vagans)*, *Euphorbia polygalifolia*, *Festuca (rubra* subsp. *pruinosa, tenuifolia)*, *Galium (pumilum, saxatile)*, *Genista (anglica, germanica, sagittalis)*, *Gentiana (lutea* subsp. *lutea, pannonica)*, *Hieracium (aurantiacum, lactucella)*, *Hypnum jutlandicum**, *Jasione laevis*, *Juncus squarrosus*, *Lycopodium clavatum*, *Meum athamaticum*, *Nardus stricta*, *Pedicularis sylvatica*, *Polygala (serpyllifolia, vulgaris)*, *Potentilla erecta*, *Pseudorchis albida**, *Salix starkeana*, *Thesium pyrenaicum*, *Thymus arcticus* subsp. *drucei**, *Ulex (cantabricus, europaeus, gallii, minor)*, *Viola (canina, lutea)*.

Lit.: WESTHOFF et al. (1946), PREISING (1949), RIVAS GODAY & BORJA CARBONELL (1961), BRIDGEWATER (1980), DE FOUCAULT (1990, 1994), SCHAMINÉE (1993).

Koelerio-Corynepherea KLIKA in KLIKA et NOVÁK 1941

Grasslands and related short-lived, herb-rich plant communities of sandy and skeletal, predominantly nutrient-poor and drought-stressed soils of temperate and boreal Europe

"*Koelerio-Corynephereales*" KLIKA in KLIKA et NOVÁK 1941 (original form)

Corynepherea canescens BR.-BL. et R. TX. 1943 (art. 8)

"*Brometo-Corynepherea*" SEGAL et WESTHOFF in WESTHOFF et al. 1946 p.p. nom. ambig. propos. (art. 36)

Corynepherea LEBRUN et al. 1949 (syntax. syn.)

Bryo-Therograminetea PIGNATTI 1953 (art. 3f)

Sedo-Scleranthetea BR.-BL. 1955 (syntax. syn.)

Festuco-Sedetea OBERD. 1957 (art. 8)

Corynepherea canescens BR.-BL. et R. TX. ex R. TX. et OBERD. 1958 (art. 31)

Species: *Acinos arvensis*, *Agrostis vinealis**, *Aira (caryophyllea, elegantissima*, praecox)*, *Alyssum (alyssoides, arenarium, montanum* subsp. *gmelinii)*, *Androsace (elongata, septentrionalis)*, *Anthemis ruthenica*, *Anthoxanthum aristatum*, *Apera interrupta*, *Arabidopsis thaliana*, *Arabis recta*, *Arenaria (leptoclados* subsp. *leptoclados*, serpyllifolia* subsp. *marischlii* and subsp. *serpyllifolia)*, *Armeria elongata**, *Astragalus arenarius*, *Bassia (arenaria, laniflora*)*, *Bombicylaena erecta*, *Brachythecium albicans**, *Bromus hordeaceus* (subsp. *hordeaceus**, subsp. *thomini*), *Campylopus introflexus*, *Carex (arenaria, ligerica, stenophylla)*, *Centaurea diffusa*, *Cerastium (arvense* subsp. *strictum, brachypetalum* subsp. *brachypetalum, diffusum, pumilum, semidecandrum)*, *Ceratodon purpureus**, *Cladonia (chlorophaea*, foliacea*, furcata*, glauca)*, *Clypeola jonthlaspi**, *Coelocaulon aculeatum*, *Corynephorus canescens*, *Cruciata pedemontana*, *Dianthus sylvestris*, *Draba (incana, nemorosa)*, *Elymus alaskanus* subsp. *scandicus*, *Equisetum ramosissimum*, *Erodium cicutarium* subsp. *bipinnatum* and subsp. *cicutarium, hoeftianum)*, *Erophila (praecox, spathulata, verna)*, *Erysimum diffusum*, *Festuca (ovina, polesica, psammophila, rubra* subsp. *arenaria)*, *Filago (arvensis, lutescens, minima, pyramidata, vulgaris)*, *Gagea (bohemica, saxatilis)*, *Helichrysum arenarium*, *Herniaria glabra*, *Holosteum umbellatum*, *Hornungia petraea*, *Hypochaeris glabra**, *Jasione montana*, *Jovibarba (arenaria, hirta, sobolifera)*, *Jurinea cyanoides**, *Koeleria glauca**, *Linaria simplex*, *Medicago minima*, *Mibora minima**, *Micropyrum tenellum*, *Minuartia (glaucina, hybrida*, mutabilis, rubra, viscosa)*, *Moenchia (erecta, mantica)*, *Myosotis (discolor, ramosissima*, stricta)*, *Onosma arenaria*, *Ornithopus perpusillus*, *Papaver (albiflorum, dubium* subsp. *dubium* and subsp. *lecoqii)*, *Peltigera rufescens**, *Petrorhagia saxifraga*, *Phleum arenarium*, *Poa (bulbosa, glauca*, perconcinna)*, *Polytrichum piliferum**, *Potentilla argentea*, *Racomitrium canescens**, *Reseda phyteuma*, *Rumex acetosella*, *Saxifraga (aspera, osloensis, tridactylites)*, *Scleranthus annuus* subsp. *annuus*, subsp. *polycarpus* and subsp. *verticillatus*, *perennis* subsp. *perennis)*, *Sedum (acre, album, anglicum* subsp. *anglicum* and subsp. *pyrenaicum, annuum, brevifolium, montanum* subsp. *montanum* and subsp. *stiriacum, rupestre, sexangulare, spurium, urvillei)*, *Sempervivum (arachnoideum* subsp. *arachnoideum* and subsp. *tomentosum, tectorum)*, *Sideritis montana*, *Silene (chlorantha, conica*, rupestris*)*, *Spergula morisonii*,

Teesdalia nudicaulis, *Thlaspi perfoliatum*, *Thymus serpyllum*, *Tortula (ruraliformis, ruralis*)*, *Trifolium (arvense, campestre*, scabrum*, striatum)*, *Trisetaria loeflingianum*, *Tuberaria guttata*, *Valerianella (carinata, locusta)*, *Ventenata dubia*, *Veronica (arvensis, dillenii, fruticans*, praecox, triphyllus*, verna)*, *Vicia (lathyroides, kitaibeliana, saxatilis subsp. saxatilis, tricolor subsp. curtisii and subsp. tricolor)*, *Vulpia (bromoides, myuros)*.

Note: In the present concept the *Koelerio-Coryneporetea* encompass also the *Sedo-Poetalia glaucae* DE MOLENNAR 1976 as suggested by DIERSSEN (1992: 212-213).

Lit.: KLIKA & NOVÁK (1941), PIGNATTI (1953), BRAUN-BLANQUET (1955), TÜXEN & OBERDORFER (1958), DIERSSEN (1992), SCHAMINÉE et al. (1996).

Molinio-Arrhenatheretea R. Tx. 1937

Nutrient-rich, mesic (pastures, hay meadows, lawns) and wet grasslands

Arrhenatheretea BR.-BL. in BR.-BL. et al. 1947 (art. 8)

Molinio-Juncetea BR.-BL. in BR.-BL. et al. 1947 (art. 8)

Molinio-Juncetea BR.-BL. ex A. DE BOLÒS Y VAYREDA 1950 (syntax. syn.)

Plantaginea majoris R. TX. et PREISING in R. TX. 1950 (art. 8)

Plantaginea majoris R. TX. et PREISING ex VON ROCHOW 1951 (syntax. syn.)

Agrostiotea stoloniferae GÖRS 1968 (syntax. syn.)

Lathyro-Vicietea cracca PASSARGE 1975 (syntax. syn.)

Cynosuretea cristati RADKE 1980 (art. 5, 8)

Filipendulo-Calystegietea sepium J.-M. GÉHU et GÉHU-FRANCK 1987 p.p.min.*

Agrostio stoloniferae-Arrhenatheretea elatioris (R. TX. 1937) DE FOUCAULT 1989 (art. 29)

Species: *Achillea (millefolium, pratensis, ptarmica)*, *Agrostis stolonifera*, *Ajuga reptans*, *Allium (angulosum, schoenoprasum, suaveolens)*, *Alopecurus (geniculatus, pratensis, rendlei)*, *Althaea officinalis*, *Angelica sylvestris*, *Anthoxanthum odoratum*, *Anthriscus sylvestris**, *Arrhenatherum elatius subsp. elatius*, *Avenula pubescens*, *Bellis perennis*, *Betonica officinalis*, *Blysmus compressus*, *Bromus racemosus*, *Caltha palustris*, *Campanula patula*, *Cardamine pratensis (subsp. matthioli, subsp. pratensis)*, *Cardaminopsis halleri*, *Carex (acuta, buekii, cespitosa, hirta*, leporina, praecox*, tomentosa, vulpina)*, *Carum carvi*, *Centaurea (carniolica, jacea subsp. jacea, phrygia subsp. pseudophrygia)*, *Cerastium fontanum subsp. vulgare*, *Cirsium (canum, heterophyllum, oleraceum, palustre, rivulare, tuberosum)*, *Clematis integrifolia*, *Cnidium dubium*, *Colchicum autumnale*, *Crepis (aurea, biennis, paludosa)*, *Crocus albiflorus*, *Cynosurus cristatus*, *Dactylis glomerata**, *Deschampsia (cespitosa*, media)*, *Dianthus superbus*, *Duchesnea indica*, *Epilobium tetragonum*, *Equisetum palustre*, *Euphorbia palustris*, *Euphrasia (kernerii, rostkoviana)*, *Festuca (arundinacea, nigrescens, pratensis, rubra subsp. rubra)*, *Filipendula ulmaria*, *Galega officinalis*, *Galium (boreale, mollugo, palustre, uliginosum)*, *Gentiana pneumonanthe*, *Geranium (palustre, phaeum subsp. lividum, pratense, sylvaticum*)*, *Gladiolus palustris*, *Glycyrrhiza glabra**, *Gratiola officinalis*, *Heracleum sphondylium subsp. sphondylium**, *Holcus lanatus*, *Inula britannica*, *Iris sibirica*, *Juncus (acutiflorus, atratus, compressus, conglomeratus, effusus, inflexus, tenuis)*, *Knautia arvensis*, *Laserpitium prutenicum*, *Lathyrus (palustris, pratensis)*, *Leontodon (autumnalis, hispidus)*, *Leucanthemum (ircutianum, vulgare)*, *Lolium (multiflorum, perenne*)*, *Lotus (corniculatus*, pedunculatus)*, *Lychnis flos-cuculi*, *Lysimachia (nummularia, vulgaris)*, *Lythrum virgatum*, *Melilotus dentata*, *Mentha (aquatica, arvensis*, longifolia, suaveolens)*, *Molinia (arundinacea*, caerulea)*, *Myosotis palustris*, *Oenanthe silaifolia*, *Ophioglossum vulgatum*, *Pastinaca sativa**, *Persicaria bistorta*, *Phleum (pratense, rhaeticum)*, *Pimpinella major*, *Plantago (alpina, altissima, lanceolata*, major subsp. intermedia, media)*, *Poa (alpina*, palustris, pratensis, supina, trivialis subsp. trivialis)*, *Potentilla (anglica, anserina subsp. anserina, reptans, supina)*, *Primula elatior*, *Prunella vulgaris*, *Pseudolysimachion longifolium*, *Ranunculus (acnitifolius, acris subsp. acris, repens, sardous*, velutinus)*, *Rhinanthus minor*, *Rorippa (kernerii, sylvestris)*, *Rumex (acetosa, alpestris*, crispus, stenophyllus)*, *Sanguisorba officinalis*, *Scirpus sylvaticus*, *Scorzonera humilis*, *Scutellaria hastifolia*, *Selinum (carvifolia, dubium)*, *Senecio erraticus*, *Serratula tinctoria*, *Stellaria graminea*, *Succisa pratensis*, *Succisella inflexa*, *Symphytum officinale*, *Taraxacum Sect. Ruderalia*, *Tephroses crisper*, *Teucrium scordium*, *Thalictrum flavum*, *Tragopogon (orientalis, pratensis)*, *Trifolium (hybridum, micranthum, patens, pratense, repens, resupinatum*)*, *Trisetum flavescens*, *Trollius europaeus*, *Valeriana (officinalis, repens)*, *Verbena officinalis*, *Veronica (chamaedrys, filiformis, serpyllifolia)*, *Vicia (cracca, sepium)*, *Viola (elatior, persicifolia, pumila)*.

Lit.: TÜXEN (1937, 1950, 1970), VON ROCHOW (1951), DE BOLÒS Y VAYREDA (1950), GÖRS (1968), DIERSCHKE (1995), SCHAMINÉE et al. (1996).

Trifolio-Geranietea MÜLLER 1962

Herb-rich heliophilous and (sub)thermophilous fringe communities of temperate woodlands

Trifolio-Geranietea MÜLLER 1961 (art. 8)

Origano-Geranietea sanguinei VAN LEEUWEN et WESTHOFF 1961 (art. 8)

Melampyro-Holcetea PASSARGE 1979 (art. 3b)

Melampyro-Holcetea mollis PASSARGE ex KLAUCK 1992 (syntax. syn.)

Species: *Agrimonia eupatoria*, *Anemone sylvestris*, *Anthericum (liliago, ramosum)*, *Arrhenatherum elatius* subsp. *bulbosum*, *Artemisia pancicii*, *Aster amellus*, *Astragalus glycyphyllos*, *Bupleurum (affine, falcatum**, *praealtum)*, *Calamintha sylvatica*, *Campanula (baumgartenii, bononiensis, cervicaria, persicifolia, rapunculus)*, *Centaurea (debeauxii* subsp. *nemoralis, triumfettii)*, *Chamaecytisus ratisbonensis*, *Cirsium pannonicum*, *Clematis recta*, *Clinopodium vulgare**, *Coronilla coronata**, *Daphne cneorum**, *Dictamnus albus**, *Dracocephalum austriacum*, *Euphorbia (angulata, salicifolia)*, *Ferulago (galbanifera, sylvatica)*, *Fragaria moschata*, *Galium glaucum*, *Geranium sanguineum**, *Hieracium (laevigatum, racemosum)*, *Holcus mollis**, *Hypericum montanum*, *Inula (conyza, germanica, hirta)*, *Iris variegata*, *Knautia maxima*, *Laserpitium (latifolium* subsp. *asperum* and subsp. *latifolium**, *nestleri, siler)*, *Lathyrus (heterophyllus, pannonicus* subsp. *collinus**, *sylvestris, transsilvanicus)*, *Lychnis viscaria**, *Melampyrum (arvense, cristatum, nemorosum**, *pratense**, *sylvaticum*)*, *Origanum vulgare*, *Orobancha (alsatica, bartlingii, laserpitii-sileris)*, *Paeonia mascula*, *Peucedanum (alsaticum, austriacum, carvifolia, cervaria, gallicum, oreoselinum)*, *Phlomis tuberosa*, *Polygonatum odoratum*, *Potentilla rupestris*, *Pseudolysimachion spicatum**, *Pulmonaria longifolia*, *Ranunculus nemorosus*, *Rosa gallica*, *Scorzonera hispanica*, *Senecio adonidifolius*, *Serratula lycopifolia*, *Seseli (libanotis**, *peucedanoides)*, *Silene nutans**, *Stachys recta**, *Tanacetum corymbosum**, *Teucrium scorodonia*, *Thalictrum minus**, *Thesium bavarum*, *Trifolium (alpestre, flexuosum, medium* subsp. *banaticum*, subsp. *medium* and subsp. *sarosiense, rubens)*, *Valeriana wallrothii*, *Verbascum lychnitis*, *Veronica (teucrium, vindobonensis)*, *Vicia (cassubica, dumetorum, pisiformis, sylvatica, tenuifolia)*, *Vincetoxicum hirsundinaria* subsp. *hirsundinaria**, *Viola hirta**.

Lit.: MÜLLER (1961, 1962), DIERSCHKE (1974), PASSARGE (1979a, b), DE FOUCAULT et al. (1983), KLAUCK (1992).

Festuco-Brometea BR.-BL. et R. TX. in BR.-BL. 1949

Steppes, rocky steppes and continental sandy grasslands of the temperate and subboreal regions

Festuco-Brometea BR.-BL. et R. TX. 1943 (art. 8)

Festucetea ovinae KNAPP 1943 (art. 1)

Festuco-Brometea BR.-BL. et R. TX. ex KLIKA et HADAČ 1944 (art. 8)

"*Brometo-Coryneporetea*" SEGAL et WESTHOFF in WESTHOFF et al. 1946 p.p. nom. ambig. propos. (art. 36)

Festucetea ovinae KNAPP ex WENDELBERGER 1954*

Brachypodio-Chrysopogonetea HORVATÍĆ 1958*

Festucetea vaginatae SOÓ 1968 (art. 8)

Brachypodio-Brometea BARBERO et LOISEL 1971*

Festucetea vaginatae SOÓ ex VICHEREK 1972 (syntax. syn.)

Species: *Aceras anthropophorum*, *Achillea (clypeolata, collina, crithmifolia, nobilis, ochroleuca, pannonica, setacea, tomentosa)*, *Aconitum anthora*, *Adonis (vernalis, volgensis)*, *Agropyron (cristatum, dasyanthum, desertorum)*, *Agrostis vinealis*, *Ajuga laxmannii*, *Alkanna tinctoria*, *Allium (albimum, atropurpureum, carinatum, flavum, moschatum, paniculatum, rotundum, senescens* subsp. *montanum, sphaerocephalon)*, *Alopecurus vaginatus*, *Alyssum (calycocarpum, desertorum, hirsutum, montanum* subsp. *brymii*, subsp. *gmelinii* and subsp. *montanum, repens, rostratum, tortuosum)*, *Anacamptis pyramidalis*, *Anchusa (barrelieri, ochroleuca)*, *Anthyllis vulneraria* (subsp. *carpatica*, subsp. *polyphylla*, subsp. *pulchella*, subsp. *vulneraria*), *Arabis planisiliqua*, *Arenaria (grandiflora**, *longifolia, procera)*, *Armeria elongata**, *Artemisia (alba, austriaca, campestris, glauca, hololeuca, laciniata, latifolia, pancicii, pontica, salsoloides, scoparia, sericea, taurica, vallesiaca)*, *Asperula (cynanchica, graveolens, purpurea, setulosa, supina, tinctoria)*, *Asphodeline taurica*, *Aster linoisyris*, *Astragalus*

(*albicaulis*, *asper*, *austriacus*, *danicus*, *dasyanthus*, *exscapus*, *glaucus*, *onobrychis*, *ponticus*, *publiflorus*, *sirinicus* subsp. *sirinicus*, *sulcatus*, *varius*, *vesicarius*), *Aurinia saxatilis* subsp. *saxatilis*, *Avenula* (*adsurgens* subsp. *adsurgens*, *mirandana*, *pratensis*, *schelliana*), *Bellevialia sarmatica*, *Biscutella laevigata* subsp. *austriaca*, *Bothriochloa ischaemum*, *Brachypodium* (*pinnatum*, *rupestre*), *Brassica repanda*, *Briza media*, *Bromus* (*cappadocicus*, *erectus*), *Bupleurum longifolium*, *Cachrys* (*ferulacea*, *odontalgica*), *Campanula* (*glomerata*, *macrostachya*, *moravica*, *sibirica* subsp. *divergentiformis* and subsp. *sibirica*), *Carduus collinus*, *Carex* (*caryophyllea* subsp. *caryophyllea*, *hallerana*, *humilis*, *liparicarpos*, *montana*, *supina**), *Carlina* (*acaulis*, *biebersteinii* subsp. *brevibracteata*, *vulgaris*), *Centaurea* (*arenaria*, *biebersteinii*, *jacea* subsp. *angustifolia*, subsp. *macroptilon* and subsp. *subjacea*, *leucophaea*, *maculosa*, *margaritacea* subsp. *breviceps*, *orientalis*, *rupestris*, *ruthenica*, *scabiosa* subsp. *badensis*, subsp. *sadleriana*, subsp. *scabiosa* and subsp. *tematinensis*, *stoebe*, *sumensis*, *trinervia*), *Cephalaria* (*radiata*, *uralensis*), *Cerastium arvense* subsp. *suffruticosum*, *Ceratocarpus arenarius*, *Chamaecytisus* (*austriacus*, *blockianus*, *glaber*, *heuffelii*, *polytrichus*, *ratisbonensis*, *ruthenicus*, *spinescens*), *Chondrilla juncea*, *Chrysopogon gryllus*, *Cirsium* (*acaule* subsp. *acaule*, *ciliatum*, *pannonicum*, *serrulatum*), *Cleistogenes serotina*, *Colchicum* (*arenarium*, *hungaricum*), *Convolvulus* (*cantabrica*, *lineatus*), *Crambe* (*koktebelica*, *tataria*), *Crepis* (*lacera*, *nicaeensis*, *pannonica*, *praemorsa* subsp. *praemorsa*), *Cuscuta epithimum*, *Cytisus procumbens*, *Dactylorhiza sambucina*, *Danthonia alpina*, *Dianthus* (*carthusianorum* subsp. *capillifrons*, subsp. *carthusianorum* and subsp. *vaginatus*, *collinus*, *diutinus*, *gratianopolitanus*, *lanceolatus*, *leptopetalus*, *moravicus*, *plumarius* subsp. *hoppei*, subsp. *lumnitzeri*, subsp. *neilreichii*, subsp. *praecox*, subsp. *pseudopraecox* and subsp. *regis-stephani*, *pontederacae* subsp. *giganteiformis*, *pyrenaeicus*, *serotinus*, *squarrosus*, *sylvestris*, *versicolor*), *Dorycnium* (*germanicum*, *herbaceum*), *Draba* (*aizoides* subsp. *beckeri*, *lasiocarpa* subsp. *klasterskyi* and subsp. *lasiocarpa*), *Echinops ritro* subsp. *ruthenicus*, *Echium maculatum*, *Ephedra distachya*, *Eryngium* (*amethystinum*, *campestre*), *Erysimum* (*andrzejowskianum*, *canum*, *crepidifolium*, *diffusum*, *marschallianum*, *sylvestre*), *Euphorbia* (*cyparissias*, *nicaeensis* subsp. *glareosa*, *petrophila*, *seguieriana* subsp. *seguieriana*), *Euphrasia* (*pectinata*, *rostkoviana*, *stricta*), *Ferula* (*orientalis*, *sadleriana*), *Festuca* (*beckeri**, *brevipila*, *dalmatica*, *duvalii*, *heteropachys*, *pallens*, *pseudodalmatica*, *rupicola*, *stricta*, *vaginata*, *valesiaca*, *wagneri*), *Filipendula vulgaris*, *Fragaria viridis*, *Fumana procumbens*, *Gagea* (*pusilla*, *szovitzii*), *Galium* (*octonarium*, *valdepilosum*, *verum* subsp. *verum* and subsp. *wirtgenii*), *Gentiana pilosa**, *Gentiana cruciata*, *Gentianella* (*austriaca*, *germanica*), *Gentianopsis ciliata*, *Globularia* (*punctata*, *vulgaris*), *Goniolimon* (*graminifolium*, *tataricum**), *Gymnadenia conopsea*, *Gypsophila* (*fastigiata*, *paniculata*), *Helianthemum* (*canum*, *nummularium* subsp. *nummularium* and subsp. *ovatum*, *oelandicum* subsp. *laevigatum*, subsp. *oelandicum* and subsp. *stevanii*), *Helichrysum arenarium*, *Helictotrichon desertorum* (subsp. *basalticum*, subsp. *desertosum*), *Herniaria incana*, *Hesperis tristis*, *Heteropogon contortus*, *Hieracium* (*bauhinii*, *echioides*, *hoppeanum*, *peleteranum*, *schmidtii*, *vogesiacum*), *Hierochloë repens*, *Himantoglossum* (*adriaticum*, *hircinum*), *Hippocrepis comosa*, *Hyacinthella leucophaea*, *Hypericum* (*elegans*, *perforatum**), *Hypochaeris maculata*, *Hyssopus officinalis*, *Inula* (*ensifolia*, *montana*, *oculus-christi*, *salicina* subsp. *aspera* and subsp. *salicina*), *Iris* (*aphylla*, *humilis* subsp. *arenaria*, *pumila*), *Jovibarba* (*hirta*, *sobolifera*), *Jurinea* (*albicaulis* subsp. *laxa*, *consanguinea* subsp. *arachnoidea*, *mollis*, *stoechadifolia*), *Knautia* (*arvensis* subsp. *pannonica*, *kitabellii*), *Koeleria* (*eristachya*, *lobata*, *macrantha*, *pyramidata*, *splendens*, *valesiaca*), *Lactuca* (*perennis*, *viminea*), *Leontodon incanus*, *Lilium bulbiferum* (subsp. *bulbiferum*, subsp. *croceum*), *Linaria* (*angustissima*, *biebersteinii*, *genistifolia*, *odora*), *Linum* (*austriacum* subsp. *austriacum* and subsp. *euxinum*, *catharticum*, *dolomiticum*, *flavum*, *hirsutum* subsp. *glabrescens* and subsp. *hirsutum*, *leonii*, *tenuifolium*, *ucrainicum*, *viscosum*), *Listera ovata*, *Lotus borbasii*, *Malabaila graveolens*, *Marrubium pestalozzae*, *Matthiola* (*fragrans*, *fruticulosa* subsp. *valesiaca*), *Medicago* (*falcata*, *prostrata*), *Melampyrum barbatum*, *Melica ciliata* (subsp. *ciliata*, subsp. *monticola*, subsp. *taurica*), *Minuartia* (*glaucina*, *glomerata*, *setacea*, *viscosa*), *Muscari* (*comosum*, *neglectum*, *tenuiflorum*), *Nepeta* (*parviflora*, *ucrainica*), *Odontites luteus*, *Onobrychis* (*alba*, *arenaria*, *viciifolia*), *Ononis* (*pusilla*, *repens*, *spinosa* subsp. *austriaca* and subsp. *spinosa*), *Onosma* (*arenarium* subsp. *arenarium*, *helvetica* subsp. *austriaca*, *pseudarenaria*, *taurica*, *tinctoria*, *tornensis*, *tridentina*, *visianii*), *Ophrys* (*apifera*, *holoserica*, *insectifera*, *sphegodes*), *Orchis* (*coriophora*, *mascula*, *militaris*, *morio*, *tridentata*, *ustulata*), *Ornithogalum pannonicum*, *Orobanche* (*alsatica*, *caesia*, *caryophyllacea*, *elatior*, *gracilis*, *loricata*, *lutea*, *purpurea*, *teucreei*), *Orostachys spinosa*, *Oxytropis pilosa*, *Paeonia tenuifolia*, *Paronychia* (*cephalotes*, *kapela*), *Pedicularis comosa*, *Peucedanum* (*arenarium*, *rochelianum*, *ruthenicum*), *Phleum* (*ambiguum*, *phleoides*), *Phlomis* (*herba-venti* subsp. *pungens*, *tuberosa*), *Phyteuma* (*orbiculare**, *tenerum*), *Pimpinella* (*nigra*, *saxifraga*, *tragium* subsp. *titanophylla*), *Plantago* (*media*, *urvillei*), *Pleurospermum austriacum*, *Poa* (*angustifolia*, *badensis*, *molineri**),

stepposa), *Polygala* (*amarella*, *calcareae*, *comosa*, *cretacea*, *major*), *Polygonum arenarium*, *Potentilla* (*arenaria*, *crantzii* subsp. *serpentina*, *humifusa*, *rigoana*, *supina*, *tabernaemontani*), *Prospero autumnalis*, *Prunella* (*grandiflora*, *laciniata*), *Pseudolysimachion* (*orchideum*, *pallens*, *spicatum**), *Pulsatilla* (*grandis*, *pratensis* subsp. *nigricans* and subsp. *hungarica*), *Ranunculus* (*bulbosus*, *gramineus*, *illyricus*, *polyanthemos*), *Rapistrum perenne*, *Rhinanthus* (*alektorolophus*, *borbasii*, *minor*), *Rindera umbellata*, *Salvia* (*aethiops*, *austriaca*, *dumetorum*, *nemorosa* subsp. *nemorosa* and subsp. *tesquicola*, *nutans*, *pratensis*, *scabiosifolia*, *transsylvanica*), *Sanguisorba minor*, *Satureja montana**, *Saxifraga* (*bulbifera*, *granulata*, *hostii* subsp. *hostii*), *Scabiosa* (*argentea*, *canescens*, *columbaria*, *ochroleuca*, *triandra*), *Schivereckia podolica*, *Scorzonera* (*austriaca*, *hispanica*, *humilis*, *purpurea*), *Scrophularia cretacea*, *Secale sylvestre*, *Securigera varia*, *Sedum* (*rupestre*, *urvillei*), *Selaginella helvetica*, *Sempervivum pittonii*, *Senecio* (*borysthenticus*, *erucifolius*, *jacobea*), *Serratula radiata*, *Seseli* (*annuum*, *arenarium*, *austriacum*, *campestre*, *hippomarathrum*, *leucospermum*, *osseum*, *pallasii*), *Sesleria* (*albicans**, *heufleriana*, *insularis* subsp. *italica*, *nitida**, *rigida*, *sadleriana*, *tenuifolia* subsp. *kalmikensis*), *Sideritis syriaca*, *Silene* (*armeria*, *borysthonica*, *bupleuroides*, *flavescens*, *otites* subsp. *hungarica* and subsp. *otites*), *sendtneri*, *spergulifolia*, *viscosa*, *wolgensis*), *Spiranthes spiralis*, *Sternbergia colchiciflora*, *Stipa* (*austriaca*, *borysthonica*, *capillata*, *dasyphylla*, *ericaulis*, *joannis*, *lessingiana*, *lithophila*, *pontica*, *pulcherrima*, *styriaca*, *tirsa*, *ucrainica*, *zalesskyi*), *Syrenia montana*, *Tanacetum millefolium*, *Taraxacum serotinum*, *Telephium imperati* subsp. *imperati*, *Tephrosia* (*integrifolia*, *serpentina*), *Teucrium* (*chamaedrys*, *montanum*), *Thalictrum* (*foetidum*, *minus*), *Thesium* (*arvense*, *humifusum*, *linophyllum*, *rostratum*), *Thlaspi* (*goesingense*, *jankae*, *montanum**), *Thymus* (*kirgisorum*, *kosteleckyanus*, *longicaulis*, *odoratissimus*, *pallasianus*, *praecox* subsp. *praecox*, *striatus*), *Tragopogon* (*brevirostris* subsp. *brevirostris*, *floccosus*), *Trifolium* (*ambiguum*, *montanum*, *ochroleucum*, *pannonicum*), *Trigonella gladiata*, *Trinia* (*dalechampii*, *glauca* subsp. *camiolica* and subsp. *glauca*, *kitaibeli*), *Verbascum* (*phoeniceum*, *speciosum**), *Veronica* (*austriaca*, *multifida*, *orientalis*), *Vinca herbacea*, *Vincetoxicum pannonicum*, *Viola* (*ambigua*, *rupestris*), *Xeranthemum cylindraceum*.

Lit.: KLIKA & HADAČ (1944), BRAUN-BLANQUET (1949), VICHEREK (1972), KORNECK (1974), WILLEMS (1982), ROYER (1991), MUCINA et al. (1993), ROMASHCHENKO et al. (1996).

Puccinellio-Salicornietea TOPA 1939

Continental (inland) salt-marshes, salt-pans and salt-steppes

Festuco-Puccinellietea SOÓ 1968 (art. 8)

Thero-Suaedetia VICHEREK 1973 (art. 31)

Crypsietea aculeatae VICHEREK 1973 (syntax. syn.)

Festuco-Limonietea KARPOV et MIRKIN 1985 (syntax. syn.)

Glycyrrhizetia glabrae GOLUB 1983 (art. 8)

Glycyrrhizetia glabrae GOLUB et MIRKIN 1986 (art. 5)

Glycyrrhizetia glabrae GOLUB et MIRKIN in GOLUB 1995 (syntax. syn.)

Species: *Achillea asplenifolia*, *Acroptilon repens*, *Artemisia* (*nitrosa*, *santonium*), *Aster* (*canus*, *tripolium* subsp. *pannonicus*), *Atriplex* (*littoralis**, *patens*, *pedunculata*, *verrucifera**), *Bassia* (*hirsuta**, *hyssopifolia*), *Beckmannia eruciformis*, *Bupleurum tenuissimum**, *Camphorosma* (*annua*, *monspeliaca**), *Carex* (*distans**, *divisa**, *hordeistichos*, *secalina*), *Centaurea jacea* subsp. *angustifolia*, *Cirsium* (*acaule* subsp. *esculentum*, *brachycephalum*), *Climacoptera crassa*, *Crypsis aculeata**, *Cyperus pannonicus*, *Dodartia orientalis*, *Eremopyrum triticeum**, *Eryngium planum*, *Festuca pseudovina*, *Frankenia hirsuta**, *Galium humifusum*, *Geranium collinum*, *Glycyrrhiza glabra**, *Halocnemum strobilaceum**, *Heleochoa* (*alopecuroides*, *schoenoides*), *Hordeum hystrix**, *Iris spuria*, *Juncus gerardii**, *Kalidium foliatum*, *Lactuca tatarica*, *Lepidium* (*cartilagineum*, *latifolium*), *Limonium* (*gmelinii*, *mayeri*, *sareptanum*, *suffruticosum*, *tomentellum*), *Lotus tenuis*, *Macroselinum latifolium*, *Petrosimonia* (*brachiata*, *oppositifolia**, *triandra*), *Pholiurus pannonicus*, *Plantago* (*cornuti*, *major* subsp. *winteri*, *maritima**, *schwarzenbergiana*, *tenuiflora*), *Polygonum* (*arenarium* subsp. *arenarium*, *bellaridii*), *Potentilla bifurca*, *Puccinellia* (*distans* subsp. *distans* and subsp. *limosa*, *dolicholepis*, *gigantea*, *peisonis*, *tenuissima*), *Ranunculus pedatus*, *Rorippa brachycarpa*, *Salicornia prostrata*, *Scorzonera* (*cana*, *parviflora*), *Senecio doria*, *Silene viscosa*, *Spergularia media*, *Stemmacantha serratuloides*, *Suaeda* (*altissima*, *confusa*, *corniculata*, *heterophylla*, *maritima* subsp. *maritima**, subsp. *pannonica* and subsp. *salsa**), *Taraxacum bessarabicum*, *Trifolium* (*fragiferum* subsp. *bonannii*, *retusum*).

Lit.: ŤOPA (1939), VICHEREK (1973), KARPOV (1985), KARPOV & MIRKIN (1985), GOLUB & MIRKIN (1986), GOLUB & ČORBADZE (1989), GOLUB (1986, 1994a, 1995).

Temperate and boreal woodlands and scrub

Rhamno-Prunetea RIVAS GODAY et BORJA CARBONELL 1961

Shrub mantle communities in regions of temperate deciduous woods

Crataego-Prunetea R. TX. 1962 (syntax. syn.)

Sambucetea DOING 1962 (art. 8)

Sambuco-Prunetea JURKO 1964 (art. 29)

Urtico-Sambucetea PASSARGE et HOFMANN 1968 (syntax. syn.)

Violo-Berberidetea PASSARGE et HOFMANN 1968 (art. 3c, 8)

Prunetea spinosae RADKE 1980 (art. 5, 8)

Species: *Amelanchier ovalis*, *Berberis vulgaris* (subsp. *seroi*, subsp. *vulgaris*), *Clematis vitalba*, *Cornus sanguinea* (subsp. *australis*, subsp. *sanguinea*), *Corylus avellana*, *Cotoneaster (integerrima, nebrodensis)*, *Crataegus monogyna*, *Cytisus sessilifolius*, *Juniperus communis* subsp. *communis**, *Ligustrum vulgare*, *Lonicera xylosteum*, *Prunus (avium, cocomilia, fruticosa, spinosa, tenella, xeminens)*, *Rhamnus cathartica*, *Rosa (agrestis, caesia, canina, corymbifera, micrantha, nitidula, pimpinellifolia, rubiginosa, squarrosa, villosa, vosagiaca)*, *Rubus (bifrons, canescens, corylifolius, drejeri, elegantispinosus, fasciculatus, fioniae, franconicus, goniophorus, gothicus, grabowskii, gracilis, hadroacanthos, insulariopsis, insularis, lindebergii, lindleyanus, macrophyllus, maxiformis, montanus, orthostachys, radula, raduloides, rudis, sanctus, slesvicensis, vestitus, whalbergii, winterti)*, *Salix arenaria*, *Sambucus nigra*, *Spartium junceum*, *Spiraea (hypericifolia subsp. obovata, media)*, *Viburnum (lantana, opulus)*.

Lit.: RIVAS GODAY & BORJA CARBONELL (1961), TÜXEN (1962), DOING (1962), PASSARGE & HOFMANN (1968), GÉHU et al. (1984), WEBER (1991).

Salicetea purpureae MOOR 1958

Willow and poplar riparian woods and scrub of temperate Europe

Tamarici-Platanetea orientalis I. KÁRPÁTI et V. KÁRPÁTI 1962*

Rubo-Salicetea purpureae PASSARGE et HOFMANN 1968 (art. 29)

Alno-Populetea FUKAREK 1968 (art. 8)

Alno-Populetea FUKAREK et FABIJANIĆ 1968 (syntax. syn.)

Species: *Hippophaë rhamnoides* subsp. *fluviatilis*, *Myricaria germanica**, *Platanus orientalis*, *Populus (alba, nigra)*, *Salix (alba, daphnoides, eleagnos, fragilis, lambertiana, phyllicifolia, purpurea, triandra subsp. discolor et subsp. triandra, viminalis)*.

Lit.: MOOR (1958), PASSARGE & HOFMANN (1968), FUKAREK & FABIJANIĆ (1968), DIERSSEN (1992).

Alnetea glutinosae BR.-BL. et R.TX ex WESTHOFF et al. 1946

Alder and willow carrs

Alnetea glutinosae BR.-BL. et R. TX. 1943 (art. 8)

Alnetea glutinosae DE SOÓ 1945 (art. 8)

Franguletea alni DOING 1962 (art. 8)

Salici-Franguletea JURKO 1964 (art. 8, 29)

Betulo-Franguletea PASSARGE et HOFMANN 1968 (art. 8, 29)

Carici-Alnetea glutinosae PASSARGE et HOFMANN 1968 (art. 29)

Carici-Salicetea cinereae PASSARGE et HOFMANN 1968 (syntax. syn.)

Franguletea alni DOING ex WESTHOFF et DEN HELD 1969 (syntax. syn.)

Species: *Alnus glutinosa**, *Carex (acutiformis*, elongata, laevigata)*, *Dryopteris (carthusiana, cristata)*, *Frangula alnus**, *Galium elongatum*, *Myrica gale*, *Osmunda regalis*, *Ribes nigrum*, *Salix (aurita, borealis, cinerea, pentandra)*, *Sphagnum squarrosum**, *Thelypteris palustris*, *Trichocolea tomentella*.

Lit.: DOING (1962), PASSARGE & HOFMANN (1968), WESTHOFF & DEN HELD (1969), WEBER (1991).

Querceto-Fagetea BR.-BL. et VIEGER in VIEGER 1937

Deciduous mesic and subxerophilous woods of temperate and subboreal Europe

Quercetea roboris-sessiliflorae BR.-BL. et R. TX. 1943 (art. 8)

"*Querceto-Ulicetea*" BR.-BL. in BR.-BL. et al. 1947 p.p. (art. 8)

Querceto-Ulicetea LEBRUN et al. 1949 p.p. (syntax. syn.)

Quercetea robori-sessiliflorae BR.-BL. et R. TX. ex BR.-BL. 1950 (syntax. syn.)

Carpino-Fagetea JAKUCS 1960 (art. 3b)

Carpino-Fagetea JAKUCS 1967 (art. 29)

Carpino-Fagetea (BR.-BL. et VIEGER in VIEGER 1937) PASSARGE et HOFMANN 1968 (art. 29, 31)

Deschampsio-Quercetea robori-petraeae PASSARGE et HOFMANN 1968 (art. 10, 29)

Geranio-Fraxinetea excelsae PASSARGE et HOFMANN 1968 (syntax. syn.)

"Regionalklasse *Carpino-Fagetea silvaticae*" PASSARGE 1968 (art. 3c)

Fraxino-Fagetea sylvaticae MOOR 1976 (syntax. syn.)

Tilieteae platyphylli MOOR 1977 (syntax. syn.)

"*Fagetea silvaticae*" RADKE 1980 (art. 5, 8)

Quercetea robori-petraeae sensu auct. (art. 30)

Species: *Abies* (*alba*, *borisii-regis*), *Acer* (*campestre*, *heldreichii* subsp. *visianii*, *hyrcanum*, *lobelii*, *obtusatum*, *opalus*, *platanoides*, *pseudoplatanus*), *Actaea spicata*, *Adoxa moschatellina*, *Aesculus hippocastanum*, *Allium* (*pendulinum*, *ursinum*), *Alnus* (*cordata*, *glutinosa*, *incana*), *Anemone* (*nemorosa*, *ranunculoides*, *trifolia*), *Anthriscus tenerrima*, *Aposeris foetida*, *Aquilegia vulgaris*, *Arabis turrita*, *Aremonia agrimonoides*, *Arum* (*alpinum*, *maculatum*), *Asarum europaeum*, *Asparagus* (*tenuifolius*, *verticillatus*), *Asperula taurina* (subsp. *leucanthera*, subsp. *taurina*), *Asyneuma* (*canescens*, *trichocalycina*), *Athyrium filix-femina*, *Betula pendula*, *Blechnum spicant**, *Botrychium virginianum*, *Brachypodium sylvaticum*, *Bromus benekenii*, *Campanula* (*latifolia*, *rapunculoides*, *trachelium*), *Cardamine* (*bulbifera*, *chelidonia*, *enneaphylla*, *glanduligera*, *graeca*, *heptaphylla*, *impatiens*, *kitabelii*, *pentaphylla*, *polyphylla*, *quinquefolia*, *trifolia*), *Carex* (*alba*, *brevicollis*, *brizoides*, *depauperata*, *digitata*, *muricata*, *pendula*, *pilosa*, *remota*, *sylvatica*, *umbrosa*), *Carpesium cernuum*, *Carpinus betulus*, *Castanea sativa*, *Cephalanthera* (*damasonium*, *longifolia*, *rubra*), *Cerastium* (*fontanum* subsp. *lucorum*, *sylvaticum*), *Circaea* (*alpina*, *intermedia*, *lutetiana*), *Convallaria majalis*, *Corydalis* (*cava*, *intermedia*, *pumila*, *solida*), *Crataegus* (*laevigata*, *nigra*, *pentagyna*), *Crocus* (*banaticus*, *flavus*, *vittatus**), *Cyclamen purpurascens*, *Cypripedium calceolus*, *Dactylis polygama*, *Daphne* (*laureola*, *mezereum*, *pontica*), *Doronicum* (*hungaricum*, *orientale*), *Dryopteris* (*affinis*, *filix-mas*), *Epilobium montanum*, *Epimedium* (*alpinum*, *pubigerum*), *Epipactis* (*helleborine*, *leptochila*, *microphylla*, *muelleri*, *purpurata*), *Epipogium aphyllum*, *Equisetum* (*hyemale*, *sylvaticum*, *telmateia*), *Erythronium dens-canis*, *Euonymus* (*europaea*, *latifolia*, *verrucosa*), *Euphorbia* (*amygdaloides*, *angulata*, *carniolica*, *dulcis*), *Fagus sylvatica* (subsp. *orientalis*, subsp. *sylvatica*), *Festuca* (*altissima*, *drymeia*, *gigantea*, *heterophylla*), *Fraxinus* (*angustifolia* subsp. *danubialis*, *excelsior* subsp. *coriariifolia* and subsp. *excelsior*), *Gagea* (*lutea*, *minima*, *spathacea*), *Galanthus nivalis*, *Galium* (*aristatum*, *laconicum*, *laevigatum*, *odoratum*, *schultesii*, *sylvaticum*), *Geranium* (*nodosum*, *versicolor*), *Glechoma hirsuta*, *Gymnocarpium dryopteris*, *Hacquetia epipactis*, *Hedera helix*, *Helleborus* (*niger*, *purpurascens*), *Hepatica* (*nobilis*, *transsilvanica*), *Hesperis matronalis* (subsp. *candida*, subsp. *matronalis*), *Hieracium* (*laevigatum*, *murorum*, *rotundatum*, *sabaudum*, *umbellatum*), *Homogyne sylvestris*, *Hordelymus europaeus*, *Hyacinthoides non-scripta*, *Hypericum androsaemum*, *Ilex aquifolium*, *Inula spiraeifolia*, *Isopyrum thalictroides*, *Knautia drymeia* subsp. *drymeia*, *Laburnum alpinum*, *Lamiastrum* (*argenteum*, *flavidum*, *montanum*), *Lamium* (*flexuosum*, *orvala*), *Lathraea* (*clandestina*, *squamaria*), *Lathyrus* (*aureus*, *hallersteinii*, *laxiflorus*, *niger*, *venetus*, *vernus*), *Leucojum* (*aestivum*, *vernum*), *Lilium martagon*, *Lonicera* (*alpigena*, *caprifolium*, *xylosteum*), *Lunaria rediviva*, *Luzula* (*divulgata*, *luzuloides**, *nivea*, *pedemontana*, *pilosa*, *sylvatica* subsp. *sylvatica*), *Lysimachia nemorum*, *Matteuccia struthiopteris*, *Melampyrum bihariense*, *Melica* (*nutans*, *uniflora*), *Mercurialis perennis*, *Moehringia trinervia*, *Monotropa hypopitys* subsp. *hypophegea*, *Mycelis muralis*, *Myosotis sylvatica*, *Narcissus pseudonarcissus*, *Neottia nidus-avis*, *Omphalodes verna*, *Orchis purpurea*, *Ornithogalum pyrenaicum* subsp. *pyrenaicum*, *Orobanche hederiae*, *Paeonia officinalis* subsp. *banatica*, *Paris quadrifolia*, *Phegopteris connectilis*, *Physospermum cornubiense*, *Phyteuma spicatum*, *Pinus nigra* subsp. *laricio*, *Piptatherum virescens*, *Poa* (*nemoralis*, *stiriaca*, *trivialis* subsp. *sylvicola**), *Polygonatum latifolium*, *Polystichum* (*aculeatum*, *braunii*, *setiferum*), *Populus tremula*, *Potentilla sterilis*, *Prenanthes purpurea*, *Primula acaulis*, *Prunus* (*avium*, *padus*), *Pseudostellaria europaea*, *Pulmonaria*

(*longifolia*, *montana* subsp. *montana* and subsp. *porciusii*, *officinalis*, *saccharata*, *stiriaca*), *Pyraeantha coccinea*, *Pyrola minor*, *Pyrus* (*communis*, *elaeagnifolia*), *Quercus* (*mas*, *petraea**, *pyrenaica*, *robur* subsp. *brutia* and subsp. *robur*), *Ranunculus* (*auricomus* agg., *brutius*, *carpathicus*, *cassubicus* agg., *ficaria*, *lanuginosus*), *Rhamnus alpinus* subsp. *fallax*, *Rhododendron ponticum*, *Ribes* (*alpinum**, *uva-crispa**), *Rosa arvensis*, *Rubus glandulosus*, *Ruscus hypoglossum*, *Sanicula europaea*, *Scilla bifolia* subsp. *bifolia*, subsp. *danubialis* and subsp. *drunensis*, *lilio-hyacinthos*, *spetana*, *subnivalis*, *vindobonensis*), *Scopolia carniolica*, *Scrophularia* (*nodosa*, *scopolii*), *Scutellaria altissima*, *Senecio germanicus* (subsp. *glabratus*, subsp. *germanicus*), *Soldanella pilia*, *Spiraea chamaedryfolia*, *Staphylea pinnata*, *Stellaria* (*holostea*, *nemorum* subsp. *glochidisperma* and subsp. *nemorum*), *Symphytum* (*bulbosum*, *cordatum*, *tuberosum*), *Taxus baccata*, *Tilia* (*cordata*, *platyphyllos*), *Ulmus* (*glabra*, *laevis*, *minor*), *Urtica galeopsifolia*, *Veratrum nigrum*, *Veronica urticifolia*, *Viburnum opulus*, *Vicia* (*oroboides*, *sparsiflora*), *Vinca minor*, *Viola* (*alba* subsp. *alba*, *mirabilis*, *reichenbachiana*, *riviniana*, *suavis*), *Viscum album* subsp. *album*, *Vitis vinifera* subsp. *sylvestris*, *Waldsteinia geoides*.

Note: The broadly-conceived class of *Quercus-Fagetea* can be split into a series of smaller units such as *Fraxino-Fagetea sylvaticae* (major part of the deciduous woods) and *Quercetea roboris-sessiliflorae* (acidophilous oak and partly also beech woods with north-European distribution). This approach is followed particularly by SCAMONI & PASSARGE (1959), PASSARGE & HOFMANN (1968) and THEURILLAT et al. (1995).

Lit.: VIEGER (1937), SCAMONI & PASSARGE (1959), JAKUCS (1967), HARTMANN & JAHN (1967), HARTMANN (1974), MOOR (1977), PASSARGE & HOFMANN (1968), HORVAT et al. (1974), FEOLI & LAGONEGRO (1982), THEURILLAT et al. (1995).

***Quercetea pubescentis* DOING-KRAFT ex SCAMONI et PASSARGE 1959**

Thermophilous oak woods of submediterranean and east-European distribution

Quercetea pubescentis OBERD. 1948 (art. 8)

Quercetea pubescentis DOING-KRAFT 1955 (art. 8)

Quercetea pubescentis OBERD. 1957 (art. 3b)

Quercetea pubescenti-petraeae JAKUCS 1960*

Quercetea pubescenti-petraeae SOÓ 1963*

Peucedano-Quercetea PASSARGE et HOFMANN 1968 (art. 29)

"Regionalklasse *Peucedano-Quercetea*" PASSARGE 1968 (art. 3c)

Species: *Abies cephalonica*, *Acer* (*monspessulanus*, *tataricum*), *Anemone apennina*, *Arabis brassica*, *Aristolochia pallida*, *Buglossoides purpureoaeerulea*, *Buxus sempervirens*, *Carex* (*fritschii*, *halleriana*, *michelii*), *Carpinus orientalis*, *Colutea arborescens*, *Cornus mas*, *Cotinus coggygia*, *Crepis fraasii*, *Dictamnus albus**, *Dioscorea balcanica*, *Euphorbia polychroma*, *Fraxinus ornus*, *Galanthus corcyrensis* (subsp. *corcyrensis*, subsp. *reginae-olgae*), *Geranium sanguineum**, *Helleborus* (*cyclophyllus*, *dumetorum* subsp. *atrorubens*, *foetidus*, *odorus*, *viridis* subsp. *occidentalis*), *Hierochloë australis*, *Hippocrepis emerus*, *Knautia drymeia* subsp. *tergestina*, *Laburnum anagyroides*, *Lactuca quercina*, *Limodorum abortivum*, *Luzula forsteri*, *Lychnis coronaria*, *Malus sylvestris*, *Melica* (*altissima*, *picta*), *Melittis melissophyllum*, *Mercurialis ovata*, *Orchis purpurea*, *Ostrya carpinifolia*, *Paeonia peregrina*, *Paliurus spina-christii*, *Philadelphus coronarius*, *Platanthera chlorantha*, *Potentilla* (*alba*, *micrantha*), *Primula veris*, *Prunus mahaleb*, *Pulmonaria* (*angustifolia*, *mollis* subsp. *mollis*, *murinii*), *Pyrus pyraeaster*, *Quercus* (*aegilops*, *cerris*, *dalechampii*, *frainetto*, *hartwisiana*, *pedunculiflora*, *petraea**, *polycarpa*, *pubescens* subsp. *pubescens*, *trojana*), *Ruscus aculeatus*, *Scutellaria columnae*, *Sedum cepaea*, *Sesleria autumnalis*, *Sorbus* (*aria*, *domestica*, *torminalis*), *Syringa vulgaris*, *Tamus communis*, *Tanacetum corymbosum*, *Tilia tomentosa*, *Viburnum lantana*, *Vicia barbarizitae*, *Vincetoxicum hirundinaria* subsp. *hirundinaria**, *Viola alba* subsp. *dernhardtii*.

Lit.: SCAMONI & PASSARGE (1959), JAKUCS (1960, 1961, 1967), HARTMANN & JAHN (1967), PASSARGE & HOFMANN (1968), HORVAT et al. (1974).

***Erico-Pinetea* HORVAT 1959**

Relict pine woods of oreo-submediterranean and montane temperate distribution over limestone

Pyrolo-Pinetea KORNECK in OBERD. et al. 1967 p.p. (art. 8)

Roso pendulinae-Pinetea mugo THEURILLAT in THEURILLAT et al. 1985 p.p. (syntax. syn.)

Species: *Aquilegia atrata*, *Asplenium cuneifolium**, *Callianthemum anemonoides*, *Carex ericetorum*, *Cephalaria flava*, *Coronilla vaginalis*, *Crepis alpestris*, *Daphne (blagayana**, *cneorum**), *Epipactis atrorubens**, *Erica carnea**, *Euphorbia (kernerii, saxatilis)*, *Euphrasia stiriaca*, *Festuca amethystina*, *Galium austriacum*, *Genista januensis*, *Knautia (carinthiaca, dinarica, slovacica)*, *Laserpitium krapfii*, *Leucanthemum margaritae*, *Melampyrum hoermannianum*, *Peucedanum austriacum*, *Pinus (heldreichii, kochiana, mugo**, *nigra* subsp. *dalmatica*, subsp. *nigra* and subsp. *pallasiana, sylvestris**), *Polygala chamaebuxus*, *Potentilla carniolica*, *Pulsatilla (slovaca, styriaca)*, *Pyrola (chlorantha, media)*, *Rhododendron hirsutum*, *Rhodothamnus chamaecistus**, *Sesleria (rigida**, *robusta)*, *Sorbus chamaemespilus**, *Stachys scardica*, *Thesium rostratum*, *Thlaspi geosingense*.

Lit.: HORVAT (1959), HORVAT et al. (1974), THEURILLAT et al. (1995).

Pulsatillo-Pinetea sylvestris OBERD. 1992

Continental thermophilous pine forests on sandy soils in eastern Europe (and western Siberia and northern Kazakhstan) and inner-alpine and inner-pyrenean steppic pine forests

Pulsatillo-Pinetea OBERD. in OBERD. et al. 1967 p.p. (art. 8)

Species: *Alyssum turkestanicum*, *Artemisia scoparia**, *Carex supina**, *Cytisus ruthenicus*, *Dianthus arenarius*, *Festuca beckeri**, *Gypsophila (altissima, paniculata)*, *Jurinea cyanoides*, *Koeleria glauca**, *Larix decidua**, *Ononis rotundifolia*, *Oxytropis campanula*, *Pinus sylvestris**, *Potentilla humifusa*, *Pseudolysimachion spicatum**, *Pulsatilla patens*, *Silene (baschkirorum, chlorantha, repens)*, *Viola pinnata*.

Lit.: BRAUN-BLANQUET (1961), KRAUSCH (1962), OBERDORFER (1992).

Junipero sabinae-Pinetea RIVAS-MARTÍNEZ 1964 nomen inversum propos.

Oromediterranean dry juniper-pine woods

Pino-Juniperetea sabinae RIVAS-MARTÍNEZ 1964 (original form)

Species: *Arctostaphylos uva-ursi*, *Astragalus monsspessulanus**, *Daphne cantabrica*, *Echinopartum horridum**, *Juniperus (communis* subsp. *alpina**, *sabina, thurifera)*, *Pinus (sylvestris**, *uncinata**).

Lit.: RIVAS-MARTÍNEZ (1964).

Vaccinio-Piceetea BR.-BL. in BR.-BL. et al. 1939

Boreal coniferous woods

"*Piceetea* (BR.-BL. 1939)" KLIKA in KLIKA et HADAČ 1944 (art. 29)

"*Piceetea* (BR.-BL. 1939)" EGGLEER 1952 (art. 29, 31)

Dicrano-Pinetea HARTMANN 1957*

Pyrolo-Pinetea KORNECK in OBERD. et al. 1967 p.p. (art. 8)

Dicrano-Pinetea SOÓ 1968 (art. 3a)

Pulsatillo-Pinetea OBERD. in OBERD. et al. 1967 p.p. (art. 8)

Pyrolo-Pinetea KORNECK 1974 (syntax. syn.)

Species: *Abies sibirica*, *Adenostyles (alliariae**, *glabra**), *Bazzania trilobata*, *Betula pubescens* subsp. *tortuosa*, *Calamagrostis lapponica*, *Chimaphila umbellata*, *Cladonia (arbuscula**, *cornuta, crispata, rangiferina**), *Corallorhiza trifida*, *Cornus suecica*, *Dicranum rugosum*, *Festuca eggleri*, *Galium (rotundifolium**, *trifidum)*, *Goodyera repens*, *Hylocomium splendens**, *Knautia norica*, *Larix (decidua**, *sibirica)*, *Linnaea borealis*, *Listera cordata*, *Lonicera caerulea*, *Luzula (luzulina, sylvatica* subsp. *sieberi)*, *Lycopodium (annotinum, complanatum)*, *Melampyrum sylvaticum**, *Moneses uniflora*, *Monotropa hypopitys* subsp. *hypopitys*, *Orthilia secunda*, *Peltigera aphthosa**, *Picea (abies* subsp. *abies**, and subsp. *obovata, omorica)*, *Pinus (cembra, mugo**, *peuce, sibirica, sylvestris**), *Pleurozium schreberi**, *Ptilium crista-castrensis*, *Rhytidadelphus loreus**, *Salix xerophila*, *Soldanella (hungarica* subsp. *major, montana)*, *Stellaria longifolia*, *Trientalis europaea*, *Vaccinium (myrtillus**, *vitis-idaea**).

Lit.: BRAUN-BLANQUET et al. (1939), PASSARGE & HOFMANN (1968), KORNECK (1974), DIERSSEN (1992, 1996).

Oromediterranean grasslands and scrub

***Festucetea indigestae* RIVAS GODAY et RIVAS-MARTÍNEZ in RIVAS GODAY et MAYOR 1966**

Oro-Iberian siliceous *Festuca indigesta* grasslands

Festucetea indigestae RIVAS GODAY et RIVAS-MARTÍNEZ 1965 (art. 8)

Species: *Agrostis nevadensis*, *Alyssum purpureum*, *Arenaria* (*aggregata*, *montana* subsp. *intricata*, *pungens*, *tetraquetra*), *Armeria splendens* subsp. *bigerrensis*, *Artemisia granatensis*, *Biscutella glacialis*, *Chaenarrhinum glareosum*, *Dianthus subacaulis*, *Erigeron frigidus*, *Erodium petraeum* subsp. *crispum*, *Eryngium glaciale*, *Festuca* (*clementei*, *frigida*, *indigesta* subsp. *aragonensis* and subsp. *indigesta*, *pseudoeskia*), *Galium* (*pyrenaicum*, *rosellum*), *Herniaria boissieri*, *Hieracium castellanum*, *Jasione crispa* (subsp. *amethystina*, subsp. *centralis*), *Jurinea humilis*, *Leontodon boryi*, *Leucanthemopsis radicans*, *Luzula hispanica*, *Poa laxa*, *Reseda complicata*, *Scabiosa turolensis*, *Scutellaria javalambrensis*, *Senecio boissieri*, *Sideritis glacialis*, *Silene boryi*, *Teesdaliopsis conferta*, *Thymus serpylloides* subsp. *serpylloides*, *Trisetum glaciale*.

Lit.: RIVAS GODAY & MAYOR (1966), MAYOR et al. (1982), PÉREZ RAYA et al. (1990), DE FOUCAULT (1994).

***Saginetea piliferae* GAMISANS 1977**

Cymo-Sardian oromediterranean siliceous grasslands

Species: *Armeria multiceps* subsp. *multiceps*, *Hieracium lactucella* subsp. *micranthum*, *Luzula italica*, *Phleum parviceps*, *Sagina pilifera*, *Sesamoides pygmaea*.

Lit.: KLEIN (1972), GAMISANS (1977), PIGNATTI et al. (1980).

***Festuco hystricis-Ononidetea striatae* RIVAS-MARTÍNEZ et al. 1991**

Dry, basiphilous pasture communities dominated by caespitose hemicryptophytes and pulvinate chamaephytes of the submediterranean region of the Eurosiberian Floristic Province and the supramediterranean and oromediterranean zones of the Mediterranean

Ononido-Rosmarinetea BR.-BL. in BR.-BL. et al. 1947 p.p. (art. 8, 35)

Ononido-Rosmarinetea BR.-BL. in A. DE BOLÒS Y VAYREDA 1950 p.p. (art. 35)

Ononido-Rosmarinetea BR.-BL. in BR.-BL. et al. 1952 p.p. (art. 31, 35)

Festucetea hystricis MAYOR 1980*

Species: *Arenaria* (*aggregata* subsp. *aggregata* and subsp. *erinacea*, *armerina*, *grandiflora**), *Artemisia pedemontana*, *Asperula pyrenaica*, *Astragalus sempervirens* subsp. *catalaunicus*, *Brimeura amethystina*, *Carduncellus* (*mitissimus*, *monspeliensium*), *Carlina acanthifolia*, *Coronilla minima**, *Crepis albida*, *Cytisus ardoinei*, *Dianthus subacaulis* subsp. *brachyanthus*, *Echinopartum horridum*, *Euphorbia duvalii*, *Festuca* (*burnatii*, *gautieri*, *hystris*, *indigesta* subsp. *allezettei* and subsp. *molineri*, *pseudotrichophylla*), *Fumana procumbens**, *Genista* (*hispanica* subsp. *occidentalis*, *lobelii**, *pulchella*), *Inula montana**, *Medicago suffruticosa*, *Onobrychis reuteri*, *Ononis* (*cristata*, *striata*), *Paronychia kapela**, *Poa ligulata*, *Ranunculus gramineus**, *Saponaria caespitosa*, *Sempervivum calcareum*, *Seseli* (*montanum*, *nanum*), *Sideritis hyssopifolia*, *Stipa iberica*, *Thymelaea nivalis*, *Thymus mastigophorus*.

Note: Many of the diagnostic species of the *Festuco-Ononidetea* are also found outside the distribution area of the class and occur either in the *Festuco-Brometea* (for instance on the Apennine Peninsula) or in the *Seslerietalia tenuifoliae* (*Elyno-Seslerietea*) communities.

Lit.: DE BOLÒS Y VAYREDA (1950), BRAUN-BLANQUET et al. (1952), RIVAS-MARTÍNEZ et al. (1991).

***Carici-Genistetea lobelii* KLEIN 1972**

Cymo-Sardian supra- and oromediterranean grasslands and phrygana

Carlinetea macrocephalae GAMISANS 1975 (art. 1, 29)

Carlinetea macrocephalae GAMISANS 1977 (art. 29)

Species: *Allium cupanii*, *Alyssum* (*nebrodense*, *robertianum*), *Anthyllis hermanniae**, *Armeria canescens* subsp. *nebrodensis*, *Arrhenatherum elatius* subsp. *sardoum*, *Astragalus* (*depressus**, *sirincus* subsp. *genargenteus*), *Berberis vulgaris* subsp. *aethnensis**, *Brimeura fastigiata*, *Bunium alpinum* subsp. *corydalinum*, *Bupleurum falcatum* subsp. *corsicum*, *Carduncellus pinnatus* subsp. *pinnatus*, *Carex caryophyllea* subsp. *insularis*, *Carlina macrocephala* subsp. *nebrodensis*, *Centaurea parlatoris*, *Cerastium* (*boissierianum*,

soleirolii), *Crepis bellidifolia*, *Crocus corsicus*, *Daphne oleoides**, *Dianthus arrostii*, *Erysimum bonannianum*, *Euphorbia spinosa*, *Evacidium discolor*, *Galium* (*aetnicum*, *corsicum*, *verticillatum*), *Genista* (*corsica*, *cupanii*), *Helianthemum* (*cinereum*, *croceum**), *Herniaria glabra* subsp. *nebrodensis*, *Hieracium crinitum*, *Hypochaeris robertia**, *Juniperus communis* subsp. *hemisphaerica**, *Jurinea humilis**, *Knautia calycina*, *Lamium corsicum*, *Odontites corsica*, *Peucedanum paniculatum*, *Plantago holosteum* subsp. *insularis*, *Poa balbisii*, *Prunus prostrata**, *Rosa* (*serafinii*, *sicula*), *Ruta corsica*, *Saponaria* (*ocymoides* subsp. *alsinoides*), *Scleranthus perennis* subsp. *vulcanicus*, *Scorzonera villosiformis*, *Silene* (*nodulosa*, *sicula*), *Stachys corsica*, *Thesium* (*corsalpinum*, *italicum*, *kyrnosum*), *Thlaspi* (*brevistylum*, *rivale**), *Thymus* (*herba-barona*, *spinulosus*), *Trifolium repens* subsp. *prostratum*, *Trisetum* (*flavescens* subsp. *splendens*, *gracile*), *Verbascum siculum*, *Vicia glauca*, *Viola* (*aethnensis**, *corsica*, *nebrodensis*).

Lit.: KLEIN (1972), GAMISANS (1977, 1991), PIGNATTI et al. (1980).

Rumici-Astragaletea siculi E. PIGNATTI et al. 1980

Sicilian oromediterranean scrub

Cerastio-Carlinetea nebrodensis BRULLO 1983 (art. 29)

Note: The *Cerastio-Carlinetea nebrodensis* is a superfluous name since BRULLO (1983) also included the *Rumici-Astragaletea siculi* (the holotype of the *Rumici-Astragaletea siculi*).

Species: *Astragalus granatensis* subsp. *siculus*, *Galium aetnicum*, *Hypochaeris robertia**, *Rumex aetnensis*, *Saponaria sicula*, *Senecio aethnensis*, *Tanacetum siculum*, *Viola aethnensis*.

Lit.: PIGNATTI et al. (1980), BRULLO (1983).

Daphno-Festucetea QUÉZEL 1964

Greek and Aegean oromediterranean calciphilous grasslands and phrygana

Astragaletea cretica ZOHARY et ORSHAN 1965 (art. 8)

Berberido-Asperuletea ZAFFRAN 1971 (art. 8)

Astragaletea mediterranea ZOHARY 1973 (art. 34)

Acantholimono-Astragaletea VOLIOTIS 1973*

Saturejetea spinosae ZAFFRAN 1990 (art. 5, 8)

Species: *Acantholimon echinus* (subsp. *echinus*, subsp. *creticus*, subsp. *lycaonicum*), *Acinos alpinus* subsp. *meridionalis*, *Alyssum* (*samium*, *sphacioticum*), *Anchusa cespitosa*, *Anthemis* (*cretica* subsp. *cretica*, *rigida**), *Arenaria saponarioides*, *Asperula* (*boissieri*, *idaea*, *lutea* subsp. *lutea*, *samia*), *Aster alpinus**, *Astragalus* (*angustifolius*, *creticus* subsp. *rumelicus*, *ptilodes*, *taygeteus*, *thracicus* subsp. *cylleneus* and subsp. *parnassi*), *Asyneuma limonifolium*, *Atraphaxis billardieri*, *Berberis cretica*, *Bufoxia stricta*, *Bunium microcarpum*, *Campanula spatulata* subsp. *spatulata*, *Carduus tmoleus*, *Carum rupestre*, *Centaurea* (*affinis* subsp. *affinis*, *idaea*, *pichleri*, *raphanina* subsp. *mixta* and subsp. *raphanina*), *Centranthus sieberi*, *Cerastium candidissimum*, *Cicer incisum*, *Cirsium hypopsilum*, *Crepis sibthorpiana*, *Cynoglossum sphacioticum*, *Daphne oleoides**, *Dianthus* (*biflorus*, *sphacioticus*, *zonatus*), *Draba* (*heterocoma* subsp. *archipelagi*, *lacaitae*), *Erodium* (*chrysanthum*, *sibthorpiatum* subsp. *vetteri*), *Eryngium amethystinum**, *Erysimum cephalonicum*, *Euphorbia* (*acanthothamnus**, *herniariifolia*), *Festuca* (*jeanpertii*, *polita*, *sipylea*), *Galium* (*incanum* subsp. *incanum*, *incurvum*, *taygeteum*, *thymifolium*), *Genista* (*parnassica*, *Geranium subcaulescens*, *Globularia stygia*, *Helianthemum hymettium*, *Helictotrichon compressum*, *Herniaria parnassica* (subsp. *cretica*, subsp. *parnassica*), *Hypericum* (*kelleri*, *trichocaulon*), *Juniperus* (*communis* subsp. *hemisphaerica**, *foetidissima*), *Jurinea cadmea*, *Koeleria lobata*, *Lactuca alpestris*, *Leontodon graecus*, *Linum arboreum*, *Lysimachia serpyllifolia*, *Marrubium cylleneum*, *Minuartia* (*anatolica*, *hamata*, *stellata*, *verna* subsp. *attica*), *Morina persica*, *Muscari spreizenhoferi*, *Origanum sipyleum*, *Ornithogalum gussonii*, *Paracaryum* (*aucheri*, *lithospermifolium*), *Paronychia* (*albanica*, *macrosepala* var. *cretica*, *rechingeri*), *Peucedanum alpinum*, *Pimpinella tragium* subsp. *depressa*, *Poa* (*thessala*, *timoleonis*), *Polygonum idaeum*, *Prunus prostrata**, *Pterocephalus* (*perennis* subsp. *perennis*, *pinardii*), *Ranunculus brevifolius*, *Rhamnus saxatilis* subsp. *prunifolius*, *Rosa* (*hackeliana*, *pulverulenta*), *Scabiosa sphaciotica*, *Scandix macrorrhyncha*, *Scutellaria* (*hirta*, *orientalis* subsp. *alpina*, *rupestris* subsp. *parnassica*), *Senecio fruticosus*, *Sesleria* (*anatolica*, *tenerima*, *vaginalis*), *Sideritis* (*clandestina* subsp. *cyllenea* and subsp. *peloponnesiaca*, *sipylea*, *syriaca**), *Silene* (*thessalonica* subsp. *dictaea*, *variegata*), *Stipa epilosa*, *Telephium imperati* subsp. *orientale*, *Teucrium alpestre*, *Thymus* (*leucotrichus* subsp. *creticus* and subsp. *leucotrichus*, *longicaulis* subsp. *chaubardii*, *samius*, *sipyleus*

subsp. *rosulans*, *thracicus*), *Trinia frigida*, *Verbascum* (*cylleneum*, *pycnostachyum*, *spinosum*), *Veronica* (*erinoides*, *glauca* subsp. *chaubardii*, *thymifolia*), *Vincetoxicum canescens*, *Viola* (*cephalonica*, *fragrans*, *graeca*, *heldreichiana*).

Lit.: QUÉZEL (1964), ZOHARY & ORSHAN (1965), ZAFFRAN (1982, 1990), CHRISTODOULAKIS & GEORGIADIS (1990), GEORGIADIS & DIMOPOULOS (1993), DIMOPOULOS & GEORGIADIS (1995).

Mediterranean vegetation

***Thero-Brachypodietea* BR.-BL. ex A. DE BOLÒS Y VAYREDA 1950**

Mediterranean terrestrial plant communities dominated by annual low-grown herbs and grasses

Thero-Brachypodietea BR.-BL. in BR.-BL. et al. 1947 (art. 8)

Thero-Brachypodietea BR.-BL. ex BR.-BL. et al. 1952 (art. 31)

Helianthemetea annui RIVAS GODAY 1958 (art. 34)

Helianthemetea guttati (RIVAS GODAY 1958) RIVAS GODAY et RIVAS-MARTÍNEZ 1963 (syntax. syn.)

Poetea bulbosae RIVAS GODAY et RIVAS-MARTÍNEZ in RIVAS-MARTÍNEZ 1978 (syntax. syn.)

"*Stipo-Brachypodietea distachyae* (BR.-BL. 1947)" BRULLO 1985 (art. 29)

Tuberarietea guttatae sensu auct. (art. 30)

Species: *Aira* (*caryophyllea**, *cupaniana*, *elegantissima*), *Allium* (*chamaemoly*, *hirtovaginum*, *lopadusanum*), *Andrachne telephioides*, *Anthemis chia*, *Anthyllis tetraphylla*, *Arenaria* (*leptoclados* subsp. *leptoclados**, *leucadia*), *Asterolinon linum-stellatum*, *Avellinia michelii*, *Brachypodium distachyum*, *Brassica tournefortii*, *Briza* (*maxima*, *minor*), *Bromus* (*diandrus*, *hordeaceus**, *rigidus*, *rubens**), *Bupleurum semicompositum*, *Catapodium* (*hemipoa*, *rigidum*), *Cerastium* (*brachypetalum* subsp. *corcyrense*, subsp. *roeserii*, subsp. *tenoreanum*, *diffusum*, *semidecandrum* subsp. *balearicum*), *Chaenarrhinum rubrifolium* subsp. *formenterae*, *Convolvulus lineatus*, *Corrigiola litoralis* subsp. *telephifolia*, *Corynephorus* (*divaricatum*, *fasciculatus*), *Crepis* (*neglecta*, *rubra*), *Cutandia maritima*, *Cynosurus* (*echinatus**, *elegantissimus*), *Echium* (*arenarium*, *parviflorum*), *Erodium* (*botrys*, *chium*, *laciniatum*), *Erophila praecox**, *Eryngium dichotomum*, *Evax asteriscifolia*, *Filago* (*aegaea*, *gallica*, *pygmaea*, *pyramidata*), *Galium* (*murale*, *verrucosum*), *Gynandris sisyrrinchium*, *Hedypnois rhagadioloides*, *Hedysarum spinosissimum*, *Herniaria hirsuta** subsp. *cinerea*, *Hippocrepis* (*biflora*, *ciliata*), *Hyoseris scabra*, *Hypochaeris* (*achyrophorus*, *glabra*), *Lagurus ovatus*, *Leontodon taraxacoides* subsp. *longirostris*, *Linaria* (*pelisseriana*, *reflexa*), *Loeflingia hispanica*, *Lotus* (*edulis*, *longisiliquosus*, *subbiflorus*), *Lupinus angustifolius*, *Malcolmia* (*flexuosa*, *maritima*, *ramosissima*), *Maresia nana*, *Matthiola tricuspidata**, *Medicago* (*littoralis*, *rugosa*, *truncatula*), *Mibora minima**, *Ononis* (*diffusa*, *variegata*, *viscosa* subsp. *breviflora*, subsp. *sieberi*, subsp. *viscosa*), *Ornithogalum collinum*, *Ornithopus* (*compressus*, *perpusillus**, *pinnatus*), *Paronychia arabica*, *Petrorrhagia* (*dubia*, *illyrica*, *velutina*), *Phleum* (*echinatum*, *graecum*), *Plantago* (*afra*, *bellardi*, *holosteam*, *lagopus*, *psyllium*, *serraria*), *Poa bulbosa**, *Polycarpon* (*polycarpoides* subsp. *catalaunicum*, *tetraphyllum* subsp. *alsinifolium* and subsp. *diphyllum*), *Prospero* (*autummale*, *elisae*), *Pseudorlaya pumila*, *Psilurus incurvus*, *Romulea* (*columnnae*, *ramiflora*, *requienii*), *Rumex bucephalophorus* (subsp. *aegaeus*, subsp. *bucephalophorus*, subsp. *gallicus*), *Salvia viridis*, *Senecio leucanthemifolius**, *Sesamoides purpurascens*, *Sideritis romana*, *Silene* (*cambessedesii*, *cerastoides*, *colorata*, *gallica*, *littorea*, *niceensis*, *nocturna* subsp. *neglecta*, *sericea*), *Spergularia diandra*, *Stipa capensis*, *Tordylium* (*apulum**, *officinale*), *Trifolium* (*angustifolium*, *cherleri*, *dalmaticum*, *infamia-ponertii*, *lucanicum*, *scabrum**, *stellatum*), *Trigonella maritima*, *Triplachne nitens**, *Tuberaria guttata*, *Valantia* (*hispidata*, *muralis**), *Vulpia* (*ciliata*, *fasciculata*, *membranacea*), *Vulpiella tenuis*.

Note: There are no names such as "*Tuberarietea guttatae*" or "*Helianthemetea guttatae*" in "BR.-BL. 1952" (most probably BRAUN-BLANQUET et al. 1952). Only the order *Helianthemetalia guttati* was described in BRAUN-BLANQUET et al. (1952) and classified within the *Cisto-Lavanduletea* in the latter paper.

Lit.: DE BOLÒS Y VAYREDA (1950), BRAUN-BLANQUET et al. (1952), BARTOLO et al. (1988), GÉHU & BRONDI (1994).

***Lygeo sparti-Stipetea tenacissima* RIVAS-MARTÍNEZ 1978**

Mediterranean steppes, pseudo-steppes and related perennial grasslands

"*Dactylo glomeratae* subsp. *hispanicae-Brachypodietea retusi*" JULVE 1993 (art. 5)

Species: *Allium pallens* subsp. *pallens*, *Ampelodesmos mauritanica*, *Aristida coerulescens*, *Asphodelus ramosus*, *Asteriscus spinosus*, *Bituminaria bituminosa*, *Brachypodium ramosum*, *Convolvulus (althaeoides, elegantissimus)*, *Conyzanthus squamatus*, *Dittrichia viscosa**, *Euphorbia pinea*, *Ferula communis*, *Foeniculum vulgare* subsp. *piperitum*, *Hyoseris radiata*, *Hyparrhenia hirta*, *Limonium calcarae*, *Lobularia maritima*, *Lygeum spartum*, *Magydaris pastinacea*, *Sanguisorba minor* subsp. *magnolii*, *Stipa (lagascae, tenacissima)*, *Thapsia garganica*, *Verbascum sinuatum*.

Note: *Lygeo-Stipetea* was described by RIVAS-MARTÍNEZ (1978b), not in 1977 as is indicated on a reprint (it is the date of the symposium). For nomenclature see RIVAS-MARTÍNEZ (1978b) and RIVAS-MARTÍNEZ et al. (1993b).

Lit.: RIVAS-MARTÍNEZ (1978b), BARTOLO et al. (1988b), RIVAS-MARTÍNEZ et al. (1993a, b), JULVE (1993).

Cytisetea scopario-striati RIVAS-MARTÍNEZ 1979

Thermomediterranean broom heathlands (retamal)

Species: *Adenocarpus (complicatus, decorticans, hispanicus, lainzii)*, *Cytisus (cantabricus, commutatus, grandiflorus, ingramii, multiflorus, oromediterraneus, scoparius, striatus)*, *Erica lusitanica*, *Genista (falcata, florida, hystrix, obtusiramea, polygaliphylla)*, *Lavandula stoechas* subsp. *sampaiana*, *Lygos (monosperma, sphaerocarpa*)*, *Ulex europaeus* subsp. *latebracteatus*.

Lit.: RIVAS-MARTÍNEZ (1979), RIVAS-MARTÍNEZ & BELMONTE (1987).

Cisto-Lavanduletea BR.-BL. in BR.-BL. et al. 1940

Low-grown Mediterranean scrub (matorral, garrigue, tomillar, phrygana) over siliceous and ultramafic substrates

Species: *Adenocarpus complicatus*, *Astragalus lusitanicus*, *Armeria (macrophylla, pinifolia, rouyana, velutina)*, *Avena longiglumis*, *Calicotome spinosa*, *Carex oedipostyla*, *Chamaespartium tridentatum*, *Cistus (albidus, crispus, ladanifer, laurifolius, libanotis, palhinhae, populifolius, salvifolius*)*, *Corema album*, *Cytisus (baeticus, malacitanus* subsp. *catalaunicus)*, *Erica (australis, scoparia)*, *Genista (hirsuta, hystrix, polyanthos, triacanthos)*, *Halimium (alyssoides, commutatum, halimifolium, ocyroides, verticillatum)*, *Helianthemum origanifolium* subsp. *molle*, *Iberis linifolia* subsp. *welwitschii*, *Lavandula (stoechas* subsp. *stoechas*, subsp. *luisieri* and subsp. *pedunculata, viridis)*, *Lithodora diffusa* (subsp. *diffusa* and subsp. *lusitanica)*, *Paeonia broteroi*, *Pinus pinaster*, *Serratula pinnatifida*, *Stauracanthus (boivinii, genistoides)*, *Teucrium polium* subsp. *vincentinum*, *Thapsia villosa*, *Thymelaea villosa*, *Thymus (camphoratus, mastichina, piperella)*, *Tuberaria lignosa*, *Ulex (argenteus* subsp. *argenteus* and subsp. *subsericeus, boivinii, parviflorus)*.

Lit.: BRAUN-BLANQUET et al. (1940, 1964), BRAUN-BLANQUET (1974), RIVAS-MARTÍNEZ (1968).

Cisto-Micromerietea julianae OBERD. 1954

Low-grown calciphilous Mediterranean scrub (matorral, garrigue, tomillar, phrygana)

Ononido-Rosmarinetea BR.-BL. in BR.-BL. et al. 1947 (art. 8)

Ononido-Rosmarinetea BR.-BL. in A. DE BOLÔS Y VAYREDA 1950 p.p. (art. 35)

Ononido-Rosmarinetea BR.-BL. in BR.-BL. et al. 1952 p.p. (art. 31, 35)

Erico-Cistetea TRINAJSTIĆ 1985*

Rosmarinetea officinalis RIVAS-MARTÍNEZ et al. 1991 (syntax. syn.)

Species: *Achillea cretica*, *Alyssum (borzaeanum, serpyllifolium, spinosum)*, *Andryala agardhii*, *Anthyllis (cytisoides, hermanniae*, tejedensis, terniflora)*, *Aphyllanthes monspelliensis*, *Arenaria armerina*, *Asparagus (albus, aphyllus)*, *Astragalus (balearicus, granatensis* subsp. *granatensis, grossii, hispanicus, incanus, massiliensis, sprunerii)*, *Atractylis (cancellata, humilis)*, *Ballota (acetabulosa, pseudodictamnus)*, *Barlia robertiana*, *Bupleurum (frutescens, spinosum*)*, *Buxus balearica*, *Campanula fastigiata*, *Carlina corymbosa*, *Centaurea (granatensis, hyssopifolia, linifolia, spinosa*)*, *Centaureum triphyllum*, *Cerastium boissierianum*, *Chaenarrhinum rubrifolium*, *Chamaeleon gummifer*, *Chronanthus biflorus*, *Cistus (clusii, creticus, monspeliensis, parviflorus, salvifolius*)*, *Clypeola eriocarpa*, *Convolvulus oleifolius*, *Coris monspeliensis*, *Ctenopsis gypsophila*, *Cytinus (hypocistis, ruber)*, *Dianthus hispanicus*, *Dipcadi serotinum*, *Dorycnium (hirsutum, pentaphyllum)*, *Echium flavum*, *Elaeoselinum tenuifolium*, *Erica (anthura, multiflora, terminalis)*, *Erinacea anthyllis*, *Euphorbia (acanthothamnus, mariolensis, minuta)*, *Fumana (arabica, ericoides, ericophylla, laevipes, thymifolia)*, *Genista (acanthoclada, corsica, dorycnifolia, pseudopilosa, ramosissima, scorpius, umbellata)*, *Globularia alypum*, *Gypsophila struthium* subsp. *hispanica*, *Helianthemum (almeriense, asperum,*

cinereum, croceum, hirtum, lavandulifolium, marifolium, origanifolium, pilosum, squamatum, syriacum), *Helichrysum* (*decumbens, stoechas**), *Herniaria fruticosa*, *Hippocrepis glauca*, *Hypericum* (*balearicum, empetrifolium*), *Jurinea* (*humilis, pinnata*), *Koeleria vallesiana* subsp. *castellana*, *Launaea* (*pumila, resedifolia*), *Lavandula* (*dentata, lanata, latifolia*), *Lepidium subulatum*, *Leuzea conifera*, *Limonium insigne*, *Linum* (*narbonense, pubescens, suffruticosum*), *Lithodora* (*fruticosa*, hispidula**), *Lotus tetraphyllus*, *Micromeria* (*graeca, juliana, myrtifolia, nervosa*), *Moricandia foetida*, *Odontites longiflora*, *Onobrychis stenorrhiza*, *Ononis* (*minutissima, speciosa, tridentata*), *Ophrys* (*bombyliflora, helenae, lutea, mammosa, sicula, tenthredinifera, vernixia*), *Orchis* (*italica, lactea, quadripunctata*), *Origanum onites*, *Orobanche latisquama*, *Paronychia aretioides*, *Phlomis* (*crinita, fruticosa, lanata, purpurea**), *Poa flaccidula*, *Reseda* (*stricta, suffruticosa*), *Rosmarinus officinalis*, *Ruta angustifolia*, *Salsola* (*genistoides, papillosa*), *Salvia* (*candelabrum, lavandulifolia, phlomoides, pomifera, triloba*), *Santolina* (*chamaecyparissias* subsp. *chamaecyparissias, rosmarinifolia, viscosa*), *Sarcopoterium spinosum*, *Satureja* (*obovata, thymbra*), *Sedum gypsicola*, *Serapias* (*ionica, lingua*), *Sideritis* (*foetans, hirsuta, ilicifolia, incana, leucantha, spinulosa*), *Stachys spinosa*, *Stachelina dubia*, *Teucrium* (*aragonense, brevifolium, capitatum, divaricatum, dunense, flavum* subsp. *hellenicum, gnaphalodes, libanitis, microphyllum, pumilum* subsp. *carolipau, turredanum*), *Thapsia gymnesica*, *Thesium divaricatum**, *Thymbra capitata*, *Thymelaea* (*hirsuta, myrtifolia, pubescens, sanamunda, tartonraira, tinctoria*), *Thymus* (*piparella, vulgaris, zygis*), *Ulex argenteus* subsp. *erinaceus*, *Urginea* (*maritima, numidica*), *Viola arborescens*, *Ziziphora hispanica*.

Note: This unit was traditionally classified within the broadly-conceived *Ononido-Rosmarinetea*. RIVAS-MARTÍNEZ et al. (1991) split the latter class into the *Rosmarinetea officinalis* and the *Festuco-Ononidetea striati*. The *Cisto-Micromerietea* (OBERDORFER 1954) comprises an ecologically analogous group of communities with an East-Mediterranean distribution. Since both *Rosmarinetea* and *Cisto-Micromerietea* share many physiognomic features, ecological characteristics and a high number of diagnostic species they are considered as one class, which, due to priority reasons, should bear the name *Cisto-Micromerietea*. This is a preliminary solution as a large-scale syntaxonomic synthesis is needed to clarify the floristic relations between the *Rosmarinetea* and the *Cisto-Micromerietea*.

Lit.: BRAUN-BLANQUET et al. (1947), DE BOLÒS Y VAYREDA (1950), OBERDORFER (1954), RIVAS GODAY & RIVAS-MARTÍNEZ (1967), RIVAS-MARTÍNEZ et al. (1991, 1992a, b).

***Onosmo polyphyllae-Ptilostemetea* KORZHENEVSKIĀ 1990**

KORZHENEVSKIĀ (1990), in a manuscript deposited in the All-Union Institute for Scientific and Technical Information (VINITI) in Moscow has suggested a new class – the *Onosmo polyphyllae-Ptilostemetea* – for the Crimean mediterranean macchia and related grasslands over flysch. The first effective publication of the name is found in KOROTKOV et al. (1991), who also listed diagnostic species of this class, among others: *Alyssum obtusifolium*, *Asperula supina*, *Cruciata taurica* subsp. *taurica*, *Erysimum cuspidatum*, *Melica ciliata* subsp. *monticola*, *Melilotus tauricus*, *Onosma polyphylla*, *Ptilostemon echinocephalus*, *Scutellaria orientalis*, *Seseli dichotomum*, *Thymus cherlerioides* and *Ziziphora tenuior*. Virtually the same characteristics of the class were repeated by SOLOMAKHA (1995). The class of *Onosmo-Ptilostemetea*, however, remains invalidly published since neither a nomenclature type has been assigned to it, nor have any of the subordinate units been validly published to-date.

***Nerio-Tamaricetea* BR.-BL. et O. DE BOLÒS 1958**

Mediterranean riparian gallery woods and related scrub

Tamarici-Platanetea orientalis I. KÁRPÁTI et V. KÁRPÁTI 1962 p.p.min.*

Species: *Arundo donax*, *Clematis campaniflora*, *Gomphocarpus fruticosus*, *Nerium oleander*, *Periploca graeca*, *Prunus lusitanica*, *Pyrus bourgeana*, *Salix* (*atrocinerea, salvifolia*), *Securigera tinctoria*, *Tamarix* (*africana, canariensis, dalmatica, gallica, parviflora, smyrniensis, tetrandia*), *Vitex agnus-castus*.

Lit.: BRAUN-BLANQUET & DE BOLÒS (1958), IZCO et al. (1984).

***Quercetea ilicis* BR.-BL. ex A. DE BOLÒS Y VAYREDA 1950**

Mediterranean evergreen woodland and macchia

Quercetea ilicis BR.-BL. in BR.-BL. et al. 1947 (art. 8)

Quercetea ilicis BR.-BL. in BR.-BL. et al. 1952 (art. 31)

Euphorbieteae dendroidis ZOHARY et ORSHAN 1966 (art. 8)

Acereteae orientalis ZOHARY et ORSHAN 1966 (art. 8)

Paliuretea TRINAJSTIĆ 1978*

Pino halepensis-Querceteae ilicis DE FOUCAULT et JULVE 1991 (art. 5, 8)

Pistacio lentisci-Rhamneteae alaterni JULVE 1993 (art. 5)

Species: *Acer sempervirens*, *Amelanchier cretica*, *Anagyris foetida*, *Anemone palmata*, *Antirrhinum majus* subsp. *cirhigerum*, *Arbutus (andrachne, unedo)*, *Arisarum vulgare* (subsp. *simorrhinum*, subsp. *vulgare**), *Aristolochia (baetica, cretica, sempervirens)*, *Asparagus (acutifolius, stipularis)*, *Asplenium onopteris*, *Ballota pseudodictamnus*, *Biarum arundanum*, *Bryonia cretica*, *Bupleurum (foliosum, fruticosum, gibraltarium, rigidum)* subsp. *paniculatum* and subsp. *rigidum*, *Calicotome spinosa*, *Carex (depressa, distachya, illegitima, olbiensis)*, *Celtis (australis, tournefortii)*, *Ceratonia siliqua*, *Chamaerops humilis*, *Clematis (cirrhosa, flammula)*, *Cneorum tricoccon*, *Colutea atlantica*, *Corema album*, *Cotoneaster nummularia*, *Cupressus sempervirens*, *Cyclamen (baleaicum, creticum, hederifolium, repandum)*, *Daphne gnidium*, *Doronicum plantagineum*, *Ephedra foemina*, *Erica arborea**, *Eryngium tricuspdatum*, *Euphorbia dendroides*, *Festuca triflora*, *Ficus carica*, *Galium (maritimum, scabrum)*, *Gennaria diphylla*, *Hyacinthoides hispanica*, *Jasminum fruticans*, *Juniperus (oxycedrus)* subsp. *macrocarpa, phoenicea*, *Laurus nobilis*, *Lonicera (etrusca, implexa)*, *Luzula nodulosa*, *Lycium schweinfurthii*, *Maytenus senegalensis*, *Moehringia pentandra*, *Myrtus communis*, *Osyris alba*, *Paeonia (broteroi, coriacea)*, *Periploca angustifolia*, *Phillyrea (angustifolia, latifolia)*, *Pinus (halepensis)* subsp. *brutia*, subsp. *halepensis* and subsp. *pihyusa, pinaster, pinea*, *Piptatherum paradoxum*, *Pistacia (atlantica, lentiscus, terebinthus)*, *Prasium majus*, *Prunus webbii*, *Pyrus bourgaeana*, *Quercus (canariensis, coccofera, ilex)* subsp. *ilex* and subsp. *rotundifolia, lusitanica, suber*, *Rhamnus (alaternus, lycioides)* subsp. *lycioides*, subsp. *oleoides* and subsp. *velutinus*, *Rhus pentaphylla*, *Rosa sempervirens*, *Rubia tenuifolia*, *Ruscus (aculeatus*, hypophyllum)*, *Ruta chalepensis*, *Salsola webbii*, *Sanguisorba hybrida*, *Scilla monophyllos*, *Serratula alcalaie*, *Smilax aspera*, *Sorbus umbellata*, *Styrax officinalis*, *Tetraclinis articulata*, *Teucrium (fruticans, salviastrum, scorodonia)* subsp. *baeticum*, *Viburnum tinus*, *Vinca difformis*, *Vincetoxicum nigrum*, *Zelkova abelicea*, *Ziziphus lotus*.

Lit.: DE BOLÒS Y VAYREDA (1950), BRAUN-BLANQUET et al. (1952), RIVAS-MARTÍNEZ et al. (1984, 1995), JULVE (1993).

Semideserts

***Pegano harmalae-Salsoteae vermiculatae* BR.-BL. et O. DE BOLÒS 1958**

Thermomediterranean and Macaronesian halo-nitrophilous semidesert scrub

Species: *Artemisia (arborescens, herba-alba, ramosa, reptans, thuscula)*, *Atriplex (glauca)* subsp. *ifniensis*, *halimus, semibaccata*, *Ballota hirsuta*, *Capparis spinosa**, *Fagonia cretica*, *Forsskalea angustifolia*, *Gonospermum fruticosum*, *Gymnocarpus decander*, *Herniaria fontanesii* subsp. *empedoclana*, *Launaea arborescens*, *Lavandula (buchii, canariensis)*, *Lavatera acerifolia*, *Limonium opulentum*, *Lotus sessilifolius*, *Lycium intricatum*, *Malva arborea*, *Mesembryanthemum (crystallinum*, nodiflorum*)*, *Messerschmidia fruticosa*, *Nicotiana glauca*, *Peganum harmala**, *Ricinus communis*, *Rumex lunaria*, *Salsola (divaricata, oppositifolia)*, *Schizogyne (glaberrima, sericea)*, *Suaeda (pelagica, vermiculata)*, *Withania (aristata, somnifera)*, *Zygophyllum fabago**.

Lit.: BRAUN-BLANQUET & DE BOLÒS (1958), PEINADO & MARTÍNEZ-PARRAS (1984).

***Artemisietea lerchianae* GOLUB 1994 em. hoc loco**

Aralo-Caspian subhalophilous semideserts

Artemisietea lerchianae GOLUB in GOLUB et SAVCHENKO 1986 (art. 5, 8)

Artemisietea lerchianae GOLUB 1987 (art. 1)

Artemisietea lerchianae GOLUB in KOROTKOV et al. 1991 (art. 5, 8)

Artemisietea tchernievianae GOLUB 1994 (syntax. syn.)

Species: *Alhagi pseudalhagi*, *Anabasis aphylla*, *Artemisia (lerchiana, tchernieviana)*, *Astragalus physodes*, *Bassia prostrata**, *Camphorosma monspeliaca**, *Ceratocarpus arenarius*, *Eremopyrum orientale**, *Euphorbia*

*seguieriana**, *Ferula caspica*, *Peganum harmala**, *Petrosimonia oppositifolia**, *Salsola dendroides*, *Stipagrostis karelinii*, *Trigonella arcuata*, *Zygophyllum fabago**.

Note: Semideserts of the Kazakho-Djungarian Desert Region (sensu PETROV sec. WALTER 1968: 728) or Irano-Turanian Subregion of the Saharo-Gobian Desert Region (sensu SAFRONOVA 1996) reach the European territory in the Caspian Lowlands, in regions of the western and northern rims of the Caspian Sea (incl. the Volga Delta). These communities can be seen as the north-westernmost outposts of extensive semideserts having their distribution centre in territories spanning the Caspian Sea and the Sea of Aral. The marginal character of this vegetation type in the Volga Delta is emphasised by the occurrence of numerous elements of the steppe (*Festuco-Brometea*) and salt-steppe (*Puccinellio-Salicornietea*) flora. GOLUB & SAVCHENKO (1986), GOLUB (1987), KOROTKOV et al. (1991) summarised the semideserts in syntaxonomic terms within a single class – *Artemisitea lerchianae* (however, this was invalidly described in all the above-mentioned papers). Later GOLUB (1994b) validly described two classes, such as the *Artemisitea lerchianae* and *Artemisitea tschernievianae*. An analysis of his synoptic table (Tab. 1 in GOLUB & SAVCHENKO 1986) reveals a considerable number of species in common. Therefore I suggest returning to the original concept of a broadly-conceived *Artemisitea lerchianae*. Solving the problem requires a large-scale analysis including data from the neighbouring regions of the semideserts of northern and western Kazakhstan. The emendation unifies two validly described classes – *Artemisitea lerchianae* and *Artemisitea tschernievianae* – and has been applied according to art. 25 of the CPN.

Lit.: GOLUB & SAVCHENKO (1986), GOLUB (1987, 1994b), KOROTKOV et al. (1991), SAFRONOVA (1996).

Classes of the Macaronesian vegetation

Zygophyllo fontanesii-*Polycarpetea niveae* SANTOS GUERRA 1977

Macaronesian halophilous coastal dune scrub

Ammophiletea canariensis ESTEVE CHUECA 1968 (art. 3f, 34)

Species: *Androcymbium psamphyllum*, *Astragalus mareoticus* var. *handiensis*, *Chenoleoides tomentosa*, *Convolvulus caput-medusae*, *Frankenia capitata*, *Herniaria* (*canariensis*, *fontanesii*), *Limonium* (*ovalifolium* subsp. *canariense*, *papillatum* var. *callibotryum*), *Lotus* (*glaucus*, *kunkellii*, *lancerottensis*, *leptophyllum*, *sessilifolius*), *Matthiola fruticulosa* var. *bolleana*, *Minuartia webbii*, *Ononis hebecarpa*, *Orobanche gratioisae*, *Polycarpaea nivea*, *Polygonum balansae* var. *tectifolium*, *Pulicaria burchardii*, *Traganum moquinii*, *Zygophyllum fontanesii*.

Lit.: ESTEVE CHUECA (1968), SANTOS GUERRA (1977).

Kleinio neriifoliae-*Euphorbietea canariensis* (RIVAS GODAY et ESTEVE CHUECA 1965) SANTOS GUERRA 1976

Macaronesian succulent scrub on lava beds (tabaibal and cardonal)

Echino-Euphorbietea macaronesica RIVAS GODAY 1960 (art. 8, 34)

Diacanthio-Euphorbietea macaronesica RIVAS GODAY et ESTEVE CHUECA 1965 (art. 34)

Kleinio-Euphorbietea macaronesica SUNDING 1972 (art. 34)

Species: *Aeonium* (*arborescens*, *lancerottense*, *manriqueorum*, *percarneum*), *Ammodaucus frutescens* subsp. *nanocarpus*, *Argyranthemum* (*frutescens* subsp. *canariae*, subsp. *foeniculaceum*, subsp. *graciliences*, subsp. *parviflorum* and subsp. *pumilum*, *hoaurytheum*, *thalasophyllum*), *Artemisia* (*ramosa*, *thuscula*), *Asparagus* (*arborescens*, *nesiotes* subsp. *nesiotes* and subsp. *pupuriense*), *Atractylis arbuscula*, *Avena canariensis*, *Beta patula*, *Campylanthus salsoloides*, *Caralluma burchardii*, *Carduus* (*baeocephalus*, *bourgaei*), *Ceropegia* (*dichotoma*, *fusca*, *hians*), *Convolvulus scoparius*, *Echium* (*aculeatum*, *brevirame*, *decaisnei*, *triste* subsp. *nivariense* and subsp. *triste*), *Erucastrum* (*canariense*, *cardaminoides*), *Euphorbia* (*anachoreta*, *aphylla*, *balsamifera* subsp. *balsamifera*, *berthelotii*, *canariensis*, *handiensis*, *lamarckii*), *Forskaholea angustifolia*, *Helianthemum thymiphyllum*, *Kickxia scoparia*, *Kleinia neriifolia*, *Lavandula canariensis*, *Limonium fruticans*, *Lolium lowei*, *Messerschmidia fruticosa*, *Misopates salvajensis*, *Neochamaelea pulverulenta*, *Odontospermum stenophyllum*, *Onopordum nogalesii*, *Parolinia* (*aridanae*, *capitata* subsp. *canariensis*, *intermedia*, *ornata*, *schizogynoides*), *Pelleteria wildpretii*, *Periploca laevigata*, *Phagnalon* (*purpurascens*, *umbelliforme*), *Plantago asphodeloides*, *Plocama pendula*, *Reichardia tingitana**, *Reseda* (*lancerotae*, *scoparia*), *Rubia fruticosa* subsp.

fruticosa, *Rumex lunaria*, *Rutheopsis herbanica*, *Salsola marujae*, *Schizogyne (glaberrima, sericea)*, *Scilla (haemorrhoidalis, latifolia)*, *Senecio (bollei, flavus, incrassatus)*, *Sonchus (arboreus, canariensis*, microcarpus)*, *Todaroa aurea* (subsp. *aurea*, subsp. *suaveolens*), *Tolpis laciniata*, *Volutaria (bollei, canariensis)*.

Lit.: RIVAS GODAY & ESTEVE CHUECA (1965), SUNDING (1972), SANTOS GUERRA (1976, 1977), RIVAS-MARTÍNEZ et al. (1993a, b).

***Oleo cerasiformis-Rhamnetea crenulatae* SANTOS in RIVAS-MARTÍNEZ 1987**

Macaronesian matorral and related scrub

Oleo-Rhamnetea crenulatae SANTOS GUERRA 1976 (art. 8)

Cisto monspeliensis-Micromerietea hyssopifoliae PÉREZ DE PAZ et al. 1990 (syntax. syn.)

Species: *Anagyris latifolia*, *Androcymbium hierrense* (subsp. *hierrense*, subsp. *macarospermum*), *Andryala cheiranthifolia*, *Argyranthemum (callichrysum, coronopifolium, dissectum, escarrei, filifolium, foeniculaceum, frutescens subsp. frutescens, gracile, haemathomma, hierrense, maderense, sundingii, webbii, winterii)*, *Asparagus (plocamoides, scoparius, umbellatus subsp. lowei and subsp. umbellatus)*, *Beta procumbens*, *Bosea yervamora*, *Bryonia verrucosa*, *Bupleurum (handiense, salicifolium subsp. acyphyllum and subsp. salicifolium)*, *Bystropogon (odoratissimum, plumosus)*, *Calendula maderensis*, *Carduus clavulatus*, *Carlina salicifolia*, *Chamaemeles coriacea*, *Cheirolophus (arbutifolius, canariensis var. canariensis, duranii, falcisectus, gomerythus, junonianus, massonianus, metlesicii, santos-abreui, satarataensis subsp. diasios and subsp. satarataensis, sventenii subsp. gracilis and subsp. sventenii, tagananensis, webbii)*, *Cistus monspeliensis**, *Convolvulus (floridus, fruticosus, glandulosus, lopezocasi, perraudieri, volubilis)*, *Crambe arborea*, *Crepis (canariensis, divaricata, nonhaea, vesicaria subsp. andryaloides)*, *Dactylis smithii*, *Descurainia (artemisioides, millefolia, praeuxiana)*, *Dorycnium (broussonetii, eriophthalmum)*, *Dracaena draco*, *Dracunculus canariensis*, *Echium (acanthocarpum, bethencourtii, callithyrsom, giganteum, handiense, hierrense, leucophaeum, nervosum, strictum, virescens var. virescens)*, *Erysimum (arbuscula, bicolor)*, *Euphorbia (atropurpurea, lambii, piscatoria)*, *Ferula (lacerottensis, linkii)*, *Fumaria (coccinea, montana)*, *Globularia salicina*, *Gonospermum (canariense, fruticosum, gomerae)*, *Helianthemum (bramwelliorum, broussonetii, fruticosum, gonzales-ferreri, teneriffae, tholiforme)*, *Helichrysum (alucense, devium, melaleucum, monizii, monogynum, obconicum)*, *Hypericum (canariense, glandulosum)*, *Jasminium odoratissimum*, *Justicia hyssopifolia*, *Kunkeliella (canariensis, psilotoclada, retamoides)*, *Lavandula (buchii, pinnata)*, *Lavatera (acerifolia, phoenicea)*, *Limonium (arborescens, bourgaei, brassicaefolium, dendroides, imbricatum, preauxii, puberulum, redivivum, spectabile, sventenii)*, *Lolium canariense*, *Lotus (eremiticus, macranthus)*, *Lysimachia azorica*, *Marcetella (maderensis, moquiniana)*, *Maytenus (canariensis, dryandri, umbellata)*, *Micromeria (lepidia, rivas-martinezii)*, *Olea europaea (subsp. cerasiformis, subsp. maderensis)*, *Ononis angustissima subsp. angustissima*, *Onopordum carduelis*, *Osyris quadripartita var. canariensis*, *Parolinia (filifolia, platypetala)*, *Paronychia (canariensis, capitata subsp. canariensis)*, *Phagnalon bennetii*, *Phalaris maderensis*, *Phoenix canariensis*, *Pimpinella (anagodendron, junoniae)*, *Plantago (arborescens, famarae)*, *Polycarpha filifolia*, *Pterocephalus dumetorum*, *Retama monosperma subsp. rhodorhizoides*, *Rhamnus crenulata*, *Rubia fruticosa subsp. periclymenum*, *Ruta (microcarpa, oreojasme, pinnata)*, *Salvia (broussonetii, canariensis, herbanica)*, *Scilla (latifolia, maderensis)*, *Scrophularia calliantha*, *Senecio (teneriffae, webbii)*, *Sideritis (barbellata, brevicaulis, candidans var. crassifolia and var. multiflora, cretica, cystosiphon, dendrochahorra, ferrensis, infernalis, kuegleriana, marmorea, nervosa, pumila, spicata)*, *Sideroxyton (canariensis, marginata, marmulano)*, *Solanum (lidii, vespertilio)*, *Sonchus (congestus, fruticosus, gandogeri, hierrensis, palmensis, pinnatus, tubifer, wildpretii)*, *Spartocytisus filipes*, *Stachys germanica var. canariensis*, *Tanacetum oshanahani*, *Teline (maderensis, osyroides subsp. osyroides and subsp. serices, rosmarinifolia, stenopetala var. pauciovulata)*, *Teucrium heterophyllum*, *Urtica stachyoides*, *Vicia (capreolata, cirrhosa, ferreirensis, filicaulis, pectinata)*, *Visnea mocanera*.

Lit.: SANTOS GUERRA (1976, 1977), RIVAS-MARTÍNEZ (1987), PÉREZ DE PAZ et al. (1990).

***Pruno hixae-Lauretea azoricae* OBERD. ex RIVAS-MARTÍNEZ et al. 1977**

Macaronesian laurisilva and related scrub

Pruno-Lauretea OBERD. 1960 (art. 8)

Species: *Adenocarpus (foliolosus, ombriosus)*, *Agrostis obtusissimum*, *Ammi huntii*, *Andryala pinnatifida* (subsp. *pinnatifida*, subsp. *praeuxiana*), *Apollonias barbujana*, *Arachnoides webbii*, *Arbutus canariensis*, *Arceutobium azoricum*, *Argyranthemum (adauctum subsp. adauctum, subsp. erythrocarpum, subsp.*

jacobaeifolium and subsp. *palmensis*, *broussonetii* subsp. *broussonetii* and subsp. *gomerensis*), *Armeria maderensis*, *Arum italicum* subsp. *canariensis*, *Asparagus fallax*, *Asplenium* (*aethiopicum* subsp. *braithwaitii*, *hemionitis*), *Bencomia* (*caudata*, *sphaerocarpa*), *Berberis maderensis*, *Bunium brevifolium*, *Bystropogon* (*canariensis*, *maderensis*, *punctatus*, *serrulatus*), *Canarina canariensis*, *Carduus squarrosus*, *Carex* (*canariensis*, *lowei*, *perrauderiana*, *pilulifera* subsp. *azorica*, *puncata* var. *laevicaulis*), *Cedronella canariensis*, *Cerastium azoricum*, *Chamaecytisus proliferus* subsp. *proliferus*, *Cheirilophus arboreus*, *Cirsium latifolium*, *Clethra arborea*, *Convolvulus* (*canariensis*, *massonii*, *Crambe santosii*), *Crambe strigosa*, *Cryptotaenia elegans*, *Culcita macrocarpa*, *Cystopteris diaphragma*, *Daboecia azorica*, *Dactylorhiza foliosa*, *Deschampsia maderensis*, *Diphasiastrum madeirense*, *Diplazium caudatum*, *Dryopteris* (*aitoniana*, *crispifolia*, *guanchica*, *intermedia* subsp. *azorica*, *maderensis*, *oligodonta*), *Ebingeria elegans*, *Echium* (*candidans*, *pininana*), *Elaphoglossum semicylindricum*, *Erica* (*maderensis*, *scoparia* subsp. *maderanicola* and subsp. *platycodon*), *Euphorbia* (*mellifera*, *stygiaca*), *Euphrasia azorica*, *Ferula latipinna*, *Festuca donax*, *Frangula azorica*, *Galium* (*geminiflorum*, *productum*), *Gaudinia coarctata*, *Geranium* (*canariense*, *maderense*, *palmatum*, *rubescens*), *Gesnouinia arborea*, *Goodyera macrophylla*, *Haberdenia excelsa*, *Holcus rigidus*, *Huperzia dentata*, *Hypericum* (*foliosum*, *inodorum*), *Ilex* (*canariensis* var. *canariensis*, *perado* subsp. *azorica*, subsp. *perado* and subsp. *platyphylla*), *Imperatoria lowei*, *Isoplexis* (*canariensis*, *chalcantha*, *sceptrum*), *Ixanthus viscosus*, *Juniperus brevifolia*, *Lactuca watsoniana*, *Laurus azorica*, *Leontodon* (*fili*, *ringens*), *Luzula* (*canariensis*, *elegans*, *purpureo-splendens*, *seubertii*), *Lycopodiella veijae*, *Melanoselinum decipiens*, *Melica* (*canariensis*, *teneriffae*), *Monizia edulis*, *Muschia wollastonii*, *Myosotis* (*azorica*, *discolor* subsp. *canariensis*), *Myrica* (*faya*, *rivas-martinezii*), *Normania* (*navae*, *triphylla*), *Ocotea foetens*, *Odontites holliana*, *Oenanthe divaricata*, *Orchis scopulorum*, *Pericallis* (*appendiculatus*, *aurita*, *cruenta*, *echinata*, *hadrosomus*, *hansenii*, *malviflora*, *multiflorus*, *murrayi*, *papyraceus*, *steezii*, *tussilaginis*, *webbii*), *Persea indica*, *Phyllis nobilis*, *Picconia* (*azorica*, *excelsa*), *Pittosporum coriaceum*, *Plantago subspatulata*, *Platanthera micrantha*, *Pleiomis canariensis*, *Poa pitardiana*, *Polypodium* (*drepanum*, *falcinellum*, *webbianum*), *Prunus lusitanica* (subsp. *azorica*, subsp. *hixa*), *Pteris incompleta*, *Ranunculus cortusifolius*, *Rhamnus glandulosa*, *Rosa mandonii*, *Rubus* (*bollei*, *canariensis*, *concolor*, *grandiflorus*, *hochstetterorum*, *palmensis*, *vahli*), *Rumex* (*azoricus*, *maderensis*), *Ruscus streptophyllus*, *Salix canariensis*, *Sambucus* (*lanceolata*, *palmensis*), *Sanicula azorica*, *Scrophularia* (*hirta*, *racemosa*, *smithii* subsp. *hierrensis*, subsp. *langeana* and subsp. *smithii*), *Semele* (*androgyna*, *gayae*), *Sibthorpia peregrina*, *Sideritis* (*canariensis*, *candidans* var. *candidans*, *discolor*, *lotzii*, *macrostachys*), *Smilax* (*canariensis*, *divaricata*, *excelsa*, *mauritanica*), *Solanum patens*, *Sorbus maderensis*, *Teline* (*canariensis*, *splendens*, *stenopetala* subsp. *micropetala* and subsp. *stenopetala*), *Teucrium* (*abutiloides*, *betonium*), *Trichomanes speciosum*, *Urtica morifolia*, *Vaccinium cylindraceum*, *Vaccinium padifolium*, *Viburnum tinus* (subsp. *rigidum*, subsp. *subcordatum*), *Vicia* (*scandens*, *anagae*), *Viola* (*kitabeliana* var. *brevicalcarata*, *plantaginea*), *Woodwardia radicans*.

Lit.: OBERDORFER (1960), RIVAS-MARTÍNEZ et al. (1993a, b).

Cytiso-Pinetea canariensis RIVAS GODAY et ESTEVE CHUECA ex SUNDING 1972

Canarian pine woods and related scrub

Cytiso-Pinetea canariensis RIVAS GODAY et ESTEVE CHUECA 1965 (art. 8)

Cytiso-Pinetea canariensis RIVAS GODAY et ESTEVE CHUECA in ESTEVE CHUECA 1969 (art. 8)

Species: *Adenocarpus viscosus* (var. *spartioides*, var. *viscosus*), *Andryala pinnatifida* var. *teydea*, *Argyranthemum* (*adauctum* subsp. *canariense*, subsp. *dugorii* and subsp. *gracile*, *haouatrytheum*, *sventenii*, *vincentii*), *Barlia metlesicsiana*, *Bencomia brachystachya*, *Bystropogon* (*canariensis* var. *smithianus*, *origanifolius*, *wildpretii*), *Carlina canariensis*, *Chamaecytisus proliferus* (subsp. *angustifolius* var. *calderae*, subsp. *angustifolius* var. *perezii*, subsp. *meridionalis*), *Cicer canariensis*, *Cistus* (*chinamadensis* subsp. *chinamadensis* and subsp. *gomerensis*, *symphytifolius* var. *leocophyllus* and var. *symphytifolius*), *Dentropoterium* (*menendezii*, *pulidoi*), *Descurainia* (*gilva*, *lemsii*), *Echium* (*onosmifolium*, *sventenii*, *virescens* var. *angustissimum*, *webbii*), *Globularia ascanii*, *Helianthemum* (*bystropogophyllum*, *cirae*, *inaguae*, *lini*), *Isoplexis isabelliana*, *Lactuca palmensis*, *Lavandula minutolii*, *Lotus* (*berthelotii*, *campylocladus*, *genistoides*, *hillebrandtii*, *holosericeus*, *pyranthus*, *spartioides*), *Micromeria* (*benthamii*, *hyssopifolia*, *lachnophylla*, *lanata*, *lasiophylla* subsp. *lasiophylla* and subsp. *palmensis*, *pineolens*, *tenuis*), *Orchis canariensis*, *Pimpinella cumbrae*, *Pinus canariensis*, *Plantago webbii*, *Polycarpha aristata*, *Romulea grandiscapa*, *Scrophularia glabrata*,

Sideritis (dasygnaphala, eriocephala, oroteneriffae, soluta, sventenii), *Teline (microphylla, stenopetala var. spachiana)*, *Todaroa montana*, *Tolpis (lagopoda, webbii)*.

Lit.: RIVAS GODAY & ESTEVE CHUECA (1965), ESTEVE CHUECA (1969), SUNDING (1972), VOGGENREITER (1974), RIVAS-MARTÍNEZ et al. (1993a, b).

***Spartocytisetea supranubii* SCHÖNFELDER et VOGGENREITER 1994**

Canarian high-mountain volcanic semideserts

Spartocytisetea nubigeni VOGGENREITER 1974 (art. 3b, 8)

Spartocytisetea nubigeni VOGGENREITER 1975 (art. 3b, 8)

Violetea cheiranthifoliae VOGGENREITER 1975 (art. 8)

Species: *Argyranthemum teneriffae*, *Arrhenatherum calderae*, *Bencomia exstipulata*, *Bromus madritensis* subsp. *kunkelii*, *Cheirolophus teydis*, *Descurainia (bourgaeana, gonzalezii)*, *Echium (auberianum, gentianoides, wildpretii)* subsp. *trichosiphon* and subsp. *wildpretii*), *Erigeron calderae*, *Erysimum scoparium*, *Genista benehoavensis*, *Helianthemum juliae*, *Juniperus cedrus*, *Nepeta teydea*, *Polycarpaea tenuis*, *Pterocephalus lasiospermus*, *Pterocephalus porphyranthus*, *Sideritis eriocephala*, *Silene nocteolens*, *Spartocytisus supranubius*, *Stemmacantha cynaroides*, *Tolpis webbii*, *Viola (cheiranthifolia, palmensis)*.

Lit.: VOGGENREITER (1974, 1975), SCHÖNFELDER & VOGGENREITER (1994).

***Aeonio-Greenovietea* SANTOS GUERRA 1976**

Macaronesian chasmophytic vegetation of exposed volcanic rocks

Greenovio-Aeonietea SANTOS GUERRA 1976 nom. inv. illegit. sensu auct. (art. 42)

Species: *Aeonium (balsamiferum, canariense, ciliatum, cuneatum, davidbrawwelii, decorum, glandulosum, glutinosum, gomerense, goochiae, haworthii, hierrense, lindleyi, nobile, palmense, pseudourbicum, rubrolineatum, sedifolium, simsii, smithii, spathulatum, subplanum, tabuliforme, undulatum, urbicum, valverdense, virgineum, xouchardii)*, *Aichryson (bethencourtianum, bollei, divaricatum, dumosum, laxum, pachycaolon, palmense, parlatoei, porphyrogenetos, villosum)*, *Allagoppapus (dichotomus, viscosissimus)*, *Anthyllis lemmaniana*, *Asplenium parvifolium*, *Babcokia platylepis*, *Brachypodium arbuscula*, *Cerastium (sventenii, vagans)*, *Ceropegia kainzii*, *Crambe (feuillei, fruticosa, gomerae, laevigata, scaberrima, sventenii)*, *Crepis vesicaria* subsp. *andryaloides*, *Deschampsia (foliosa, maderensis)*, *Dicheiranthus plocamoides*, *Echium simplex*, *Erysimum maderense*, *Festuca (agustini, petraea)*, *Globularia sarcophylla*, *Greenovia (aizoon, aurea, diplocycla, dodrentalis, xrowleyi)*, *Habenaria tridactylites*, *Helichrysum gossypinum*, *Hypericum reflexum*, *Hypochaeris oligocephala*, *Lotus (borzii, callis-viridis, dumetorum)*, *Lugoa revoluta*, *Micromeria (glomerata, helianthemifolia, leucantha, platyphylla, teneriffae)*, *Monanthes (adenoscepes, anagaensis, brachycaulon, dasyphylla, icterica, laxiflora, lowei, minima, muralis, niphophylla, pallens, polyphylla, praegerii, purpurascens, silensis, subcrassicaulis, wildpretii)*, *Monyzia edulis*, *Muschia aurea*, *Ononis christii*, *Pancratium canariense*, *Parafestuca albida*, *Parietaria filamentosa*, *Pericallis lanata*, *Phyllis viscosa*, *Pimpinella (dendrotragium, rupicola)*, *Plantago leiopetala*, *Polycarpaea (carnosa, smithii)*, *Prenanthes pendula*, *Pterocephalus virens*, *Reichardia (famarae, ligulata)*, *Rhamnus integrifolia*, *Saxifraga (maderensis, portosanctana)*, *Scilla maderensis*, *Scrophularia lowei*, *Sedum (brissemoretii, farinosum, nudum)* subsp. *lacerotense* and subsp. *nudum*), *Senecio (hermosae, palmensis)*, *Sideritis (gomerae, nutans)*, *Silene (berthelotiana, bourgaei, lagunensis, pogonocalyx, sabinosae)*, *Sinapidendron (angustifolium, frutescens, gymnocalyx, rupestre, sempervivifolium)*, *Sonchus (acaulis, bornmuelleri, brachylobus, congestus, fauces-orci, gonzalez-padronii, gummifer, tectifolius, ustulatus)*, *Sutera canariensis*, *Sventenia bupleuroides*, *Taeckholmia capillaris*, *Tanacetum (ferulaceum, ptarmiciflorum)*, *Teline (pallida, stenopetala var. sericea)*, *Thymus organoides*, *Tinguarra cervariaefolia*, *Tolpis (azorica, calderae, crassiuscula, macrorrhiza, succulenta)*, *Urtica portosanctana*, *Vieraea laevigata*, *Viola paradoxa*.

Lit.: SANTOS GUERRA (1976, 1977), RIVAS-MARTÍNEZ et al. (1993a, b).

Acknowledgements: Thanks to Sandro Pignatti for the idea of compiling this Conspectus. Sandro Pignatti and Harald Niklfeld put their libraries at my disposal. Salvatore Brullo, Andraž Čarni, Jean-Marie Géhu, Valentin Golub, Salvador Rivas-Martínez, Irina Safronova, Arnoldo Santos, Vladimir Solomakha, Aizyk Solomeshch, Jean-Paul Theurillat and Milan Valachovič further provided less accessible literature sources. Milan Valachovič, Karol Marhold and Panayiotis Dimopoulos corrected several check-lists of diagnostic species.

Special thanks to Arnaldo Santos Guerra, who corrected and up-dated the lists of diagnostic species for the Macaronesian classes. Milan Chytrý, Xavier Font, Jean-Marie Géhu, Philippe Julve, Javier Loidi, Jaroslav Moravec, Sandro Pignatti, Joop Schaminée, Jean-Paul Theurillat and Heinrich E. Weber criticised parts of the early versions of the Conspectus. I apologise for not having accepted all of their ideas. All omissions and mistakes resulting therefrom go on my account. The English of the final version was kindly corrected by Janine Victor and David Hoare. This work was in part supported by the University of Rome "La Sapienza" where I spent a period of guest-professorship. In part this was logistically supported by the Austrian Science Foundation (FWF), Project P10466-BIO.

REFERENCES

- BARBERO M. & BONIN G. (1969): Signification biogéographique et phytosociologique des pelouses écorchées des massifs méditerranéens nord-occidentaux, des Apennins et des Balkans septentrionaux (*Festuco-Seslerietea*). *Bull. Soc. Bot. France* 116: 227-243.
- BARKMAN J.J., MORAVEC J. & RAUSCHERT S. (1986): Code of phytosociological nomenclature. Ed. 2. *Vegetatio* 67: 145-195.
- BARTOLO G. & BRULLO S. (1993): La classe *Crithmo-Limonietea* in Sicilia (The class of *Crithmo-Limonietea* in Sicily). *Boll. Accad. Gioenia Sci. Nat. Catania* 26: 5-47.
- BARTOLO G., BRULLO S., MINISALE P. & SPAMPINATO G. (1988): Flora e vegetazione dell'Isola di Lampedusa (Flora and vegetation of the Island of Lampedusa). *Boll. Accad. Gioenia Sci. Nat. Catania* 21: 119-255.
- BEEFTINK W.G. (1962): Conspectus of the phanerogamic salt plant communities in the Netherlands. *Biol. Jaarb.* 1962: 325-362.
- BEEFTINK W.G. (1968): Die Systematik der europäischen Salzpflanzengesellschaften. In: TÜXEN R. (ed.), *Pflanzensoziologische Systematik*, Dr. W. Junk, Den Haag, pp. 239-263.
- BEEFTINK W.G. & GÉHU J.-M. (1973): *Prodrome des groupements végétaux d'Europe. Livraison 1. Spartinetea maritima*. J. Cramer, Lehre.
- BRAUN-BLANQUET J. (1933): *Prodrome des groupements végétaux. Prodromus der Pflanzengesellschaften. Ammophiletalia et Salicornietalia médit.* Mari-Lavit, Montpellier.
- BRAUN-BLANQUET J. (1948): *La végétation alpine des Pyrénées orientales*. Consejo Superior de Investigaciones Científicas, Barcelona.
- BRAUN-BLANQUET J. (1949): Übersicht der Pflanzengesellschaften Rätians (III). *Vegetatio* 1: 285-316.
- BRAUN-BLANQUET J. (1955): Das *Sedo-Scleranthion* – neu für die Westalpen. *Österr. Bot. Z.* 102: 476-485.
- BRAUN-BLANQUET J. (1961): *Die inneralpine Trockenvegetation*. Gustav Fischer, Stuttgart.
- BRAUN-BLANQUET J. (1964): *Pflanzensoziologie. Grundzüge der Vegetationskunde*. Ed. 3. Springer, Wien.
- BRAUN-BLANQUET J. (1967): Vegetationskizzen aus dem Baskenland mit Ausblicken auf das weitere Ibero-Atlantikum. II. Teil. *Vegetatio* 14: 1-126.
- BRAUN-BLANQUET J. (1974): *Fragmenta phytosociologica mediterranea. II. – La végétation des landes calcifuges à cistes de la plaine languedocienne*. *Rev. Biol. Ecol. Médit.* 1: 53-62.
- BRAUN-BLANQUET J. & DE BOLÒS O. (1958): Les groupements végétaux du bassin moyen de l'Ebre et leur dynamisme. *Anales Estac. Exp. Aula Dei* 5 (1957): 1-266.
- BRAUN-BLANQUET J., EMBERGER L. & MOLINIER R. (1947): *Instructions pour l'établissement de la Carte des groupements végétaux*. Causse Graille Castelnau, Montpellier.
- BRAUN-BLANQUET J., MOLINIER R. & WAGNER H. (1940): *Prodrome des groupements végétaux. Prodromus der Pflanzengesellschaften. Cisto-Lavanduletea (landes siliceuses à Cistes et Lavandes)*. Mari-Lavit, Montpellier.
- BRAUN-BLANQUET J., PINTO DA SILVA A.R. & ROZEIRA A. (1964): Resultados de trois excursions géobotaniques à travers de Portugal septentrional et moyen. III. Landes à cistes et ericacées (*Cisto-Lavanduletea* et *Calluno-Ulicetea*). *Agron. Lusit.* 23: 229-312.
- BRAUN-BLANQUET J., ROUSSINE N. & NÈGRE R. (1952): *Les groupements végétaux de la France Méditerranéenne*. C.N.R.S., Montpellier.
- BRAUN-BLANQUET J., SISSINGH G. & VLIÉGER J. (1939): *Klasse der Vaccinio-Piceetea. (Nadelholz- und Vaccinienheiden-Verbände der eurosiberisch-nordamerikanischen Region)*. Mari-Lavit, Montpellier.

- BRAUN-BLANQUET J. & TÜXEN R. (1943): Übersicht der höheren Vegetationseinheiten Mitteleuropas. *Commun. Stat. Int. Geobot. Médit. Alpine Montpellier* 84: 1-10.
- BRAUN-BLANQUET J. & TÜXEN R. (1952): Irische Pflanzengesellschaften. *Veröff. Geobot. Inst. Rübel Zürich* 25: 224-415.
- BRIDGEWATER P.B. (1980): Phytosociological studies in the British heath formation. 1. Heaths of the *Ulicetalia minoris* (P. DUVIGN. 1944) J.M. GÉHU 1973. *Phytocoenologia* 8: 191-235.
- BRULLO S. (1983): Contributo alla conoscenza della vegetazione delle Madonie (Sicilia settentrionale) (Contribution to knowledge on vegetation of the Madonie (northern Sicily)). *Boll. Accad. Gioenia Sci. Nat. Catania* 16: 351-420.
- BRULLO S., LO GIUDICE R. & PRIVITERA M. (1989): La classe *Adiantetea* in Sicilia (The class of *Adiantetea* in Sicily). *Arch. Bot. Ital.* 65: 81-99.
- BRULLO S. & MARCENÓ C. (1985): Contributo alla conoscenza della vegetazione nitrofila della Sicilia (Contribution to knowledge on nitrophilous vegetation of Sicily). *Colloq. Phytosoc.* 12: 23-148.
- CANO CARMONA E. & GARCÍA-FUENTES A. (1994): Estado actual de la clase *Ruderali-Secalietae cerealis* BR.-BL. 1936 en el sur de la Península Ibérica (Andalucía, España). *Monogr. Fl. Veg. Béticas* 7/8: 35-76.
- CHRISTODOULAKIS D. & GEORGIADIS T. (1990): The vegetation of the island of Samos, Greece. *Ann. Mus. Goulandris* 8: 45-80.
- DE BOLÒS Y VAYREDA A. (1950): *Vegetación de las comarcas Barcelonesas*. Instituto Español de Estudios Mediterráneos, Barcelona.
- DE BOLÒS O. & MASCLANS F. (1955): La vegetación de los arrozales en la región mediterránea. *Collect. Bot. (Barcelona)* 4: 415-434.
- DE FOUCAULT B. (1988): *Les végétations herbacées basses amphibies: Systémique, structuralisme, synsystème*. J. Cramer, Berlin.
- DE FOUCAULT B. (1990): Essai sur une ordination synsystème des landes continentales a boréo-alpines. *Doc. Phytosoc. N.S.* 12: 151-174.
- DE FOUCAULT B. (1994): Essai synsystème sur les pelouses sèches acidophiles (*Nardetea strictae*, *Caricetea curvulae*). *Colloq. Phytosoc.* 22: 431-456.
- DE FOUCAULT B., RAMEAU J.-C. & ROYER J.-M. (1983): Essai de synthèse syntaxonomique sur les groupements des *Trifolio-Geranietea sanguinei* MÜLLER 1961 en Europe centrale et occidentale. *Colloq. Phytosoc.* 8: 445-461.
- DEN HARTOG C. (1983): Synecological classification of aquatic plant communities. *Colloq. Phytosoc.* 10: 171-182.
- DEN HARTOG C. & SEGAL S. (1964): A new classification of the water-plant communities. *Acta Bot. Neerl.* 13: 367-393.
- DIEMONT W.H., SISSINGH G. & WESTHOFF V. (1940): Het dwergbiezenverbond (*Nanocyperion flavescens*) in Nederland (The alliance of dwarf rushes (*Nanocyperion flavescens*) in the Netherlands). *Ned. Kruidk. Arch.* 50: 215-284.
- DIERSCHKE H. (1974): Saumgesellschaften im Vegetations- und Standortsgefälle an Waldrändern. *Scripta Geobot.* 6: 1-246.
- DIERSCHKE H. (1990): Syntaxonomische Gliederung des Wirtschaftsgrünlandes und verwandter Pflanzengesellschaften (*Molinio-Arrhenatheretea*) in Westdeutschland. *Ber. Reinhold-Tüxen-Ges.* 2: 83-89.
- DIERSCHKE H. (1994): *Pflanzensoziologie*. Eugen Ulmer, Stuttgart.
- DIERSCHKE H. (1995): Syntaxonomical survey of *Molinio-Arrhenatheretea* in Central Europe. *Colloq. Phytosoc.* 23: 387-399.
- DIERSSEN K. (1975): *Prodromus der europäischen Pflanzengesellschaften*. 2. Littorelletea uniflorae. J. Cramer, Vaduz.
- DIERSSEN K. (1980): Some aspects of the classification of oligotrophic and mesotrophic mire communities in Europe. *Colloq. Phytosoc.* 7: 399-423.
- DIERSSEN K. (1982): *Die wichtigsten Pflanzengesellschaften der Moore NW-Europas*. Conservatoire et Jardin botanique, Genève.
- DIERSSEN K. (1992): Zur Systematik nordeuropäischer Vegetationstypen. 1. Alpine Vegetation und floristisch verwandte Vegetationseinheiten tieferer Lagen sowie der Arktis. *Ber. Reinhold-Tüxen-Ges.* 4: 191-226.
- DIERSSEN K. (1996): *Vegetation Nordeuropas*. Verlag Eugen Ulmer, Stuttgart.

- DIMOPOULOS P. & GEORGIADIS T. (1995): Present state of the phytosociological research on the Greek mountains, syntaxonomy and future perspectives. *Ann. Bot. (Rome)* 53: 119-133.
- DIMOPOULOS P., ŠYKORA K.V., MUCINA L. & GEORGIADIS T. (1997): The high-rank syntaxa of the vegetation of the rock-cliff and scree vegetation of the mainland Greece and Crete. *Folia Geobot. Phytotax.* (in print).
- DOING H. (1962): *Systematische Ordnung und floristische Zusammensetzung niederländischer Wald- und Gebüschgesellschaften*. North-Holland Publ. Co., Amsterdam.
- DONIȚA N., IVAN D., COLDEA G., SANDA V., POPESCU A., CHIFU T., PAUCĂ-COMĂNESCU M., MITTELU D. & BOȘCAIU N. (1992): *Vegetația României (Vegetation of Romania)*. Editura Tehnică Agricolă, București.
- DU RIETZ G.E. (1954): Die Mineralbodenwasserzeigergerne als Grundlage einer natürlichen Zweigleiderung der nord- und mitteleuropäischen Moore. *Vegetatio* 5/6: 571-585.
- DUVIGNEAUD P. (1949): Classification phytosociologique des tourbières de l'Europe. *Bull. Soc. Roy. Bot. Belgique* 81: 58-129.
- EGGLER J. (1952): Übersicht der höheren Vegetationseinheiten der Ostalpen. *Mitt. Naturwiss. Vereins Steiermark* 81/82: 28-41.
- ELLENBERG H. (1986): *Vegetation Mitteleuropas mit den Alpen in Ökologischer Sicht*. Ed. 4. Eugen Ulmer, Stuttgart.
- ERNST W. (1974): *Schwermetallvegetation der Erde*. Gustav Fischer, Stuttgart.
- ERNST W. (1976): *Prodrum der europäischen Pflanzengesellschaften*. 3. *Violetea calamariae*. J. Cramer, Vaduz.
- ESTEVE CHUECA F. (1968): Datos para el estudio de las clases *Ammophiletea*, *Juncetea* y *Salicornietea* en las Canarias Orientales. *Collect. Bot. (Barcelona)* 7: 303-323.
- ESTEVE CHUECA F. (1969): Estudio de las alianzas y asociaciones del orden *Cytiso-Pinetalia* en las Islas Canarias Orientales. *Bol. Real Soc. Esp. Hist. Nat., Secc. Biol.* 67: 77-104.
- FEOLI E. & LAGONEGRO M. (1982): Syntaxonomical analysis of beech woods in the Apennines (Italy) using the program package IAHOPA. *Vegetatio* 50: 129-173.
- FREMSTAD E. & ELVEN R. (eds.) (1991): *Enheder for vegetasjinskartlegging i Norge (Units for vegetation mapping in Norway)*. NINA, Trondheim.
- FREY W., FRAHM J.-P., FISCHER E. & LOBIN W. (1995): *Die Moos- und Farnpflanzen Europas*. Ed. 6. Gustav Fischer, Stuttgart.
- FUKAREK P. & FABIJANIĆ B. (1968): Versuch einer Pflanzensoziologischen Gliederung der Wald- und Šibljak-Gesellschaften Bosniens und der Hercegovina. In: TÜXEN R. (ed.), *Pflanzensoziologische Systematik*, Dr. W. Junk, Den Haag, pp. 112-123.
- GAMISANS J. (1977): La végétation des montagnes corses. Deuxième partie. *Phytocoenologia* 4: 35-131.
- GAMISANS J. (1991): *La végétation de la Corse*. Conservatoire et Jardin botanique, Genève.
- GÉHU J.-M. (1968): Essai sur la position systématique des végétations vivaces halo-nitrophiles des côtes Atlantiques Françaises (*Agropyretea pungentis* Cl. Nov.). *Bull. Soc. Bot. N. France* 21: 73-77.
- GÉHU J.-M. (1994): Schéma synsystématique et typologie des milieux littoraux français atlantiques et méditerranéens. *Colloq. Phytosoc.* 22: 183-212.
- GÉHU J.-M. & BIONDI E. (1994): Végétation du littoral de la Corse: Essai de synthèse phytosociologique. *Braun-Blanquetia* 13: 1-149.
- GÉHU J.-M., DE FOUCAULT B. & DELELIS-DUSOLLIER A. (1984): Essai sur un schéma synsystématique des végétations arbustives preforestières de l'Europe occidentale. *Colloq. Phytosoc.* 8: 463-479.
- GÉHU J.-M. & GÉHU J. (1969): Les associations végétales des dunes mobiles et des bordures de plages de côte atlantique française. *Vegetatio* 18: 122-166.
- GÉHU J.-M. & GÉHU-FRANCK J. (1992): Considérations taxonomiques et syntaxonomiques sur les végétations halophiles de l'estuaire du fleuve St Laurent (Québec, Canada) et des îles de la Madeleine. *Colloq. Phytosoc.* 8: 261-321.
- GEORGIADIS T. & DIMOPOULOS P. (1993): Etude de la végétation supraforestière du Mont Kyllini (Péloponnèse-Grèce). *Bot. Helv.* 103: 149-175.
- GOLUB V.B. (1986): Soobshchestva *Glycyrrhizetea glabrae* na Nizhneï Volge (Communities of the *Glycyrrhizetea glabrae* at Lower Volga). In: MIRKIN B.M. (ed.), *Voprosi dinamiki i sintaksonomii antropogennoi rastitel'nosti SSSR s ispol'zovaniem floristicheskikh kriteriev (Classification of vegetation of the USSR using floristic criteria)*, Izd. Mosk. Univ., Moskva, pp. 159-172.

- GOLUB V.B. (1987): *K sintaksonomicheskoj kharakteristike pastbishchnykh pustynnykh soobshchestv del'ty Volgi (Syntaxonomic description of pasture desert communities in the Volga Delta)*. VINITI Manuscript No. N5424-V87, Moskva.
- GOLUB V.B. (1994a): Class *Asteretea tripolium* on the territory of the former USSR and Mongolia. *Folia Geobot. Phytotax.* 29: 15-54.
- GOLUB V.B. (1994b): The desert vegetation communities of the Lower Volga Valley. *Feddes Repert.* 105: 499-515.
- GOLUB V.B. (1995): *Halophytic, desert and semi-desert plant communities on the territory of the former USSR*. Russian Academy of Sciences, Institute of Ecology of the Volga River Basin, Togliatti.
- GOLUB V.B. & ČORBADŽE N.B. (1989): The communities of the order *Halostachyetalia* TOPA 1939 in the area of western substeppe Ilmens of the Volga delta. *Folia Geobot. Phytotax.* 24: 113-130.
- GOLUB V.B. & MIRKIN B.M. (1986): Grasslands of the Lower Volga Valley. *Folia Geobot. Phytotax.* 21: 337-395.
- GOLUB V.B. & SAVCHENKO I.V. (1986): Floristicheskaya klassifikaciya pustynnykh soobshchestv del'ty r. Volgi (Floristic classification of desert communities of the Volga Delta). In: MIRKIN B.M. (ed.), *Voprosi dinamiki i sintaksonomii antropogennoj rastitel'nosti (Problems of dynamics and syntaxonomy of anthropogenic vegetation)*, Bashkirskij Gos. Univ., Ufa, pp. 17-26.
- GÖRS S. (1968): Der Wandel der Vegetation im Naturschutzgebiet Schwenninger Moos unter dem Einfluß des Menschen in zwei Jahrhunderten. *Natur- u. Landschaftsschutzgeb. Baden-Württ.* 5: 191-284.
- GÖRS S. & MÜLLER T. (1969): Beitrag zur Kenntnis der nitrophilen Saumgesellschaften Süwestdeutschlands. *Mitt. Florist.-Soziol. Arbeitsgem. N.F.* 14: 153-168.
- GREUTER W., BURDET H.M. & LONG G. (eds.) (1984-1989): *Med-Checklist 1, 3, 4*. Conservatoire et Jardin botanique, Genève.
- GUNNLAUGSDÓTTIR E. (1985): Composition and dynamical status of heathland communities in Iceland in relation to recovery measures. *Acta Phytogeogr. Suec.* 75: 1-84.
- HADAČ E. (1946): The plant-communities of Sassen Quarter, Vestspitsbergen. *Stud. Bot. Českoslov.* 7: 127-164.
- HADAČ E. (1956): *Rostlinné společenstva Temnosmrečínové doliny ve Vysokých Tatrách (Plant communities of the Temnosmrečínová Dolina in the High Tatra)*. Vydavateľstvo SAV, Bratislava.
- HADAČ E. (1970): Sea-shore communities of Reykjanes Peninsula, SW Iceland (Plant communities of Reykjanes Peninsula, part 2). *Folia Geobot. Phytotax.* 5: 133-144.
- HADAČ E. (1972): Fell-field and heath communities of Reykjanes Peninsula, SW Iceland (Plant communities of Reykjanes Peninsula, Part 5). *Folia Geobot. Phytotax.* 7: 349-380.
- HADAČ E. (1981): Rostlinná společenstva pramenišť (Plant communities of water-springs). *Zprávy Českoslov. Bot. Společn.* 16, Materiály 2: 58-60.
- HADAČ E. (1983): A survey of plant communities of springs and mountain brooks in Czechoslovakia. *Folia Geobot. Phytotax.* 18: 339-362.
- HADAČ E. & SOFRON J. (1980): Notes on syntaxonomy of cultural forest communities. *Folia Geobot. Phytotax.* 15: 245-258.
- HANSEN A. & SUNDING P. (1985): Flora of Macaronesia. Check-list of vascular plants. Ed. 3. *Sommerfeltia* 1: 1-167.
- HARTMANN F.-K. (1974): *Mitteleuropäische Wälder*. Gustav Fischer, Stuttgart.
- HARTMANN F.-K. & JAHN G. (1967): *Waldgesellschaften des mitteleuropäischen Gebirgsraumes nördlich der Alpen I*. Gustav Fischer, Stuttgart.
- HORVAT I. (1959): Sistematski odnosi termofilnih hrastovih i borovih šuma Jugoistočne Evrope (Systematic relations of thermophilous shrubbery and pine woods of southeastern Europe). *Biol. Glasn.* 12: 1-40.
- HORVAT I., GLAVAČ V. & ELLENBERG H. (1974): *Vegetation Südosteuropas*. Gustav Fischer, Stuttgart.
- HUML O., LEPŠ J., PRACH K. & REJMÁNEK M. (1979): Zur Kenntnis der Quellfluren, alpinen Hochstaudenfluren und Gebüsche des Fägäraş-Gebirges in den Südkarpaten. *Preslia* 51: 35-45.
- HÜPPE J. & HOFMEISTER H. (1991): Syntaxonomische Fassung und Übersicht über die Ackerunkrautgesellschaften der Bundesrepublik Deutschland. *Ber. Reinhold-Tüxen-Ges.* 2: 61-81.
- ISHBIRDIN A.R., MIRKIN B.M., SOLOMESHCH A.I. & SAKHAPOV M.T. (1988): *Sintaksonomiya, ekologiya i dinamika ruderal'nykh soobshchestv Bashkirii (Syntaxonomy, ecology and dynamics of ruderal communities of Bashkiria)*. Bashkirskij Nauchnyj Tsentr Ural'skogo Otdeleniya Akademii Nauk SSSR, Ufa.

- IZCO J., FERNÁNDEZ F. & MOLINA A. (1984): El orden *Tamaricetalia* BR.-BL. & BOLÔS 1957 y su ampliación con los tarayales hiperhalófilos. *Doc. Phytosoc. N.S.* 8: 377-392.
- JAKUCS P. (1960): Nouveau classement cénologique des bois de chênes xérophiles (*Quercetea pubescenti-petraeae* cl. nova) de l'Europe. *Acta Bot. Acad. Sci. Hung.* 6: 267-303.
- JAKUCS P. (1961): *Die phytözöologischen Verhältnisse der Flaumeichen-Buschwälder Südostmitteleuropas.* Akadémiai Kiadó, Budapest.
- JAKUCS P. (1967): Gedanken zur höheren Systematik der europäischen Laubwälder. *Contr. Univ. "Babeş-Bolyai" Bot. Cluj-Napoca* 1967: 159-166.
- JALAS J. & SUOMINEN J. (eds.) (1972-1994): *Atlas florae europaeae 1-10.* Helsinki Univ. Printing House, Helsinki.
- JENÍK J., BUREŠ L. & BUREŠOVÁ Z. (1980): Syntaxonomic study of vegetation in Velká Kotlina Cirque, the Sudeten Mountains. *Folia Geobot. Phytotax.* 15: 1-28.
- JULVE P. (1993): Synopsis phytosociologique de la France (communautés de plantes vasculaires). *Lejeunia N.S.* 140: 1-160.
- JURKO A. (1963): Zmeny pôvodných lesných fytoocenóz introdukciovú agátu (Changes in original woodland phytocoenoses after introduction of black locust). *Českoslov. Ochr. Přír.* 1: 56-75.
- JURKO A. & PECIAR V. (1963): Pflanzengesellschaften an schattigen Felsen in den Westkarpaten. *Vegetatio* 11: 199-209.
- KARPOV D.N. (1985): Associacii solonnetsechvatykh stepей Bashkirskogo Predural'ya (Associations of solonetz steppes of the Bashkirian Predural'e). In: MIRKIN B.M. (ed.), *Fitotsenologiya antropogennoi' rastitel'nosti* (*Phytosociology of anthropogenic vegetation*), Bashkirskii Gosudarstvennyi' Universitet, Ufa, pp. 124-132.
- KARPOV D.N. & MIRKIN B.M. (1985): Novyi' klass rastitel'nosti pastbishch na solonchakakh – *Festuco-Limonietea* cl. nova (*Festuco-Limonietea* – a new class of vegetation of solonetz-steppe pastures). In: MIRKIN B.M. (ed.), *Antropogennye processy v rastitel'nosti* (*Anthropogenic processes in vegetation*), Izd. Bashk. Filiala Akad. Nauk SSSR, Ufa, pp. 6-20.
- KLAUCK E.-J. (1992): *Hieracium murorum* L. in helio-thermophil-azidoklinen Säumen und Staudenfluren. *Tuexenia* 12: 147-173.
- KLEIN J.C. (1972): Le *Genisteto-Carlinetum macrocephalae* ass. nov. de l'étage montagnard et le *Ligusticetum corsici* ass. nov. de l'étage subalpin des Massifs des Cinto et du Campotile Orientale. *Vegetatio* 25: 311-334.
- KLIKA J. (1948): *Rostlinná sociologie (fytoocenologie) (Plant sociology (phytoecology))*. Melantrich, Praha.
- KLIKA J. & HADAČ E. (1944): Rostlinná společenstva střední Evropy (Plant communities of Central Europe). *Příroda* 36: 1-26.
- KLIKA J. & NOVÁK V. (eds.) (1941): *Praktikum rostlinné sociologie, půdoznalství, klimatologie a ekologie (Handbook of plant sociology, pedology, climatology and ecology)*. Melantrich, Praha.
- KOPECKÝ K. (1969): Zur Syntaxonomie der natürlichen nitrophilen Saumgesellschaften in der Tschechoslowakei und zur Gliederung der Klasse *Galio-Urticetea*. *Folia Geobot. Phytotax.* 4: 235-259.
- KORNECK D. (1974): Xerothermvegetation in Rheinland-Pfalz und Nachbargebieten. *Schriftenreihe Vegetationsk.* 7: 1-196.
- KOROLEVA N.E. (1994): Phytosociological survey of the tundra vegetation of the Kola Peninsula, Russia. *J. Veg. Sci.* 5: 803-812.
- KOROTKOV K.O., MOROZOVA O.V. & BELONOVSKAYA E.A. (1991): *The U.S.S.R. vegetation syntaxa prodromus*. Dr. Gregory E. Vilchek, Moscow.
- KORZHENEVSKIĬ V.V. (1990): *Rastitel'nost' flishevego nizkogor'ya yugo-vostochnogo Kryma (Vegetation of flysh hills of the south-eastern Crimea)*. VINITI Manuscript No. N1430-B90, Moskva.
- KRAUSCH H.-D. (1962): Der Sandnelken-Kiefernwald an seiner Westgrenze in Brandenburg. *Mitt. Florist.-Soziol. Arbeitsgem. N.F.* 9: 141-144.
- KRAUSCH H.-D. (1964): Die Pflanzengesellschaften des Stechlinsee-Gebietes. I. Die Gesellschaften des offenen Wassers. *Limnologica* 2: 145-203.
- KRAUSCH H.-D. (1968) Zur Gliederung der Characeen-Gesellschaften. In: TÜXEN R. (ed.), *Pflanzensoziologische Systematik*, Dr. W. Junk, Den Haag, pp. 176-180.
- LOHMEYER W. (1970): Zur Kenntnis einiger nitro- und thermophiler Unkrautgesellschaften im Gebiet des Mittel- und Niederrheins. *Schriftenreihe Vegetationsk.* 8: 29-43.

- LOHMEYER W., MATUSZKIEWICZ A., MATUSZKIEWICZ W., MERKER H., MOORE J.J., MÜLLER T., OBERDORFER E., POLI E., SEIBERT P., SUKOPP H., TRAUTMANN W., TÜXEN J., TÜXEN R. & WESTHOFF V. (1962): Contribution a l'unification du système phytosociologique pour l'Europe moyenne et nord-occidentale. *Melhoramento* 15: 137-151.
- LOIDI J., BERASTEGI A., BIURRUN I., GARCÍA-MIJANGOS I. & HERRERA M. (1996): Perennial nitrophilous vegetation of the northern Iberian Peninsula. *J. Veg. Sci.* 7: 575-584.
- MAAS F.M. (1959): Bronnen, bronbeken en bronbossen van Nederland, in het bijzonder die van de Veluwezoom (Water springs, rills and water-spring woods of the Netherlands, in particular of the Veluwezoom). *Meded. Rijks Landbouwhoogeschool* 59: 1-166.
- MALMER N. (1968): Über die Gliederung der *Oxycocco-Sphagnetea* und *Scheuchzerio-Caricetea fuscae*. In: TÜXEN R. (ed.), *Pflanzensoziologische Systematik*, Dr. W. Junk, Den Haag, pp. 293-305.
- MATUSZKIEWICZ W. (1981): *Przewodnik do oznaczania zbiorowisk roślinnych Polski (Handbook on determination of plant communities of Poland)*. Państwowe Wydawnictwo Naukowe, Warszawa.
- MAYER A. (1995): *Comparative study of the coastal vegetation of Sardinia (Italy) and Crete (Greece) with respect to the effects of human influence*. IHW-Verlag, Eching bei München.
- MAYOR M., FERNÁNDEZ CASADO M.A., NAVA H.S., ALONSO FERNÁNDEZ J.R., LASTRA J.J. & HOMET J. (1982): Comportamiento ecológico de *Festuca hystrix* en la Península Ibérica, con especial referencia a los montes Cantabro-Astures. *Bol. Ci. Naturaleza I.D.E.A.* 30: 93-106.
- MEIER H. & BRAUN-BLANQUET J. (1934): *Classe des Asplenietales rupestres – groupements rupicoles*. Mari-Lavit, Montpellier.
- MEUSEL H., JÄGER E., RAUSCHERT S. & WEINERT E. (1978): *Vergleichende Chorologie der zentraleuropäischen Flora*. Gustav Fischer, Jena.
- MIRKIN B.M., ABRAMOVA L.M., ISHBIRDIN A.R., RUDAKOV K.M. & KHAZIEV F.KH. (1985): *Segetal'nye soobshchestva Bashkirii (Segetal communities of Bashkiria)*. Akademiya Nauk SSSR, Bashkirskii Filial, Institut Biologii, Ufa.
- MIRKIN B.M., ISHBIRDIN A.R., SAKHAPOV M.T. & SOLOMESHCH A.I. (1986): Ekologo-floristicheskaya klassifikatsiya ruderal'noi rastitel'nosti Bashkirii (Ecologic-floristical classification of ruderal vegetation of Bashkiria). In: MIRKIN B.M. (ed.), *Voprosi dinamiki i sintaksonomii antropogennoi rastitel'nosti (Problems of dynamics and syntaxonomy of anthropogenic vegetation)*, Bashkirskii Gosudarstvennyi Universitet, Ufa, pp. 4-16.
- MIYAWAKI A. (1960): Pflanzensoziologische Untersuchungen über Reisfeld-Vegetation auf den Japanischen Inseln mit vergleichender Betrachtung Mitteleuropas. *Vegetatio* 9: 345-402.
- MOOR M. (1958): Pflanzengesellschaften schweizerischer Flußauen. *Mitt. Schweiz. Anst. Forstl. Versuchswesen* 34: 221-360.
- MOOR M. (1977): Le rôle de l'Erable, du Frêne, de l'Orme et du Tilleul dans la synsystème des forêts feuillues riches. *Doc. Phytosoc. N.S.* 1: 183-188.
- MOORE J.J. (1968): A classification of the bogs and wet heaths of northern Europe. In: TÜXEN R. (ed.), *Pflanzensoziologische Systematik*, Dr. W. Junk, Den Haag, pp. 306-320.
- MORAVEC J. (ed.) et al. (1995): Rostlinná společenstva České republiky a jejich ohrožení (Plant communities of Czech Republic and their endangerment). Ed. 2. *Severočeskou Přír., Append.* 1995: 1-206.
- MUCINA L. (1982): Numerical classification and ordination of ruderal plant communities (*Sisymbrietalia, Onopordetalia*) in the western part of Slovakia. *Vegetatio* 48: 267-275.
- MUCINA L., GRABHERR G., ELLMAUER T. & WALLNÖFER S. (eds.) (1993): *Die Pflanzengesellschaften Österreichs 1-3*. Gustav Fischer, Jena.
- MÜLLER T. (1961): Ergebnisse pflanzensoziologischer Untersuchungen in Südwestdeutschland. *Beitr. Naturk. Forsch. Südwestdeutschl.* 20: 111-122.
- MÜLLER T. (1962): Die Saumgesellschaften der Klasse *Trifolio-Geranietea sanguinei*. *Mitt. Florist.-Soziol. Arbeitsgem. N.F.* 9: 95-139.
- NEZADAL W. (1989): *Unkrautgesellschaften der Getreide- und Frühjahrhackfruchtkulturen (Stellarietea mediae) im mediterranen Iberien*. J. Cramer, Berlin.
- NIEMANN E., HEINRICH W. & HILBIG W. (1973): Mädesüß-Uferfluren und verwandte Staudengesellschaften im hercynischen Raum. *Wiss. Z. Friedrich-Schiller-Univ. Jena, Math.-Naturwiss. Reihe* 22: 591-635.

- OBERDORFER E. (1954): Nordaegaeische Kraut- und Zwergstrauchfluren im Vergleich mit den entsprechenden Vegetationseinheiten des westlichen Mittelmeergebietes. *Vegetatio* 5/6: 88-96.
- OBERDORFER E. (1957): *Süddeutsche Pflanzengesellschaften*. Gustav Fischer, Jena.
- OBERDORFER E. (1960): *Pflanzensoziologische Studien in Chile. Ein Vergleich mit Europa*. J. Cramer, Weinheim.
- OBERDORFER E. (ed.) (1977-1992): *Süddeutsche Pflanzengesellschaften 1-4*. Gustav Fischer, Jena.
- OBERDORFER E., GÖRS S., KORNECK D., LOHMEYER W., MÜLLER T., PHILIPPI G. & SEIBERT P. (1967): Systematische Übersicht der westdeutschen Phanerogamen- und Gefäßkryptogamen-Gesellschaften. *Schriftenreihe Vegetationsk.* 2: 7-240.
- OHBA T. (1974): Vergleichende Studien über die alpine Vegetation Japans. 1. *Carici rupestris-Kobresietea bellardii*. *Phytocoenologia* 1: 339-401.
- PASSARGE H. (1967): Über Saumgesellschaften im nordostdeutschen Flachland. *Feddes Repert.* 74: 145-158.
- PASSARGE H. (1979a): Über azidophile Waldsaumgesellschaften. *Feddes Repert.* 90: 465-479.
- PASSARGE H. (1979b): Über vikariierende *Trifolio-Geranietea*-Gesellschaften in Mitteleuropa. *Feddes Repert.* 90: 51-83.
- PASSARGE H. & HOFMANN G. (1968): *Pflanzengesellschaften des nordostdeutschen Flachlandes 2*. Gustav Fischer, Jena.
- PEINADO LORCA M. & RIVAS-MARTÍNEZ S. (eds.) (1987): *La vegetación de España*. Univ. de Alcalá de Henares, Alcalá de Henares.
- PEINADO M. & MARTÍNEZ-PARRAS J.M. (1984): Sobre la clase *Pegano-Salsoletea: Helichryso-Santolinetalia* ord. nov. *Anales Jard. Bot. Madrid* 40: 437-444.
- PÉREZ DE PAZ P.L., DEL ARCO AGUILAR M. & WILDPRET DELA TORRE W. (1990): Contribución al conocimiento de los matorrales de sustitución del Archipiélago Canario. Nuevas comunidades para El Hierro y La Palma. *Vieraea* 19: 53-61.
- PÉREZ RAYA F., LÓPEZ NIETO J.M., MOLERO MESA J. & VALLE TENDERO F. (1990): *Vegetación de Sierra Nevada*. Urania, Granada.
- PIETSCH W. (1973): Beitrag zur Gliederung der europäischen Zwergbinsengesellschaften (*Isoëto-Nanojuncetea* BR.-BL. & TX. 1943). *Vegetatio* 28: 401-438.
- PIETSCH W. (1977): Beitrag zur Soziologie und Ökologie der europäischen *Littorelletea*- und *Utricularietea*-Gesellschaften. *Feddes Repert.* 88: 141-245.
- PIGNATTI S. (1953): *Introduzione allo studio fitosociologico della pianura veneta orientale (Introduction to the phytosociological study of the eastern lowlands of Veneto)*. Valbonesi, Forlì.
- PIGNATTI S., OBERDORFER E., SCHAMINÉE J.H.J. & WESTHOFF V. (1995): On the concept of vegetation class in phytosociology. *J. Veg. Sci.* 6: 143-152.
- PIGNATTI E., PIGNATTI S., NIMIS P. & AVANZINI A. (1980): *La vegetazione ad arbusti spinosi emisferici: Contributo alla interpretazione delle fasce di vegetazione delle alte montagne dell'Italia mediterranea (The vegetation of hedge-hog scrub: contribution to interpretation of the high-altitude vegetation belts of the mediterranean Italy)*. CNRS, AQ/1/79, Roma: 1-130.
- POELT J. (1969): *Bestimmungsschlüssel europäischer Flechten*. J. Cramer, Lehre.
- POELT J. & VÉZDA A. (1977): *Bestimmungsschlüssel europäischer Flechten. Ergänzungsband 1*. J. Cramer, Vaduz.
- POELT J. & VÉZDA A. (1984): *Bestimmungsschlüssel europäischer Flechten. Ergänzungsband 2*. J. Cramer, Vaduz.
- POLI E. & TÜXEN J. (1960): Über *Bidentetalia*-Gesellschaften Europas. *Mitt. Florist.-Soziol. Arbeitsgem. N.F.* 8: 136-143.
- POTT R. (1995): *Die Pflanzengesellschaften Deutschlands*. Ed. 2. Eugen Ulmer, Stuttgart.
- PREISING E. (1949): *Nardo-Callunetea*. Zur Systematik der Zwergstrauch-Heiden und Magertriften Europas mit Ausnahme des Mediterran-Gebietes, der Arktis und der Hochgebirge. *Mitt. Florist.-Soziol. Arbeitsgem. N.F.* 1: 82-94.
- PREISING E., VAHLE H.-C., BRANDES D., HOFMEISTER H., TÜXEN J. & WEBER H.E. (1990a): Die Pflanzengesellschaften Niedersachsens. Bestandsentwicklung, Gefährdung und Schutzprobleme. Salzpflanzengesellschaften der Meeresküste und des Binnenlandes. *Naturschutz Landschaftspflege Niedersachs.* 20: 1-45.

- PREISING E., VAHLE H.-C., BRANDES D., HOFMEISTER H., TÜXEN J. & WEBER H.E. (1990b): Die Pflanzengesellschaften Niedersachsens. Bestandsentwicklung, Gefährdung und Schutzprobleme. Wasser- und Sumpfpflanzengesellschaften des Süßwassers. *Naturschutz Landschaftspflege Niedersachs.* 20: 47-161.
- QUÉZEL P. (1964): Végétation des hautes montagnes de la Grèce méridionale. *Vegetatio* 12: 289-385.
- RIVAS GODAY S. & BORJA CARBONELL J. (1961): Estudio de vegetación y flórmula, del Mázcico de Gúdar y Jabalambre. *Anales Inst. Bot. Cavanilles* 19: 1-550.
- RIVAS GODAY S. & ESTEVE CHUECA F. (1965): Ensayo fitosociológico de la *Crassi-Euphorbieteae macaronesica* y estudio de los tabaibales y cardonales de Gran Canaria. *Anales Inst. Bot. Cavanilles* 22: 220-339.
- RIVAS GODAY S. & MAYOR M. (1966): Aspectos de la vegetación y flora orófilas del Reino de Granada. *Anales Real Acad. Farm.* 31: 345-400.
- RIVAS GODAY S. & RIVAS-MARTÍNEZ S. (1967): Matorrales y tomillares de la Península Ibérica comprendidos en la clase *Ononido-Rosmarineteae* BR.-BL. 1947. *Anales Inst. Bot. Cavanilles* 25: 3-201.
- RIVAS GODAY S. & RIVAS-MARTÍNEZ S. (1971): Vegetación potencial de la Provincia de Granada. *Trab. Dept. Bot. Fisiol. Veg. Madrid* 4: 3-85.
- RIVAS-MARTÍNEZ S. (1964): Esquema de la vegetación potencial y su correspondencia con los suelos en la España peninsular. *Anales Inst. Bot. Cavanilles* 22: 341-405.
- RIVAS-MARTÍNEZ S. (1968): Los jarales de la Cordillera Central. *Collect. Bot. (Barcelona)* 7: 1033-1082.
- RIVAS-MARTÍNEZ S. (1975a): Mapa de la vegetación de la Provincia de Ávila. *Anales Inst. Bot. Cavanilles* 32: 1493-1556.
- RIVAS-MARTÍNEZ S. (1975b): Observaciones sobre la sintaxonomía de los bosques acidófilos europeos. Datos sobre la *Quercetalia robori-petraeae* en la Península Ibérica. *Colloq. Phytosoc.* 3: 255-260.
- RIVAS-MARTÍNEZ S. (1975c): Sobre la nueva clase *Polygono-Poeteae annuae*. *Phytocoenologia* 2: 123-140.
- RIVAS-MARTÍNEZ S. (1978a): Sinopsis de la vegetación nitrófila rupestre (*Parietarieteae judaicae*). *Anales Inst. Bot. Cavanilles* 35: 225-233.
- RIVAS-MARTÍNEZ S. (1978b): Sur la syntaxonomie des pelouses thérophytiques de l'Europe occidentale. *Colloq. Phytosoc.* 6: 55-71.
- RIVAS-MARTÍNEZ S. (1979): Brezales y jarales de Europa occidental (Revisión fitosociológica de las clases *Calluno-Uliceteae* y *Cisto-Lavanduletea*). *Lazaroa* 1: 5-127.
- RIVAS-MARTÍNEZ S. (1987): *Memoria del mapa de Series de Vegetación de España 1:400.000*. Ministerio de Agricultura, Pesca y Alimentación, ICONA, Madrid.
- RIVAS-MARTÍNEZ S. (1996a): *Bioclimatic map of Europe*. Servicio de Publicaciones de la Universidad de Granada, Granada.
- RIVAS-MARTÍNEZ S. (1996b): *Geobotánica y bioclimatología. Discursos pronunciados en el acto de investiture de doctor honoris causa del Excelentísimo Señor D. Salvador Rivas-Martínez*. Servicio de Publicaciones de la Universidad de Granada, Granada.
- RIVAS-MARTÍNEZ S., ALCARAZ F., BELMONTE D., CANTÓ P. & SÁNCHEZ-MATA D. (1984): Contribución al conocimiento de la vegetación de los saladares del sureste de la Península Ibérica (*Arthrocnemion glauci*). *Doc. Phytosoc. N.S.* 8: 335-342.
- RIVAS-MARTÍNEZ S., BÁSCONES J.C., DÍAZ T.E., FERNÁNDEZ-GONZÁLEZ F. & LOIDI J. (1991): Vegetación del Pirineo occidental y Navarra. *Itinera Geobot.* 5: 5-456.
- RIVAS-MARTÍNEZ S. & BELMONTE D. (1987): Sinopsis de la clase *Cytiseteae scopario-striati*. *Folia Bot. Madrid* 3: 1-14.
- RIVAS-MARTÍNEZ S., CANTÓ P., FERNÁNDEZ-GONZÁLEZ F. & SÁNCHEZ-MATA D. (1995): Revisión de la clase *Querceteae ilicis* en España y Portugal: I. subalianza *Quercenion ilicis*. *Folia Bot. Matrit.* 15: 1-20.
- RIVAS-MARTÍNEZ S. & COSTA M. (1984): Sinopsis sintaxonómica de la clase *Arthrocnemeteae* BR.-BL. & TX. 1943 en la península Ibérica. *Doc. Phytosoc. N.S.* 8: 15-27.
- RIVAS-MARTÍNEZ S., COSTA M. & IZCO J. (1984): Sintaxonomía de la clase *Querceteae ilicis* en el Mediterráneo occidental. *Notiz. Fitosociol.* 19: 71-98.
- RIVAS-MARTÍNEZ S., COSTA M. & LOIDI J. (1992a): La vegetación de las islas de Ibiza y Formentera (Islas Baleares, España). *Itinera Geobot.* 6: 99-236.
- RIVAS-MARTÍNEZ S., COSTA M., SORIANO P., PÉREZ R. LLORENS L. & ROSELL J.A. (1992b): Datos sobre el paisaje vegetal de Mallorca e Ibiza (Islas Baleares, España). *Itinera Geobot.* 6: 5-98.

- RIVAS-MARTÍNEZ S., DÍAZ T.E., FERNÁNDEZ PRIETO J.A., LOIDI J. & PENAS A. (1991): *Festuco hystricis-Ononidetea striatae* y *Rosmarinetea officinalis*, clases de vegetación independientes. *Itinera Geobot.* 5: 505-516.
- RIVAS-MARTÍNEZ S. & IZCO J. (1977): Sobre la vegetación terofítica subnitrófila mediterránea (*Brometalia rubeti-ectori*). *Anales Inst. Bot. Cavanilles* 4: 355-381.
- RIVAS-MARTÍNEZ S., WILDPRET DE LA TORRE W., DEL ARCO AGUILAR M., RODRÍGUEZ O., PÉREZ DE PAZ P.L., GARCÍA-GALLO A., ACEBES GINOVÉS R., DÍAZ GONZÁLEZ T.E. & FERNÁNDEZ-GONZÁLEZ F. (1993a): Las comunidades vegetales de la Isla de Tenerife (Islas Canarias). *Itinera Geobot.* 7: 169-374.
- RIVAS-MARTÍNEZ S., WILDPRET DE LA TORRE W., DÍAZ GONZÁLEZ T., PÉREZ DE PAZ P., DEL ARCO AGUILAR M. & RODRÍGUEZ DELGADO O. (1993b): Sinopsis de la vegetación de la Isla de Tenerife (Islas Canarias): Guía de la excursión. *Itinera Geobot.* 7: 5-167.
- RODWELL J.S. (ed.) (1991-1996): *British plant communities 1-4*. Cambridge Univ. Press, Cambridge.
- ROMASHCHENKO K.YU., DIDUCH YA.P. & SOLOMAKHA V.A. (1996): Syntaksonomiya klasu *Helianthemo-Thymetea* cl.nov. roslynnosti keřdyanyh vidklonov' pıvdenno-schıdnoı Ukrainy (Syntaxonomy of the class of *Helianthemo-Thymetea* cl.nov. – vegetation of chalk outcrops of southeastern Ukraine). *Ukrayinsk. Fitotsenolog. Zbirn., Ser. A.* 1: 63-77.
- ROYER J.M. (1991): *Synthèse eurosibérienne, phytosociologique et phytogéographique de la classe des Festuco-Brometea*. J. Cramer, Berlin.
- SAFRONOVA I.N. (1993): *Pustyni Mangyshlaka (ocherk rastitel'nosti) (The deserts of Mangyshlak (vegetation outline))*. Botanicheskiı Institut im. V.L.Komarova, Sankt-Petersburg.
- SANTOS GUERRA A. (1976): Notas sobre la vegetación potencial de la Isla de el Hierro (1). *Anales Inst. Bot. Cavanilles* 3: 249-261.
- SANTOS GUERRA A. (1977): *Ensayo sintaxonómico de la vegetación de las Islas Canarias*. Funchal.
- SCAMONI A. & PASSARGE H. (1959): Gedanken zu einer natürlichen Ordnung der Waldgesellschaften. *Arch. Forstwesen* 8: 386-425.
- SCHAMINÉE J.H.J. (1993): *Subalpine heathlands and adjacent plant communities of the Monts du Forez (Massif Central, France)*. Krips Repro, Meppel.
- SCHAMINÉE J., LANJOUW B. & SCHIPPER P. (1990): Een nieuwe indeling van de waterplantengemeenschappen (*Potametea*) in Nederland (A new classification of the water plant communities (*Potametea*) in the Netherlands). *Stratiotes* 1: 5-16.
- SCHAMINÉE J.H.J., STORTELDER A.H.E. & WEEDA E.J. (1996): *De vegetatie van Nederland 3. Plantengemeenschappen van grasland, zoomen en droge heiden (The vegetation of the Netherlands 3. Plant communities of grasslands, fringes and dry heathlands)*. Opulus Press, Uppsala.
- SCHAMINÉE J.H.J., WEEDA E.J. & WESTHOFF V. (1995): *De vegetatie van Nederland 2. Plantengemeenschappen van wateren, moerassen en natte heiden (The vegetation of the Netherlands 2. Plant communities of water bodies, swamps and wet heathlands)*. Opulus Press, Uppsala.
- SCHAMINÉE J.H.J., WESTHOFF V. & ARTS G.H.P. (1992): Die Strandlinggesellschaften (*Littorelletea* BR.-BL. et TX. 43) der Niederlande, in europäischem Rahmen gefaßt. *Phytocoenologia* 20: 529-558.
- SCHÖNFELDER P. & VOGGENREITER V. (1994): Zur Abgrenzung und Gliederung der Klassen *Spartocytisetea supranubii* cl. nov. und *Cytiso-Pinetea canariensis* auf Tenerife/Kanarische Inseln. *Phytocoenologia* 24: 461-493.
- SCHUBERT R. (1960): *Die zwergstrauchreichen azidiphilen Pflanzengesellschaften Mitteldeutschlands*. Gustav Fischer, Jena.
- SCHWABE-BRAUN A. & TÜXEN R. (1981): *Prodromus der europäischen Pflanzengesellschaften. Lieferung 4: Lemnetae minoris*. J. Cramer, Vaduz.
- SCOPPOLA A. (1983): Synthèse des *Lemnetae minoris* en Europe. *Colloq. Phytosoc.* 10: 513-518.
- SEGAL S. (1968): Ein Einteilungsversuch der Wasserpflanzengesellschaften. In: TÜXEN R. (ed.), *Pflanzensoziologische Systematik*, Dr. W. Junk, Den Haag, pp. 191-219.
- SOLOMAKHA B.A., KOSTYL'OV O.V. & SHEL'YAH-SOSONKO YU.R. (eds.) (1992): *Synanthropna roslynnist' Ukrainy (Synanthropic vegetation of Ukraine)*. Naukova Dumka, Kii'v.
- SOLOMAKHA V.A. (1995): *Syntaksony roslynnisti Ukrainy za metodu Braun-Blanke ta ich osoblyvosti (Syntaxa of the Ukrainian vegetation and their characteristics following the method of BRAUN-BLANQUET)*. Nacion. Kiivskii Univ. im. Tarasa Shevchenka, Kii'v.

- STRID A. (ed.) (1986): *Mountain flora of Greece 1*. Cambridge Univ. Press, Cambridge.
- STRID A. & KIT TAN (eds.) (1991): *Mountain flora of Greece 2*. Edinburgh Univ. Press, Edinburgh.
- SUCCOW M. (1974): Vorschlag einer systematischen Neugliederung der mineralbodenwasserbeeinflussten wachsenden Moorvegetation Mitteleuropas unter Ausklammerung des Gebirgsraumes. *Feddes Repert.* 85: 57-113.
- SUNDING P. (1972): The vegetation of Gran Canaria. *Skr. Norske Vidensk.-Akad. Oslo, Mat.-Naturvidensk. Kl., N.S.* 29: 1-186.
- SUZUKI-TOKIO T. (1964): *Übersicht auf die alpinen und subalpinen Pflanzengesellschaften im inneren Kurobe-Gebiet*. Synthetic Science Research Organization of the Toyama University, Toyama.
- THEURILLAT J.-P., AESCHIMANN D., KÜPFER P. & SPICIGER R. (1995): Habitats et régions naturelles des Alpes. *Colloq. Phytosoc.* 22: 15-30.
- ȚOPA E. (1939): Vegetația halofitelor din Nordul Românei (The vegetation of halophyte in the north of Romania). *Bull. Fac. Ști. Cernaui* 13: 1-79.
- TUTIN T.G. et al. (eds.) (1964-1993): *Flora europaea 1-5 & 1* (Ed. 2). Cambridge Univ. Press, Cambridge.
- TÜXEN J. (1960): Zur systematischen Stellung des *Ruppion*-Verbandes. *Mitt. Florist.-Soziol. Arbeitsgem. N.F.* 8: 180.
- TÜXEN J. (1991): Salzwiesengesellschaften der atlantischen Küsten Nordeuropas. *Ber. Reinhold-Tüxen-Ges.* 3: 185-231.
- TÜXEN R. (1937): Die Pflanzengesellschaften Nordwestdeutschlands. *Mitt. Florist.-Soziol. Arbeitsgem. Niedersachsen* 3: 1-170.
- TÜXEN R. (1950): Grundriß einer Systematik der nitrophilen Unkrautgesellschaften in der Eurosiberischen Region Europas. *Mitt. Florist.-Soziol. Arbeitsgem. N.F.* 2: 94-175.
- TÜXEN R. (1962): Pflanzensoziologisch-systematische Überlegungen zu Jakucs P.: Die phytosoziologischen Verhältnisse der Flaumeichen-Buschwälder Südostmitteleuropas. *Mitt. Florist.-Soziol. Arbeitsgem. N.F.* 9: 296-301.
- TÜXEN R. (1966): Über nitrophile *Elymus*-Gesellschaften an nordeuropäischen und nordamerikanischen Küsten. *Ann. Bot. Fenn.* 3: 358-367.
- TÜXEN R. (1970): Zur Syntaxonomie des europäischen Wirtschafts-Grünlandes (Wiesen, Weiden, Tritt- und Flutrasen). *Ber. Naturhist. Ges. Hannover* 114: 77-85.
- TÜXEN R. (1979): *Die Pflanzengesellschaften Nordwestdeutschlands*. Ed. 2. J. Cramer, Vaduz.
- TÜXEN R. (1980a): Courtes réponses aux interventions de Dierßen sur la synsystème de *Oxycocco-Sphagneteta*. *Colloq. Phytosoc.* 7: 393-398.
- TÜXEN R. (1980b): Remarques sur la synsystème de la classe des *Oxycocco-Sphagneteta*. *Colloq. Phytosoc.* 7: 383-390.
- TÜXEN R. & HÜLBUSCH K.-H. (1971): *Bolboschoeneteta maritimi*. *Fragm. Florist. Geobot.* 17: 391-407.
- TÜXEN R. & OBERDORFER E. (1958): Die Pflanzenwelt Spaniens. II. Eurosiberische Phanerogamen-Gesellschaften Spaniens. *Veröff. Geobot. Inst. Rübel Zürich* 32: 1-328.
- TÜXEN R. & PREISING E. (1942): Grundbegriffe und Methoden zum Studium der Wasser- und Sumpfpflanzen-Gesellschaften. *Deutsche Wasserw.* 37: 10-17, 57-69.
- TÜXEN R., WESTHOFF V., BEEFTINK W.G. & JAHNS W. (1963): *Sagineteta maritimae*, eine Gesellschaftsgruppe im wechselhalinen Grenzbereich der europäischen Meeresküsten. *Mitt. Florist.-Soziol. Arbeitsgem. N.F.* 10: 116-129.
- VALACHOVIČ M., DIERSSEN K., DIMOPOULOS P., HADAČ E., LOIDI J., MUCINA L., ROSSI G., VALLE TENDERO F. & TOMASELLI M. (1997): The vegetation on screes – a synopsis of higher syntaxa in Europe. *Folia Geobot. Phytotax.* 32: 173-192.
- VALACHOVIČ M., OŤAHELOVÁ H., STANOVÁ V. & MAGLOCKÝ Š. (1995): *Rastlinné spoločenstvá Slovenska. 1. Pionierska vegetácia (Plant communities of Slovakia. 1. Pioneer vegetation)*. Veda, Bratislava.
- VERHOEVEN M.T.A. (1980): The ecology of *Ruppia*-dominated communities in Western Europe. II. Synecological classification. Structure and dynamics of the macroflora and macrofauna communities. *Aquatic Bot.* 8: 1-85.
- VICHEREK J. (1972): Die Sandpflanzengesellschaften des unteren und mittleren Dnjeprstromgebietes (die Ukraine). *Folia Geobot. Phytotax.* 7: 9-46.

- VICHEREK J. (1973): *Die Pflanzengesellschaften der Halophyten- und Subhalophytenvegetation der Tschechoslowakei*. Academia, Praha.
- VLIEGER J. (1937): Aperçu sur les unités phytosociologiques supérieures des Pays-Bas. *Ned. Kruidk. Arch.* 47: 335-353.
- VOGGENREITER V. (1974): *Geobotanische Untersuchungen an der natürlichen Vegetation der Kanareninsel Tenerife als Grundlage für den Naturschutz*. J. Cramer, Vaduz.
- VOGGENREITER V. (1975): Vertikalverbreitung der natürlichen und introduzierten Flora in der zentralen SW-Abdachung von Tenerife (mit Beispielen von Vegetationstypen). *Monogr. Biol. Canar.* 6: 5-47.
- VON ROCHOW M. (1951): *Die Pflanzengesellschaften des Kaiserstuhls*. Gustav Fischer, Jena.
- WALTER H. (1968): *Die Vegetation der Erde in öko-physiologischer Betrachtung 2. Die gemäßigten und arktischen Zonen*. Gustav Fischer, Jena.
- WEBER H. (1991): Übersicht über die Brombeergebüsche der *Pteridio-Rubetalia* (*Franguletea*) und *Prunetalia* (*Rhamno-Prunetea*) in Westdeutschland mit grundsätzlichen Bemerkungen zur Bedeutung der Vegetationsstruktur. *Ber. Reinhold-Tüxen-Ges.* 2: 91-119.
- WESTHOFF V. & DEN HELD A.J. (1969): *Plantengemeenschappen in Nederland (Plant communities of the Netherlands)*. W.J. Thieme & Cie, Zutphen.
- WESTHOFF V., DIJK J.W. & PASSCHIER H. (1946): *Overzicht der plantengemeenschappen in Nederland (Overview of plant communities in the Netherlands)*. G.W. Breughel, Amsterdam.
- WESTHOFF V., VAN LEEUWEN C.G. & ADRIANI M.J. (1962): Enkele aspecten van vegetatie en bodem der duinen van Goeree, in het bijzonder de contactgordels tussen zout en zoet milieu (Some aspects of the vegetation and soil of the Goeree dunes, in particular of the contact zone between salty and fresh-water environments). *Jaarb. Wetensch. Genootsch. Goeree-Overflakke* 1961.
- WILLEMS J.H. (1982): Phytosociological and geographical survey of *Mesobromion* communities in Western Europe. *Vegetatio* 48: 227-240.
- WISSKIRCHEN R. (1995): *Verbreitung und Ökologie von Flußufer-Pioniergesellschaften (Chenopodion rubri) im mittleren und westlichen Europa*. J. Cramer, Berlin.
- ZAFFRAN J. (1982): *Contributions à la flore et à la végétations de la Crête. II. Végétation*. Ms., Univ. de Provence, Aix-au-Provence.
- ZAFFRAN J. (1990): *Contribution à la flore et à la végétation de la Crête*. Univ. de Provence, Aix-en-Provence.
- ZECHMEISTER H. & MUCINA L. (1994): Vegetation of European springs: High-rank syntaxa of the *Montio-Cardaminetea*. *J. Veg. Sci.* 5: 385-402.
- ZOHARY M. & ORSHAN G. (1965): An outline of the geobotany of Crete. *Israel J. Bot.* 14: 1-49.

Encl. Appendix (Tab. 1), pp. 169-172

Tab. 1. Basic data on physiognomy and major factors structuring vegetation of the European vegetation classes as well as their bioclimatic and biogeographic set up. Growth-form: A – macroalgae, B – bryophytes, L – lichens, G – graminoids (Gd – dwarf, Gt – tall), H – herbs (Hd – dwarf, Ht – tall, Hs – succulent), S – shrubs (Sd – dwarf, St – tall, Ss – succulent), T – trees; Water: F – fresh, S – saline, B – brackish, fogg – pronounced influence of air-borne water; Substrate (basic characteristics of soil and bedrock): subhydr – subhydry soil, semihydr – semihydric soil, skeletol – skeletal soils, sand – sandy soils and dunes, rock – indifferently rocky substrates, volc – volcanic sediments, peat – peaty soils, clay – clayey soils, anthropog – anthropogenic soils, Si – siliceous rocks, Ca – calcareous rocks; Bioclimate: the coding of the bioclimatic regions follows RIVAS-MARTINEZ (1996a,b). Biogeography: the abbreviations used for the floristic zones, regions and provinces follows MEUSEL et al. (1978). The items given in brackets by any of the characteristics listed in this table indicate only conditional or partial validity. × stands for irrelevant items; ? indicates unclear items.

	Growth form	Water	Substrate	Stress	Disturbance Management	Bioclimate	Biogeography
<i>Lemneta minoris</i>	Hd	F	×	(inoxia)	water flow	T12,15,17,19 M1	mitteleur, (submed, pont, macar-mediterranean)
<i>Charetea fragilis</i>	A	F/B	subhydr	inoxia	flood	T12,15,17,19	mitteleur
<i>Potametea</i>	H	F	subhydr	inoxia	water flow	T12,15,17,19	mitteleur, boreoeur, pont-s-sibir, (macar-mediterranean)
<i>Ruppiaetea maritimae</i>	H	B	subhydr	inoxia, salt	flood	T12,15,M1	mitteleur, pont-s-sibir, macar-mediterranean
<i>Zosteretea</i>	H	S	subhydr	inoxia, salt	flood	T9,11,12	macar-mediterranean, atl, balt
<i>Isoëto-Littorelletea</i>	Hd	(F)	Si	inoxia	grazing	T10,12,15	atl, mitteleur, boreoeur
<i>Isoëto-Nanojuncetea</i>	Hd/B	(F)	semihydr	(low nutrients)	flood	B22,24	
<i>Montio-Cardaminetea</i>	Hd	(F)	semihydr	low temper.	flood	T12,15,17,19 M1	mitteleur, pont-s-sibir, mediterranean
<i>Phragmito-Magnocaricetea</i>	Gt	(F)	semihydr	inoxia	flood, grazing	T10,12,13,15 B21,22,24, M1,P	mitteleur, boreoeur, (circumarct), (mediterranean)
<i>Scheuchzerio-Caricetea</i>	Gd/B	(F)	peat	inoxia	flood	T,B21,22 B21,22,P,	mitteleur, (boreoeur)
<i>Oxyocco-Sphagnetea</i>	Gd/B	(F)	peat	inoxia	flood	T10,12,13,15,17 B,P,T10,12,13	boreoeur, mitteleur, (submed), (circumarct) boreoeur, circumarct
<i>Cakiletea maritimae</i>	Hd	(S)	sand	low temper.	wave action	T10,11,12,15 M1-5,9	macar-mediterranean, atl, balt, eux
<i>Saginetetea maritimae</i>	Hd	(B)	sand	salt spray	×	T12,13,M1,5,9	mediterranean, atl
<i>Crithmo-Staticetea</i>	Hd	(S)	rock	salt spray	sea storms	T10-12,M1,5,9	macar-mediterranean, atl, eux
				dryness			

	Growth form	Water	Substrate	Stress	Disturbance Management	Bioclimate	Biogeography
<i>Thero-Salicornietea</i>	Hs	S	semihydr	salt, (inoxia)	flood, grazing	T11-13,15 M1,3,5,9	macar-mediterranean, atl, bal, (boreoatl?)
<i>Spartinetea maritima</i>	Gt	S	semihydr	salt, (inoxia)	flood, grazing?	T10,12-14,M1	atl, w-med, circadr
<i>Salicornietea fruticosae</i>	Sd	S	semihydr	salt, (inoxia)	flood, grazing	M1,3,5,9 T11,13	mediterranean, s-atl
<i>Juncetea maritimi</i>	Gt	(S)	semihydr	salt, (inoxia)	flood, (grazing)	T10-13,15 M21,22,26,P27	mediterranean, atl, fael-sun, balc, boreoatl, circumarct
<i>Honckenyo-Elymetea</i>	Gt	x	sand	salt spray	moving sand	T10,12,15	atl, fael-sund, balc, (boreoatl)
<i>Ammophiletea</i>	Gt/Sd	x	sand	dryness	wind	M1,3-5,9 T11-13	mediterranean, atl
<i>Asplenietea trichomanis</i>	Hd	x	rock	dryness	moving sand	T,M,B21,22,P2	(macar)-mediterranean, mitteleur, (boreoaur, circumarct)
<i>Adiantetea</i>	Hd	(F)	Ca	(inoxia)	flowing water	M	(macar)-mediterranean
<i>Thlaspietea rotundifolii</i>	Hd	x	skeletal	low nutrients	moving scree	B21,22,P27	mitteleur, mediterranean
<i>Loiseleurio-Vaccinietea</i>	Sd/L	x	Si	low nutrients	grazing	B21,22,P27 (T12,13,15)	(boreoaur, circumarct)
<i>Salicetea herbaceae</i>	Sd/Hd/B	x	Si	low nutrients	erosion	B21,23,P27 (T12,15)	boreoaur, circumarct, alpisch, carp, balc, (alb, w-pyro, n-app)
<i>Juncetea trifidi</i>	Gd	x	Si	snow cover	(erosion)	B11,22 (T12,13)	scand, isl, circumarct, alpisch, carp, (balc, w-pyro, n-app, alb, mac-thrac)
<i>Carici-Kobresietea</i>	Gd	x	rock	low temper.	grazing	B21,22,P27	scand, scot, isl, circumarct
<i>Elyno-Seslerietea</i>	G	x	Ca	low nutrients	erosion	T12,13,15	medioeur: alpisch, carp. (herec), w-submed: n-iber-catal, w-pyro, c-submed: app. illyr, alb, o-submed: balc, mac-thrac
<i>Mulgedio-Aconitetea</i>	Gt/Ht	x	x	low temper.	avalanches (flood)	T12,13,15 B21,22,(P27)	medioeur: alpisch, carp. subatl, w-submed: n-iber-catal, w-pyro, baet, c-submed: app. illyr, alb, o-submed: balc, mac-thrac, scand, isl, (circumarct)
<i>Oryzetea sativae</i>	Gt	(F)	semihydr	(inoxia)	flood, harvest	T14,17,M1	n-iber-catal
<i>Bidentetea tripartiti</i>	Hd	(F)	semihydr	(inoxia)	flood	T,B,(M)	pad, (pamm) mitteleur, (mediterranean, scand)

	Growth form	Water	Substrate	Stress	Disturbance Management	Bioclimate	Biogeography
<i>Polygono-Poëtea</i>	Hd	x	anthropog	dryness	trampling	T,B,M	mitteleur, macar-mediterranean, boreoëur, (circumarc)
<i>Stellarietea mediae</i>	H	x	anthropog	x	mechanical harvest	T,B,M	mitteleur, macar-mediterranean, (boreoëur, circumarc)
<i>Artemisietea vulgaris</i>	Ht	x	anthropog	x	mechanical grazing	T,B,M	mitteleur, (macar-mediterranean, boreoëur, circumarc)
<i>Galio-Urticetea</i>	Ht	x	anthropog	low light	mechanical grazing	T,B,(M)	mitteleur, (macar-mediterranean)
<i>Epilobietea angustifolii</i>	Ht	x	x	x	mechanical	T,B	mitteleur, boreoëur
<i>Calluno-Ulicetea</i>	Sd/Gd	x	Si	low nutrients	fire, grazing	T10-15 B20-21 T10-15	ati, subatl, scand, herc, polon, alpisch, carp, balc, mac-thrac, calab
<i>Koelerio-Corynephoretea</i>	Gd	x	Si	low nutrients	grazing (moving sand)	T10-15	ati, subatl, herc, balt, c-submed
<i>Molinio-Arrhenatheretea</i>	G/H	x	x	x	mowing	T,B, (M)	mitteleur, pont-s-sibir, (boreoëur, submed)
<i>Trifolio-Geranietea</i>	Ht	x	x	x	x	T10-15, B22	mitteleur, (submed)
<i>Festuco-Brometea</i>	Gd	x	x	(low nutrients)	grazing (mowing)	T15-19 (10-13)	pont-s-sibir, mitteleur, submed
<i>Puccinellio-Salicornietea</i>	Gd/Hs	x	(subhydr)	(low nutrients)	grazing (flood)	T17,19, M1,8	pont-s-sibir, aralocasp, w-med, o-submed, (herc, polon)
<i>Rhamno-Prunetea</i>	S	x	x	salt	grazing (fire)	T10-17	mitteleur, submed, calab
<i>Salicetea purpureae</i>	S/T	(F)	(subhydr)	(inoxia)	flood	T12-19, B21-11	mitteleur, boreoëur
<i>Alnetae glutinosae</i>	T/S	(F)	peat	(inoxia)	flood	T10-17, B21-22	mitteleur, boreoëur
<i>Quercu-Fagetea</i>	T	(F)	(subhydr)	x	silviculture (grazing, flood)	T10-13, 15	mitteleur, submed, s-app, sic, w-hell, w-aeg
<i>Quercetea pubescentis</i>	T	x	x	dryness	(grazing)	T12-13,15,17	submed, w-hell, calab, burgund-rhen, herc, carp, pann, pn-slov, dahub, pont, s-sarm
<i>Pulsatillo-Pinetea</i>	T	x	Ca	dryness	erosion (fire)	T12-13,15	alpisch, carp, illyr, balc, mac-thrac
<i>Pulsatillo-Pinetea</i>	T	x	(sand)	low nutrients	(erosion)	T12,15,17	alpisch, pont, s-sarm, s-sibir
<i>Junipero-Pinetea</i>	T/S	x	Ca	dryness	(fire)	T13	w-submed
<i>Vaccinio-Piceetea</i>	T/S	(F)	(peat)	low nutrients	silviculture	B21-24, T12,15	boreoëur, alpisch, carp, illyr, balc, mac-thrac, balt
<i>Festucetea indigestae</i>	Gd	x	Si	low nutrients	flood, (fire) grazing (erosion)	T13	z-iber, baet?

	Growth form	Water	Substrate	Stress	Disturbance Management	Bioclimate	Biogeography
<i>Saginetea piliferae</i>	Hd	x	Si	low nutrients	grazing (erosion)	T13	corssard
<i>Festuco-Ononidetea</i>	Sd/H	x	Ca	low temper.	grazing (erosion)	T13	w-submed
<i>Carici-Genistetetea</i>	Sd/H	x	Si	low temper.	grazing (erosion)	T13	corsard
<i>Rumici-Astragaletea</i>	Sd/H	x	volc	low temper.	grazing (erosion)	T13	sic
<i>Daphno-Festucetea</i>	Sd/H	x	Ca	low temper.	grazing (erosion)	T13	aeg. w-hell
<i>Thero-Brachypodietea</i>	Hd	x	Ca, Si	low nutrients	grazing (erosion)	M, T13	mediterranean, (submed)
<i>Lygeo-Stipetea</i>	Gt	x	clay	low nutrients	grazing, fire erosion	M1-3,5	mediterranean
<i>Cytisetea scopario-striati</i>	St	x	Si	low nutrients	grazing, fire	M1, T13	w-submed, w-med
<i>Cisto-Levanduletea</i>	Sd/H	x	Si	low nutrients	grazing, fire	M1-6	mediterranean
<i>Cisto-Micromeritetea</i>	Sd/H	x	Ca	low nutrients	grazing, fire	M1-6	mediterranean
<i>Nerio-Tamaricetea</i>	Sh	(F)	skeletal	low nutrients	flood	M	mediterranean, (submed)
<i>Quercetea ilicis</i>	T/St	x	x	low nutrients	fire, grazing	M1-4	mediterranean, (submed)
<i>Pegano-Salsoletea</i>	Sd/H	-x	Ca	low nutrients salt spray	(sea storms)	M9	macar-mediterranean
<i>Artemisieta lechiana</i>	Hd	x	x	dryness high temper.	grazing	M8	aralocasp
<i>Zygophyllo-Polycarpetea</i>	Ss	x	sand	low nutrients salt, dryness temper. oscill.	moving sand	M9	macar
<i>Kleinio-Euphorbietea</i>	Ss	x	volc	low nutrients salt spray	? (fire)	M5,9	macar
<i>Oleo-Rhannetea</i>	S/H	x	volc	high temper. ?		M1	macar
<i>Pruno-Lauretea</i>	T	fogg	volc	? ?	? fire	M1	macar
<i>Cytiso-Pinetea</i>	T	(fogg)	volc	?	fire	M1	canar
<i>Spartocytisetea supranubii</i>	St	(fogg)	volc	temper. oscill.	?	M1	canar
<i>Aeonio-Greenovietea</i>	Hs	(fogg)	volc	low nutrients temper. oscill.	?	M1,5,9	macar