

Chytrý et al.: EUNIS-ESy: Expert system for automatic classification of European vegetation plots to EUNIS habitats (Version 2021-06-01) [Data set]. Zenodo. <http://doi.org/10.5281/zenodo.4812736>

EUNIS Habitat Factsheets

version 2021-06-01

Factsheets for the vegetated marine (coastal saltmarshes), coastal, wetland, grassland, shrubland, forest, inland sparsely vegetated and man-made habitats at hierarchical Level 3 of the revised EUNIS classification. The data are based on the classification of the EVA database (version 2021-04-07) and some additional vegetation-plot datasets by the expert system EUNIS-ESy version 2021-06-01. Each factsheet contains:

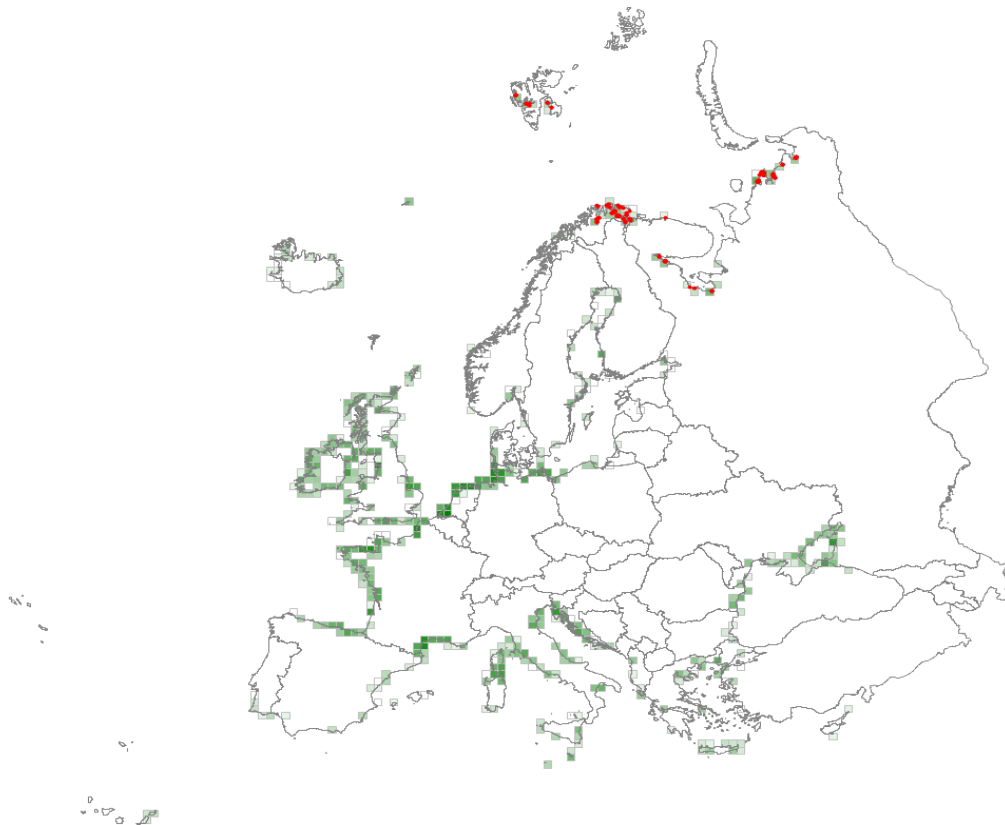
- Habitat code and name
- Brief description of the habitat
- Distribution map of the habitat showing the locations of vegetation plots classified to this habitat by the EUNIS-ESy expert system (red points); green shading in the background indicates the density of plots belonging to the superior habitat group (vegetated marine, coastal, wetland, grassland, shrubland, forest, inland sparsely vegetated, man-made)
- Corresponding phytosociological alliances in EuroVegChecklist (Mucina et al. 2016, <https://www.synbiosys.alterra.nl/evc/>); explanation of the qualifiers:
 - < the EUNIS habitat is defined as a part of the alliance
 - > the EUNIS habitat is defined as a broader than and entirely including the alliance
 - <> the EUNIS habitat and the alliance contain a large part that overlaps, but also parts that do not overlap
 - = the EUNIS habitat exactly matches the alliance
- Characteristic species combinations of the habitat divided into diagnostic, constant and dominant species; the values are:
 - diagnostic species: fidelity (phi coefficient multiplied by 100)
 - constant species: percentage occurrence frequency (constancy)
 - dominant species: percentage frequency of plots in which the species occurs with a cover larger than 25% (or with a lower cover if this cover is the highest of all species occurring in the plot)

Recommended citation: Chytrý et al. (2020), version 2021-06-01

Chytrý M., Tichý L., Hennekens S.M., Knollová I., Janssen J.A.M., Rodwell J.S., Peterka T., Marcenò C., Landucci F., Danihelka J., Hájek M., Dengler J., Novák P., Zúkal D., Jiménez-Alfaro B., Mucina L., Abdulhak S., Ačić S., Agrillo E., Attorre F., Bergmeier E., Biurrun I., Boch S., Böllöni J., Bonari G., Braslavskaya T., Bruelheide H., Campos J.A., Čarni A., Casella L., Čuk M., Čušterevska R., De Bie E., Delbosc P., Demina O., Didukh Y., Dítě D., Dziuba T., Ewald J., Gavilán R.G., Gégout J.-C., Giusso del Galdo G.P., Golub V., Goncharova N., Goral F., Graf U., Indreica A., Isermann M., Jandt U., Jansen F., Jansen J., Jašková A., Jiroušek M., Kački Z., Kalníková V., Kavğacı A., Khanina L., Korolyuk A.Yu., Kozhevnikova M., Kuzemko A., Kůzmič F., Kuznetsov O.L., Laiviņš M., Lavrinenko I., Lavrinenko O., Lebedeva M., Lososová Z., Lysenko T., Maciejewski L., Mardari C., Marinšek A., Napreenko M.G., Onyshchenko V., Pérez-Haase A., Pielech R., Prokhorov V., Rašomavičius V., Rodríguez Rojo M.P., Rūsiņa S., Schrautzer J., Šibík J., Šilc U., Škvorc Ž., Smagin V.A., Stančić Z., Stanisci A., Tikhonova E., Tonteri T., Uogintas D., Valachovič M., Vassilev K., Vynokurov D., Willner W., Yamalov S., Evans D., Palitzsch Lund M., Spyropoulou R., Tryfon E. & Schaminée J.H.J. (2020) EUNIS Habitat Classification: expert system, characteristic species combinations and distribution maps of European habitats. *Applied Vegetation Science*, 23, 648–675. <https://doi.org/10.1111/avsc.12519>

MA211 – Arctic coastal saltmarsh

Salt marshes along muddy and sandy intertidal shores in arctic Europe with dominance of halophytic plants with a circumpolar distribution. Stands are usually small and often occurring in mosaic with bare sediment, as they are subject to erosion by waves and ice. Although the tidal differences are relatively low, the species composition varies according to the frequency and duration of flooding.



Corresponding alliances in EuroVegChecklist 2016

- > JUN-04A Puccinellion phryganodis Hadač 1946
- > JUN-04B Caricion glareosae Nordhagen 1954
- > JUN-04C Dupontion fischeri Hadač 1946

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Stellaria humifusa</i>	75
<i>Carex subspathacea</i>	70
<i>Puccinellia phryganodes</i>	68
<i>Carex glareosa</i>	51
<i>Bryum salinum</i>	44
<i>Arctanthemum arcticum</i>	43

<i>Calamagrostis deschampsoides</i>	43
<i>Carex salina</i>	36
<i>Carex mackenziei</i>	29
<i>Festuca richardsonii</i>	24
<i>DuPontia psilosantha</i>	23
<i>Carex ursina</i>	23
<i>Hippuris tetraphylla</i>	21
<i>DuPontia fisheri</i>	21
<i>Salix reptans</i>	20
<i>Gentianella detonsa</i>	19
<i>Primula nutans</i>	16

Constant species (percentage frequencies)

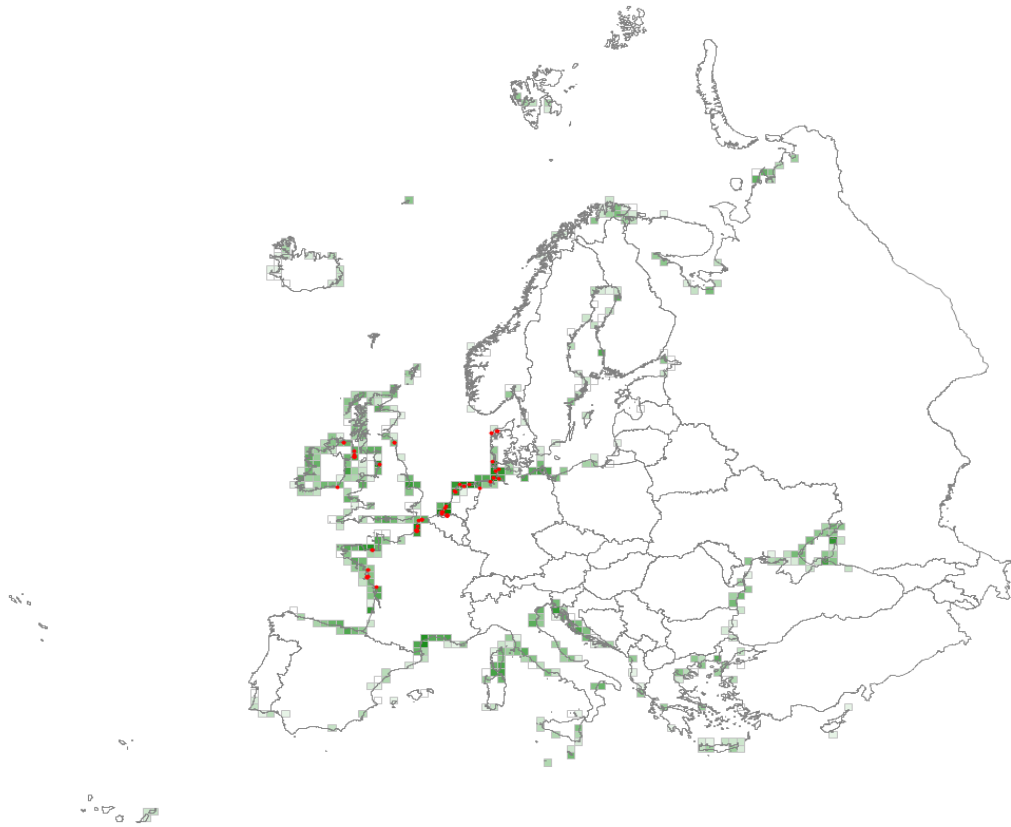
<i>Stellaria humifusa</i>	56
<i>Carex subspathacea</i>	50
<i>Puccinellia phryganodes</i>	47
<i>Agrostis stolonifera</i>	34
<i>Carex glareosa</i>	31
<i>Argentina anserina</i>	29
<i>Plantago maritima</i>	27
<i>Festuca rubra</i> aggr.	26
<i>Triglochin maritima</i>	21
<i>Bryum salinum</i>	20
<i>Calamagrostis deschampsoides</i>	19
<i>Arctanthemum arcticum</i>	19
<i>Sanionia uncinata</i>	17
<i>Parnassia palustris</i>	17
<i>Triglochin palustris</i>	15
<i>Carex mackenziei</i>	15
<i>Carex salina</i>	14

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Carex subspathacea</i>	27
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MA221 – Atlantic saltmarsh driftline

Driftline communities with annual nitrophilous plant species along and inside Atlantic salt marshes, often with a linear structure in the upper zone incidentally or regularly flooded by high tides. Species composition indicates both high nutrient content and saline conditions.



Corresponding alliances in EuroVegChecklist 2016

- <> CAK-01A *Atriplicion littoralis* Nordhagen 1940
- <> CAK-01C *Agropyro-Rumicion* Nordhagen 1940 nom. ambig. rejic. propos.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Oxybasis rubra</i>	53
<i>Atriplex prostrata</i>	37
<i>Atriplex littoralis</i>	32
<i>Oxybasis glauca</i>	27
<i>Artemisia maritima</i>	21
<i>Tripleurospermum maritimum</i> aggr.	20
<i>Elytrigia repens</i> aggr.	19
<i>Rumex crispus</i>	16
<i>Puccinellia nutkaensis</i>	16

Constant species (percentage frequencies)

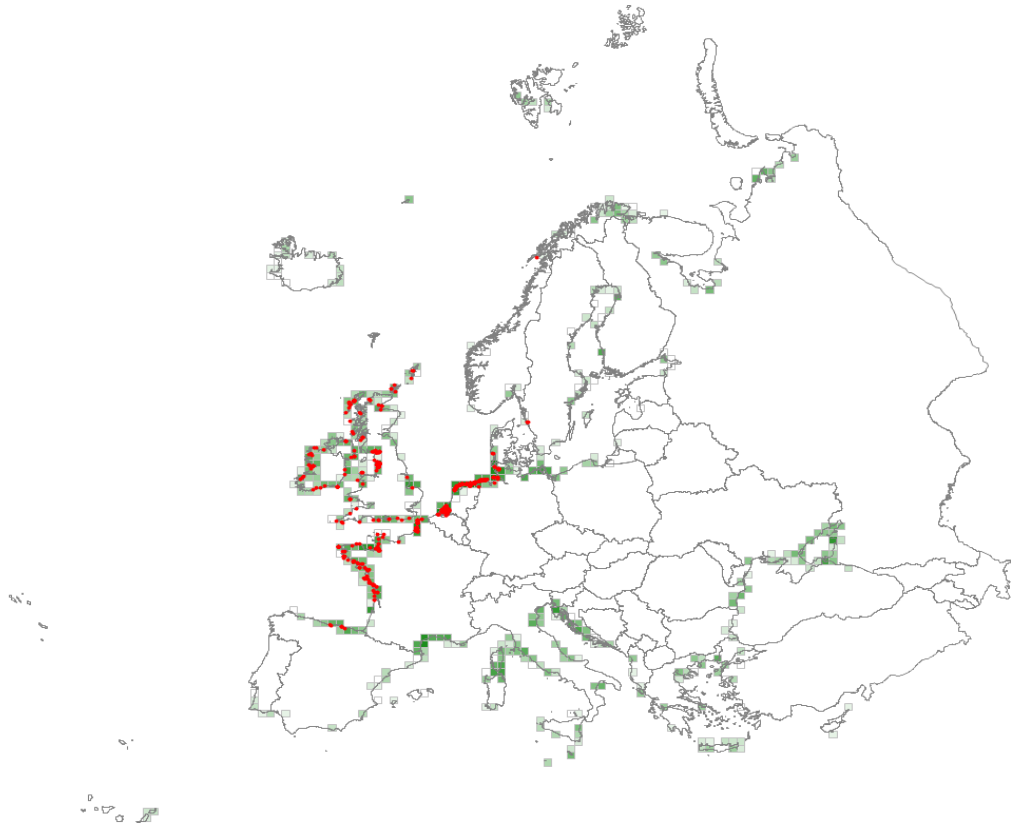
<i>Atriplex prostrata</i>	75
<i>Elytrigia repens</i> aggr.	64
<i>Oxybasis rubra</i>	40
<i>Tripleurospermum maritimum</i> aggr.	38
<i>Agrostis stolonifera</i>	34
<i>Atriplex littoralis</i>	33
<i>Rumex crispus</i>	30
<i>Festuca rubra</i> aggr.	30
<i>Sonchus arvensis</i>	23
<i>Bolboschoenus maritimus</i>	23
<i>Tripolium pannonicum</i>	21
<i>Senecio vulgaris</i>	19
<i>Suaeda maritima</i> aggr.	18
<i>Cirsium arvense</i>	18
<i>Oxybasis glauca</i>	16
<i>Argentina anserina</i>	16
<i>Polygonum aviculare</i> aggr.	15
<i>Sonchus asper</i>	14
<i>Elytrigia juncea</i>	14
<i>Artemisia maritima</i>	14
<i>Elytrigia atherica</i>	12
<i>Limonium vulgare</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Elytrigia repens</i> aggr.	41
<i>Oxybasis rubra</i>	30

MA222 – Atlantic upper saltmarsh

Upper zone of Atlantic salt marshes, with (extreme) fluctuating salinity and often influenced by fresh water seepage from surrounding dunes. This specific setting is reflected by species ranging from obligate halophytes to brackish and fresh water and dry dune indicators. Stands are often small and ephemeric, may be relatively species rich, with many annuals. They are often embedded in wet grassland or dry dune habitat.



Corresponding alliances in EuroVegChecklist 2016

- <> JUN-01B Frankenio laevis-Armerion maritimae Géhu et Géhu-Franck 1975
- <> MOL-10B Loto tenuis-Trifolion fragiferi Westhoff et Den Held ex de Foucault 2009
- <> SAG-01A Saginion maritimae Westhoff et al. 1962

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Juncus gerardi</i>	31
<i>Carex distans</i>	26
<i>Trifolium fragiferum</i>	26
<i>Glaux maritima</i>	26
<i>Plantago coronopus</i> aggr.	24
<i>Agrostis stolonifera</i>	23

<i>Cochlearia danica</i>	23
<i>Armeria maritima</i>	21
<i>Sagina nodosa</i>	21
<i>Trifolium repens</i>	21
<i>Parapholis strigosa</i>	21
<i>Sagina maritima</i>	20
<i>Centaurium pulchellum</i>	20
<i>Festuca rubra</i> aggr.	18
<i>Argentina anserina</i>	18
<i>Scorzoneroides autumnalis</i>	17
<i>Centaurium littorale</i>	17
<i>Plantago maritima</i>	16
<i>Odontites vulgaris</i> aggr.	16
<i>Oenanthe lachenalii</i>	16

Constant species (percentage frequencies)

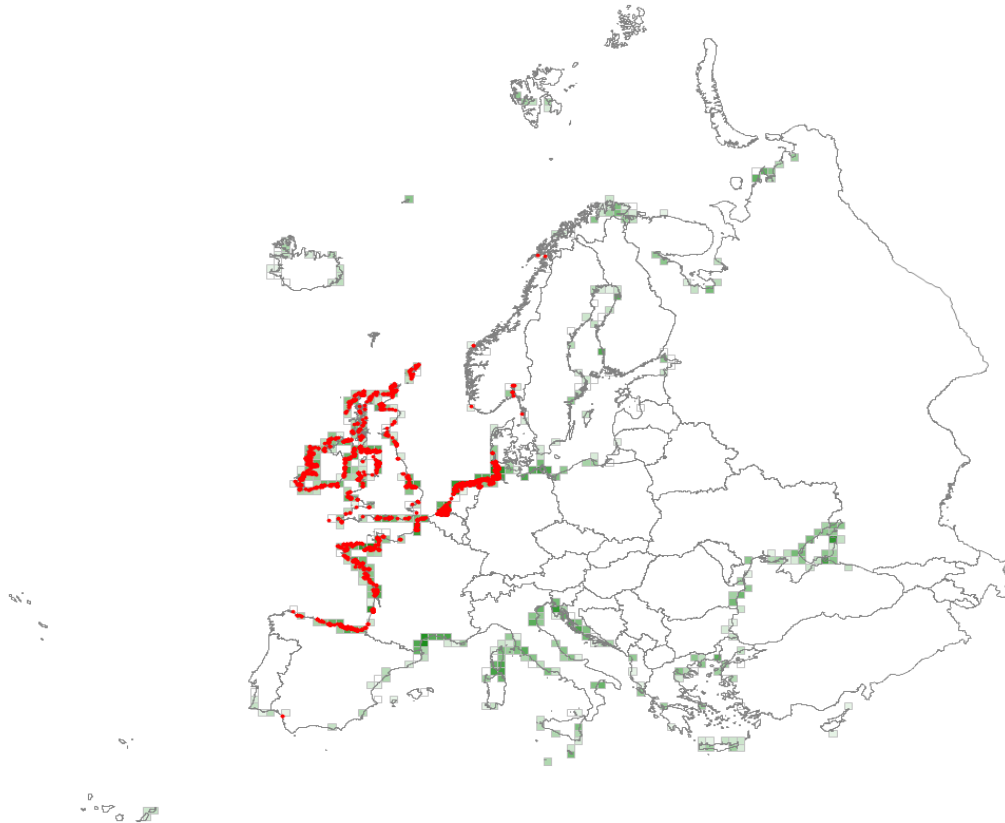
<i>Agrostis stolonifera</i>	83
<i>Festuca rubra</i> aggr.	79
<i>Trifolium repens</i>	61
<i>Juncus gerardi</i>	61
<i>Plantago coronopus</i> aggr.	53
<i>Glaux maritima</i>	42
<i>Armeria maritima</i>	38
<i>Carex distans</i>	36
<i>Plantago maritima</i>	35
<i>Argentina anserina</i>	35
<i>Trifolium fragiferum</i>	34
<i>Scorzoneroides autumnalis</i>	29
<i>Poa pratensis</i> aggr.	22
<i>Centaurium pulchellum</i>	20
<i>Lotus tenuis</i>	19
<i>Lolium perenne</i>	19
<i>Holcus lanatus</i>	19
<i>Odontites vulgaris</i> aggr.	18
<i>Cochlearia danica</i>	18
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	18
<i>Leontodon saxatilis</i>	17
<i>Sagina maritima</i>	16
<i>Lotus corniculatus</i>	15
<i>Juncus articulatus</i>	15
<i>Centaurium littorale</i>	14
<i>Sagina nodosa</i>	13
<i>Plantago major</i>	13
<i>Triglochin maritima</i>	12
<i>Phragmites australis</i>	12
<i>Oenanthe lachenalii</i>	12
<i>Elytrigia repens</i> aggr.	12
<i>Carex flacca</i>	12
<i>Sagina procumbens</i>	11
<i>Parapholis strigosa</i>	11
<i>Bellis perennis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Festuca rubra</i> aggr.	45
<i>Agrostis stolonifera</i>	28

MA223 – Atlantic upper-mid saltmarsh and saline and brackish reed, rush and sedge bed

Middle zone of Atlantic salt marshes with closed swards of graminoids, herbs and low shrubs on sandy or clayey flats. The communities are regularly but not daily flooded by sea water. In areas with fresh-water influence, helophytes may dominate. The communities are grazed or occur in unmanaged situations.



Corresponding alliances in EuroVegChecklist 2016

- <> JUN-01A Juncion maritimi Br.-Bl. ex Horvatić 1934
- <> JUN-03B Puccinellio maritimae-Spergularion salinae Beefink 1965
- <> JUN-03C Armerion maritimae Br.-Bl. et De Leeuw 1936
- <> PHR-02A Scirpion maritimi Dahl et Hadač 1941

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Glaux maritima</i>	36
<i>Plantago maritima</i>	28
<i>Artemisia maritima</i>	24
<i>Tripolium pannonicum</i>	24
<i>Juncus gerardi</i>	22
<i>Elytrigia atherica</i>	22

<i>Armeria maritima</i>	21
<i>Triglochin maritima</i>	19
<i>Cochlearia officinalis</i>	19
<i>Puccinellia maritima</i>	18
<i>Spergularia media</i>	16
<i>Cochlearia anglica</i>	15

Constant species (percentage frequencies)

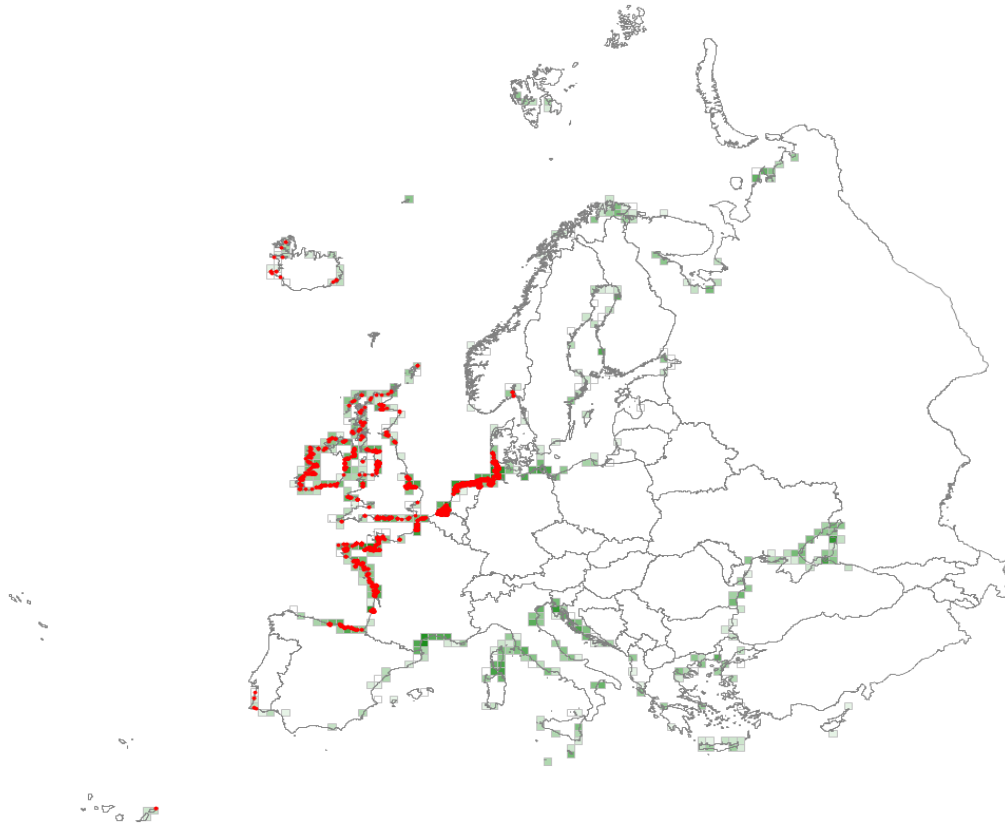
<i>Festuca rubra</i> aggr.	66
<i>Plantago maritima</i>	59
<i>Glaux maritima</i>	58
<i>Tripolium pannonicum</i>	51
<i>Agrostis stolonifera</i>	51
<i>Juncus gerardi</i>	45
<i>Armeria maritima</i>	36
<i>Triglochin maritima</i>	34
<i>Atriplex prostrata</i>	30
<i>Elytrigia atherica</i>	27
<i>Puccinellia maritima</i>	24
<i>Spergularia media</i>	19
<i>Juncus maritimus</i>	19
<i>Limonium vulgare</i>	17
<i>Halimione portulacoides</i>	16
<i>Artemisia maritima</i>	16
<i>Suaeda maritima</i> aggr.	13
<i>Bolboschoenus maritimus</i>	13
<i>Plantago coronopus</i> aggr.	12
<i>Cochlearia officinalis</i>	12
<i>Carex extensa</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Festuca rubra</i> aggr.	38
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MA224 – Atlantic mid-low saltmarsh

Low zone of Atlantic salt marshes with open to closed swards of halophytic graminoids, herbs and low shrubs on sandy or clayey flats. The communities are regularly flooded (100-200 days/year) by sea water. In the southern part of the distribution range perennial glassworts may dominate, indicating transitions toward Mediterranean salt marshes.



Corresponding alliances in EuroVegChecklist 2016

- <> JUN-03A Festucion maritimae Christiansen 1927
- <> SAL-01A Salicornion fruticosae Br.-Bl. 1933

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Puccinellia maritima</i>	68
<i>Spergularia media</i>	39
<i>Suaeda maritima</i> aggr.	38
<i>Salicornia europaea</i> aggr.	38
<i>Tripolium pannonicum</i>	30
<i>Halimione portulacoides</i>	29
<i>Spartina anglica</i>	24
<i>Limonium vulgare</i>	23

<i>Limonium humile</i>	19
<i>Triglochin maritima</i>	17

Constant species (percentage frequencies)

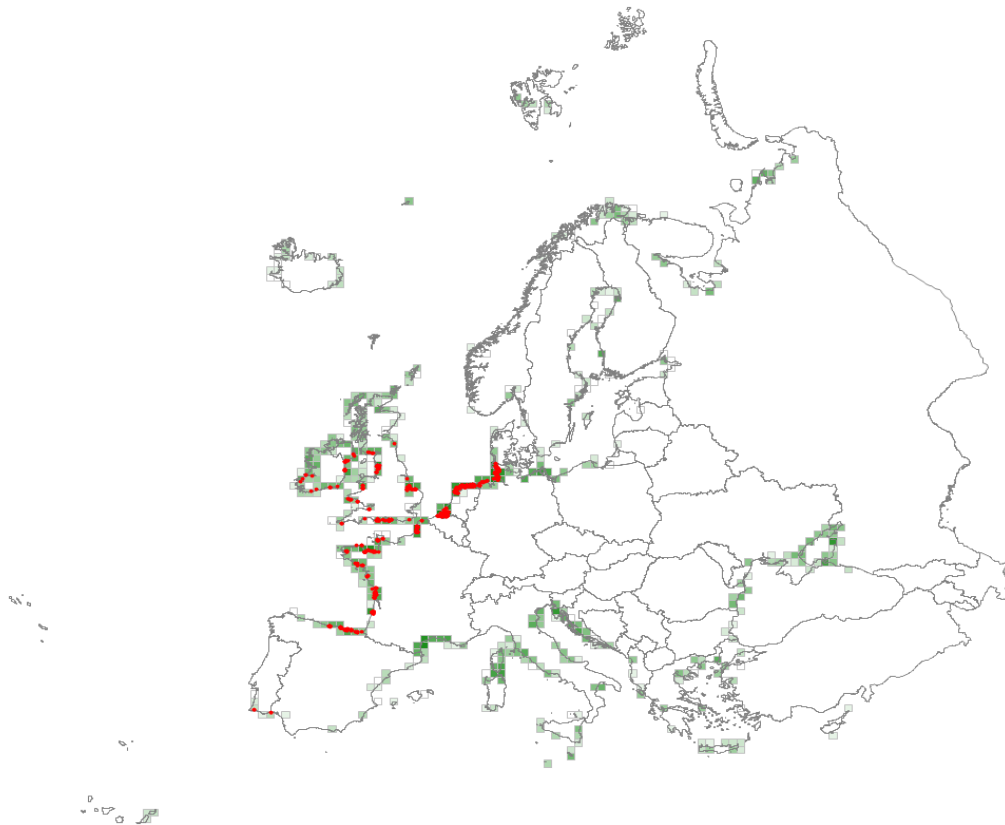
<i>Puccinellia maritima</i>	89
<i>Salicornia europaea</i> aggr.	66
<i>Tripolium pannonicum</i>	63
<i>Suaeda maritima</i> aggr.	63
<i>Spergularia media</i>	44
<i>Halimione portulacoides</i>	44
<i>Triglochin maritima</i>	31
<i>Plantago maritima</i>	30
<i>Limonium vulgare</i>	28
<i>Spartina anglica</i>	26
<i>Glaux maritima</i>	23
<i>Festuca rubra</i> aggr.	13
<i>Atriplex prostrata</i>	11
<i>Armeria maritima</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Puccinellia maritima</i>	52
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MA225 – Atlantic pioneer saltmarsh

Pioneer zone of Atlantic salt marshes with open vegetation dominated by annual chenopodioids and grasses (*Spartina*). Stands are daily (twice) flooded by sea water and relatively species poor. Dominating species are obligate halophytes and may occupy both sandy and clayey sites.



Corresponding alliances in EuroVegChecklist 2016

- <> SPA-01A *Spartinion glabrae* Conard 1935
- <> THE-01A *Therosalicornion* Br.-Bl. 1933
- > THE-01B *Salicornion dolichostachyo-fragilis* Géhu et Rivas-Mart. ex Géhu et Géhu-Franck 1984
- > THE-01C *Salicornion ramosissimae* Tx. 1974

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Spartina anglica</i>	80
<i>Salicornia europaea</i> aggr.	31
<i>Spartina maritima</i>	28
<i>Puccinellia maritima</i>	25
<i>Suaeda maritima</i> aggr.	18

Constant species (percentage frequencies)

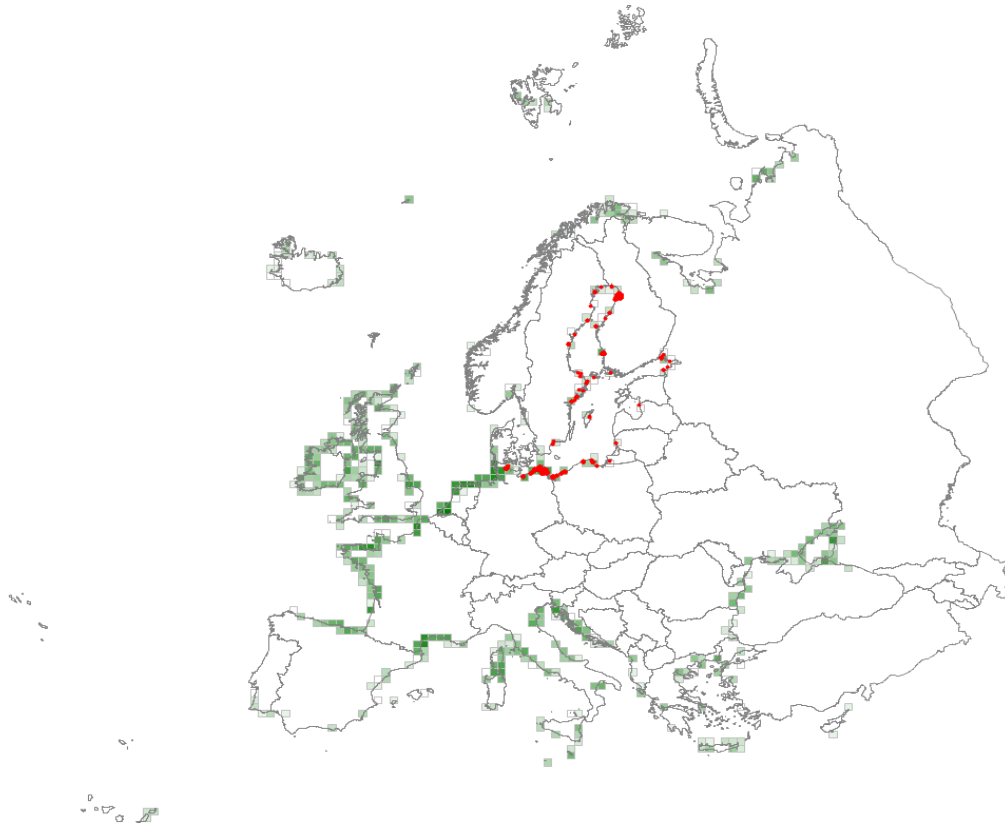
<i>Spartina anglica</i>	86
<i>Salicornia europaea</i> aggr.	54
<i>Puccinellia maritima</i>	33
<i>Suaeda maritima</i> aggr.	30
<i>Tripolium pannonicum</i>	28
<i>Halimione portulacoides</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Spartina anglica</i>	71
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MA232 – Baltic coastal meadow

Baltic coastal meadows, mostly with low plant communities in the geolittoral zone (above mean high tide). Salinity is low (brackish water) and tidal ranges are small. Most of the areas were traditionally used for mowing or grazing. Abandonment of traditional management leads to dominance of reed beds, another habitat type. Although tidal range is small, the vegetation occurs in distinct zones, with saline vegetation closest to the sea.



Corresponding alliances in EuroVegChecklist 2016

- <> JUN-03A Festucion maritimae Christiansen 1927
- <> JUN-03C Armerion maritimae Br.-Bl. et De Leeuw 1936
- <> MOL-10B Loto tenuis-Trifolion fragiferi Westhoff et Den Held ex de Foucault 2009
- <> PHR-02A Scirpion maritimi Dahl et Hadač 1941

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Eleocharis uniglumis</i>	43
<i>Juncus gerardi</i>	39
<i>Glaux maritima</i>	36
<i>Triglochin maritima</i>	33
<i>Calamagrostis neglecta</i>	32

<i>Argentina anserina</i>	27
<i>Trifolium fragiferum</i>	24
<i>Agrostis stolonifera</i>	24
<i>Plantago maritima</i>	22
<i>Carex halophila</i>	22
<i>Carex mackenziei</i>	22
<i>Blysmopsis rufa</i>	19
<i>Scorzoneroides autumnalis</i>	19
<i>Carex paleacea</i>	18
<i>Triglochin palustris</i>	16
<i>Phragmites australis</i>	15

Constant species (percentage frequencies)

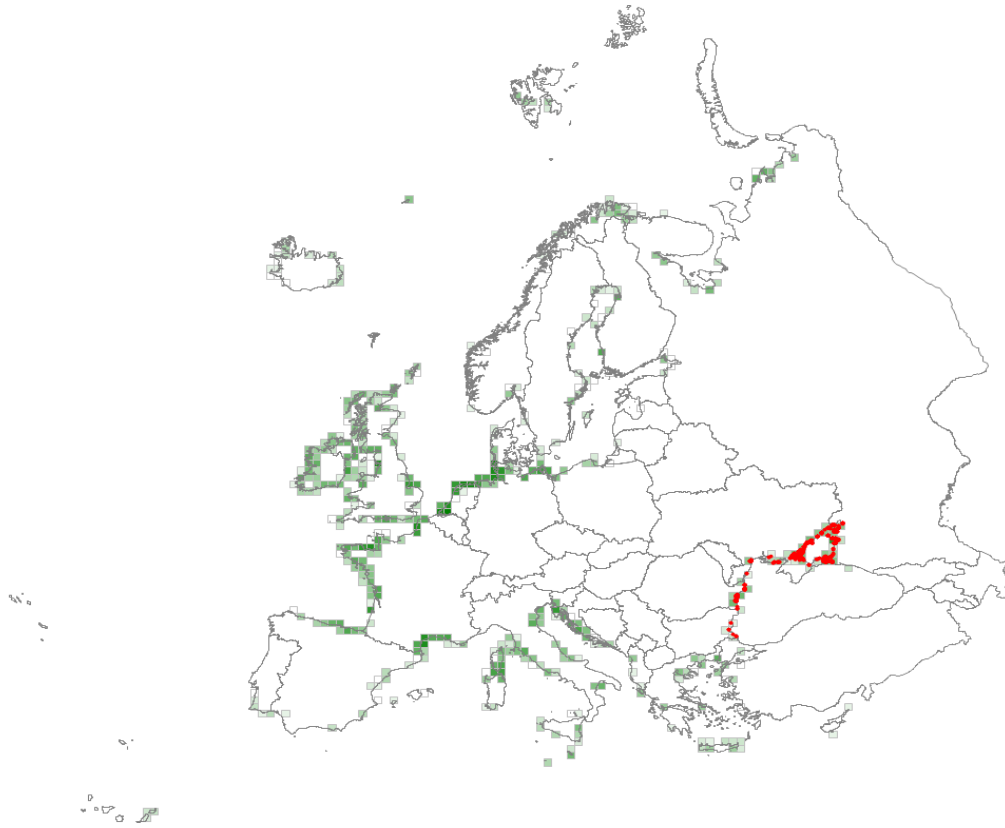
<i>Agrostis stolonifera</i>	86
<i>Juncus gerardi</i>	76
<i>Triglochin maritima</i>	58
<i>Glaux maritima</i>	58
<i>Festuca rubra</i> aggr.	52
<i>Argentina anserina</i>	52
<i>Phragmites australis</i>	50
<i>Plantago maritima</i>	47
<i>Eleocharis uniglumis</i>	45
<i>Scorzoneroides autumnalis</i>	33
<i>Trifolium fragiferum</i>	31
<i>Calamagrostis neglecta</i>	25
<i>Triglochin palustris</i>	24
<i>Trifolium repens</i>	19
<i>Poa pratensis</i> aggr.	19
<i>Plantago major</i>	17
<i>Galium palustre</i> aggr.	17
<i>Bolboschoenus maritimus</i>	16
<i>Odontites vulgaris</i> aggr.	14
<i>Elytrigia repens</i> aggr.	14
<i>Tripolium pannonicum</i>	13
<i>Spergularia marina</i>	13
<i>Schedonorus arundinaceus</i>	11
<i>Carex nigra</i>	11
<i>Carex mackenziei</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Agrostis stolonifera</i>	34
<i>Juncus gerardi</i>	32

MA241 – Black Sea littoral saltmarsh

Black Sea salt marshes on sandy and muddy substrates along sheltered shores, characterised by small tidal ranges and relatively low salinity. In most sites, tall rushes dominate, but locally shrub and herb communities may occur, that outside the coastal region are found in (inland) continental salt pans. Due to desiccation, the substrate of such communities in the upper zone can be hypersaline.



Corresponding alliances in EuroVegChecklist 2016

- <> FEP-03D Puccinellion giganteae Dubyna et Neuhäuslová 2000
- <> JUN-01A Juncion maritimi Br.-Bl. ex Horvatić 1934
- <> THE-02A Salicornion prostratae Géhu 1992

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Puccinellia gigantea</i>	41
<i>Limonium meyeri</i>	41
<i>Halimione verrucifera</i>	33
<i>Artemisia santonicum</i>	31
<i>Salicornia europaea</i> aggr.	28
<i>Limonium bellidifolium</i>	28

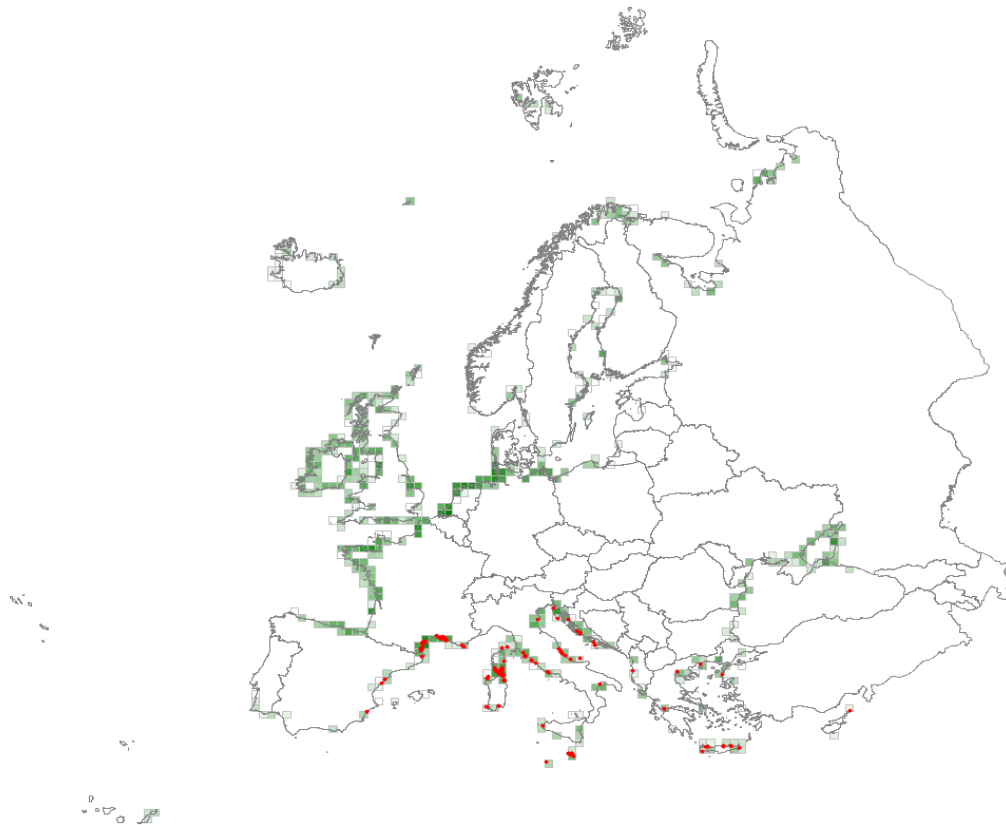
<i>Halimione pedunculata</i>	27
<i>Aeluropus littoralis</i>	25
<i>Suaeda maritima</i> aggr.	23
<i>Bassia hirsuta</i>	22
<i>Elytrigia elongata</i>	18
<i>Puccinellia distans</i>	16
<i>Juncus gerardi</i>	16

Constant species (percentage frequencies)

<i>Limonium meyeri</i>	57
<i>Salicornia europaea</i> aggr.	49
<i>Artemisia santonicum</i>	48
<i>Suaeda maritima</i> aggr.	38
<i>Tripolium pannonicum</i>	31
<i>Puccinellia gigantea</i>	31
<i>Juncus gerardi</i>	31
<i>Phragmites australis</i>	29
<i>Halimione verrucifera</i>	26
<i>Aeluropus littoralis</i>	25
<i>Elytrigia elongata</i>	22
<i>Puccinellia distans</i>	21
<i>Limonium bellidifolium</i>	17
<i>Halimione pedunculata</i>	13
<i>Elytrigia repens</i> aggr.	11
<i>Atriplex prostrata</i>	11

MA251 – Mediterranean upper saltmarsh

Open communities of the upper fringe of Mediterranean salt marshes, dominated by annual species, often under the influence of salt spray. The vegetation often occupies small but relatively species-rich patches. Many species are vernal, ending their life cycle before summer, and many are also found outside the coastal region.



Corresponding alliances in EuroVegChecklist 2016

- > JUN-02C Agropyro-Artemision coerulescentis Pignatti 1953
- <> SAG-01B Spergularion macrorhizae Gamisans 1990
- <> SAG-01C Junco ranarii-Plantaginion commutatae Horvatić 1934
- <> SAG-01D Romuleo-Saginion (Wolff 1968) Mucina in Mucina et al. 2016
- <> SAG-01E Sileno sedoidis-Catapodion loliacei de Foucault et Bioret 2010
- > SAL-01C Suaedion brevifoliae Br.-Bl. et O. de Bolòs 1958

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Parapholis incurva</i>	49
<i>Parapholis filiformis</i>	45
<i>Polypogon subspatheus</i>	32
<i>Spergularia marina</i>	28

<i>Plantago coronopus</i> aggr.	24
<i>Arthrocnemum macrostachyum</i>	24
<i>Frankenia pulverulenta</i>	24
<i>Spergularia macrorrhiza</i>	23
<i>Spergularia heldreichii</i>	22
<i>Hordeum marinum</i>	21
<i>Sagina maritima</i>	20
<i>Triglochin barrelieri</i>	19
<i>Sphenopus divaricatus</i>	18
<i>Salsola soda</i>	17
<i>Melilotus messanensis</i>	16
<i>Cotula coronopifolia</i>	16
<i>Juncus bufonius</i> aggr.	15

Constant species (percentage frequencies)

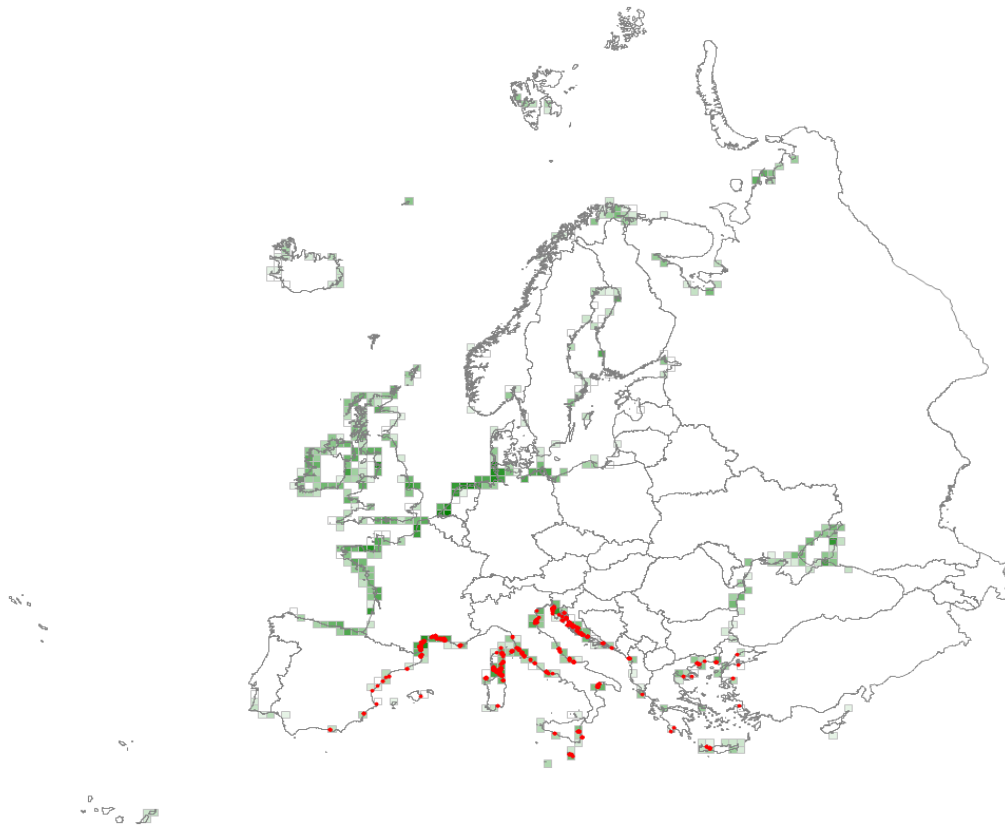
<i>Plantago coronopus</i> aggr.	53
<i>Parapholis incurva</i>	53
<i>Parapholis filiformis</i>	38
<i>Spergularia marina</i>	32
<i>Arthrocnemum macrostachyum</i>	21
<i>Juncus bufonius</i> aggr.	20
<i>Halimione portulacoides</i>	18
<i>Sagina maritima</i>	17
<i>Hordeum marinum</i>	17
<i>Polypogon subspathaceus</i>	16
<i>Puccinellia festuciformis</i>	13
<i>Frankenia pulverulenta</i>	13
<i>Frankenia laevis</i>	13
<i>Sarcocornia fruticosa</i>	12
<i>Salsola soda</i>	12
<i>Polypogon monspeliensis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Parapholis filiformis</i>	29
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MA252 – Mediterranean upper-mid saltmarsh and saline and brackish reed, rush and sedge bed

Open to closed rush communities on the high zone of Mediterranean salt marshes, where flooding frequency (by sea water) is low. The vegetation generally occupies small belts and patches, in line with the limited tidal range of the Mediterranean Sea. Inbetween the rushes, a range of halophytic grasses, herbs and low shrubs may be found.



Corresponding alliances in EuroVegChecklist 2016

<> JUN-01A Juncion maritimi Br.-Bl. ex Horvatić 1934

Characteristic species combination

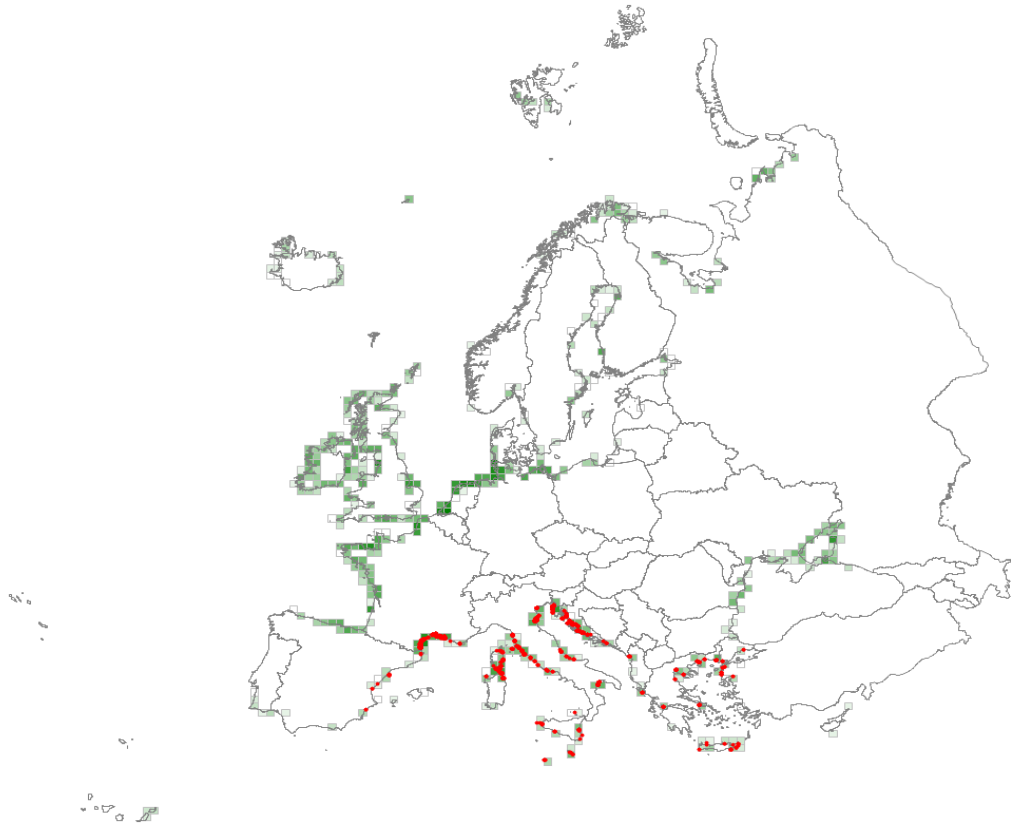
Diagnostic species (phi coefficient * 100)

<i>Limonium narbonense</i>	41
<i>Juncus acutus</i>	34
<i>Juncus maritimus</i>	33
<i>Juncus subulatus</i>	32
<i>Sarcocornia fruticosa</i>	28
<i>Limbarda crithmoides</i>	25
<i>Carex extensa</i>	22
<i>Bolboschoenus maritimus</i>	20
<i>Puccinellia festuciformis</i>	20

<i>Halimione portulacoides</i>	19
Constant species (percentage frequencies)	
<i>Juncus maritimus</i>	50
<i>Phragmites australis</i>	45
<i>Juncus acutus</i>	41
<i>Bolboschoenus maritimus</i>	36
<i>Limonium narbonense</i>	33
<i>Sarcocornia fruticosa</i>	32
<i>Limbarda crithmoides</i>	32
<i>Tripolium pannonicum</i>	29
<i>Halimione portulacoides</i>	29
<i>Carex extensa</i>	21
<i>Juncus subulatus</i>	19
<i>Puccinellia festuciformis</i>	18
<i>Elytrigia atherica</i>	16
<i>Atriplex prostrata</i>	14
<i>Limonium vulgare</i>	11
<i>Elytrigia elongata</i>	11

MA253 – Mediterranean mid-low saltmarsh

Open to closed halophytic communities of the lower tidal zone of Mediterranean salt marshes. Perennial chenopodioids dominate the species-poor vegetation. Different species of sea lavender form a characteristic element, some of which having a small distribution range. In the lowest parts annual glassworts (*Salicornia*) and grasses (*Spartina*) are frequent.



Corresponding alliances in EuroVegChecklist 2016

- <> SAL-01A *Salicornion fruticosae* Br.-Bl. 1933
- > SAL-01B *Arthrocnemion glauci* Rivas-Mart. et Costa M. 1984
- <> SPA-01A *Spartinion glabrae* Conard 1935
- <> THE-01A *Therosalicornion* Br.-Bl. 1933

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sarcocornia fruticosa</i>	56
<i>Puccinellia festuciformis</i>	46
<i>Halimione portulacoides</i>	38
<i>Arthrocnemum macrostachyum</i>	35
<i>Limonium narbonense</i>	28
<i>Artemisia caerulea</i>	26

<i>Limonium vulgare</i>	26
<i>Limoniastrum monopetalum</i>	25
<i>Sarcocornia perennis</i>	22
<i>Limbarda crithmoides</i>	21
<i>Spartina versicolor</i>	18
<i>Juncus maritimus</i>	17
<i>Aeluropus littoralis</i>	17

Constant species (percentage frequencies)

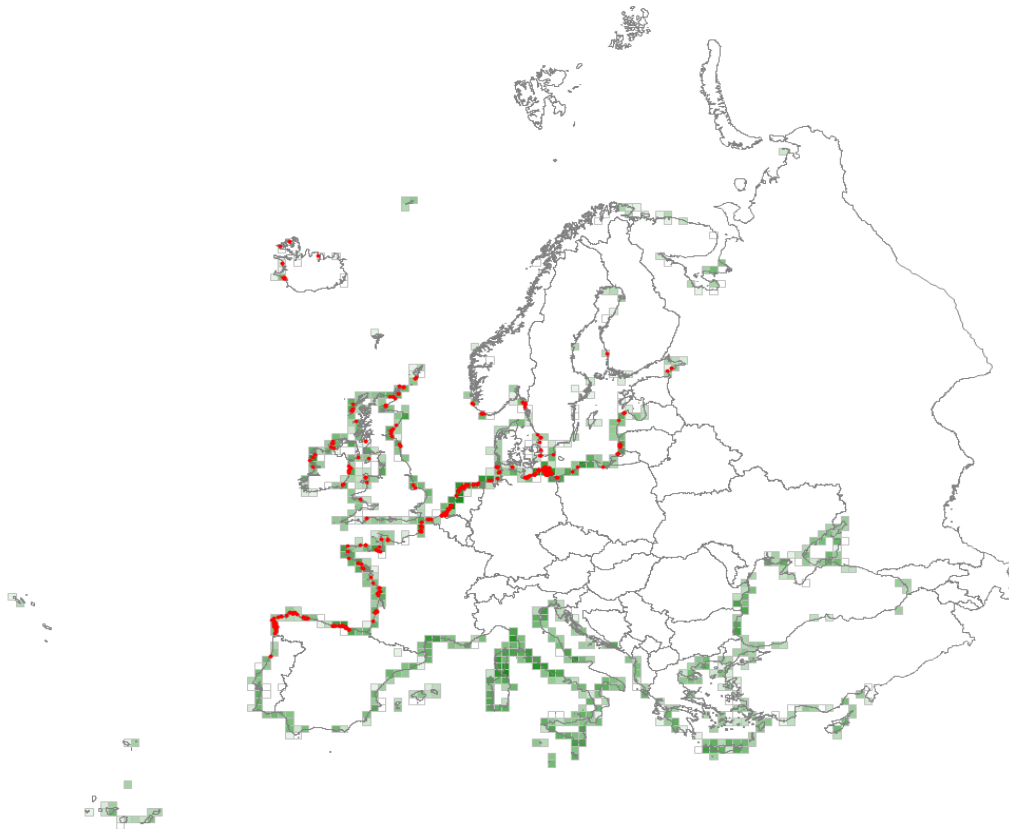
<i>Sarcocornia fruticosa</i>	61
<i>Halimione portulacoides</i>	57
<i>Puccinellia festuciformis</i>	43
<i>Limonium vulgare</i>	30
<i>Arthrocnemum macrostachyum</i>	30
<i>Suaeda maritima</i> aggr.	26
<i>Limbarda crithmoides</i>	26
<i>Juncus maritimus</i>	26
<i>Limonium narbonense</i>	22
<i>Tripolium pannonicum</i>	19
<i>Salicornia europaea</i> aggr.	19
<i>Artemisia caerulescens</i>	19
<i>Aeluropus littoralis</i>	17
<i>Sarcocornia perennis</i>	14

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Sarcocornia fruticosa</i>	30
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N11 – Atlantic, Baltic and Arctic sand beach

Atlantic, Baltic and Arctic sandy beach is a linear habitat, occurring on sandy shores of the Atlantic and Arctic Oceans and the North and Baltic Seas. It is mainly an unvegetated habitat with low species diversity. Annual plants, often halophytes are the typical plant species, appearing temporarily on strandline sediments. On less dynamic beaches, as around the Baltic, perennials including some brackish and freshwater marsh plants are characteristic. Volcanic sediments can provide a distinctive character around Icelandic shores. Distinctive invertebrates characterise beaches and their driftlines, providing food for some wading birds.



Corresponding alliances in EuroVegChecklist 2016

- ◊ CAK-01A *Atriplicion littoralis* Nordhagen 1940
- > CAK-01B *Salsolo-Minuartion peploidis* Tx. in Br.-Bl. et Tx. 1952
- ◊ CAK-01C *Agropyro-Rumicion* Nordhagen 1940 nom. ambig. rejic. propos.
- ◊ CAK-02A *Cakilion edentulae* Thannheiser 1981
- ◊ CAK-02B *Atriplicion nudicaulis* Golub et al. 2003
- ◊ CAK-03A *Euphorbion peploidis* Tx. ex Oberd. 1952

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cakile maritima</i>	51
<i>Honckenya peploides</i>	39
<i>Salsola kali</i> aggr.	31
<i>Leymus arenarius</i>	25
<i>Atriplex littoralis</i>	25
<i>Atriplex laciniata</i>	25
<i>Atriplex prostrata</i>	21
<i>Elytrigia juncea</i>	20
<i>Atriplex glabriuscula</i>	17

Constant species (percentage frequencies)

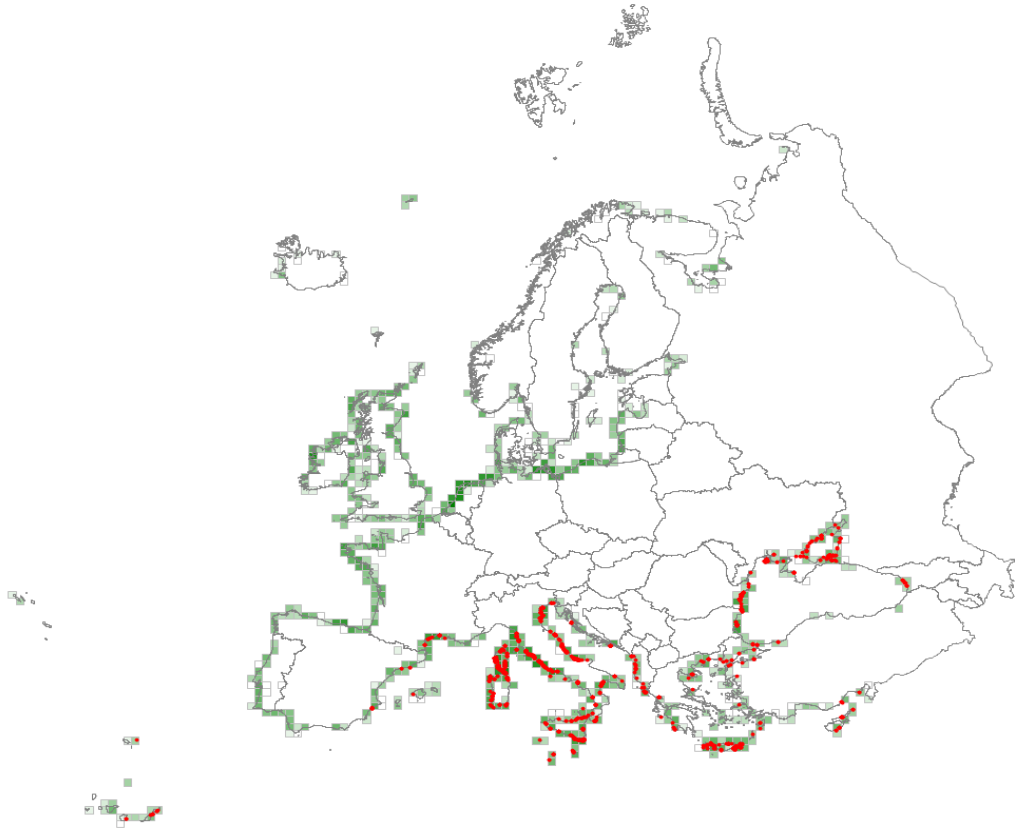
<i>Cakile maritima</i>	97
<i>Salsola kali</i> aggr.	55
<i>Atriplex prostrata</i>	44
<i>Elytrigia juncea</i>	41
<i>Honckenya peploides</i>	40
<i>Atriplex littoralis</i>	26
<i>Leymus arenarius</i>	24
<i>Tripleurospermum maritimum</i> aggr.	17
<i>Ammophila arenaria</i>	17
<i>Atriplex laciniata</i>	13

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Cakile maritima</i>	58
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N12 – Mediterranean and Black Sea sand beach

A largely unvegetated linear feature of sheltered coastlines around the Mediterranean and Black Seas, with fragmentary and sporadic vegetation cover developing on the accumulated sand, gravel and decaying plant material. Typically, the vegetation cover comprises scattered annual halophytes, although pioneer dune perennials can appear where sand ridges get pushed by storms beyond the normal tidal limit.



Corresponding alliances in EuroVegChecklist 2016

- <> CAK-03A Euphorbion peplidis Tx. ex Oberd. 1952
- <> CAK-03B Cakilion euxinae Géhu et al. 1994

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cakile maritima</i>	49
<i>Euphorbia peplis</i>	35
<i>Salsola kali</i> aggr.	34
<i>Xanthium orientale</i>	30
<i>Polygonum maritimum</i>	24
<i>Eryngium maritimum</i>	18

Constant species (percentage frequencies)

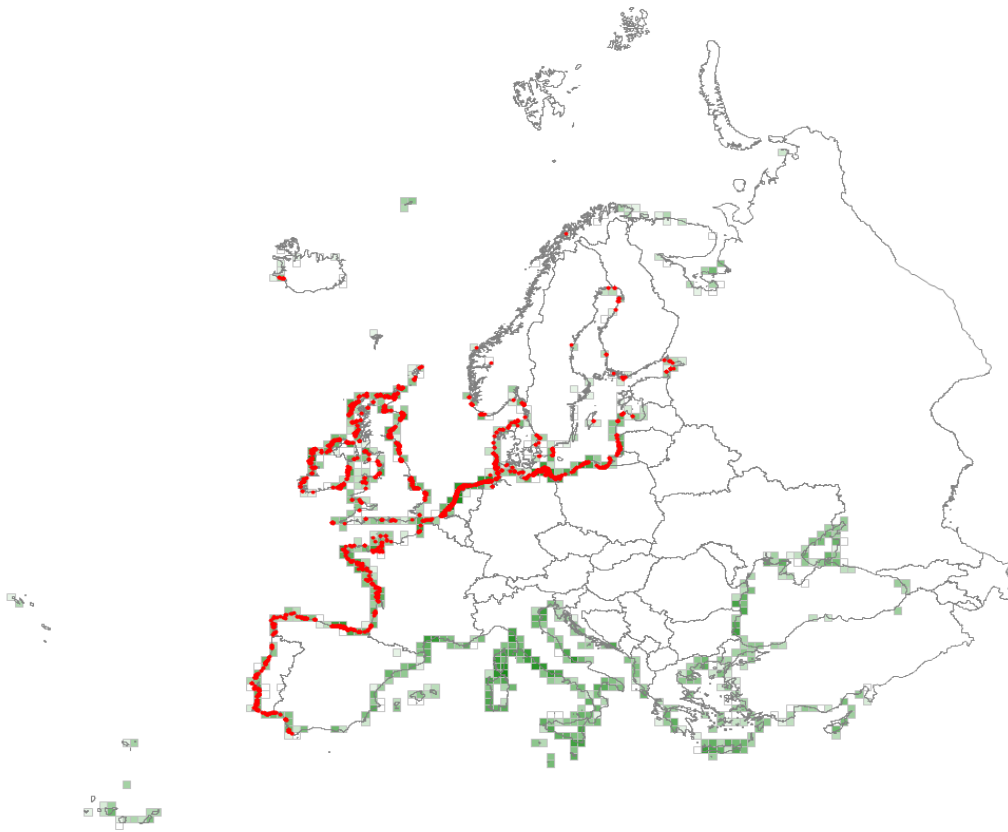
<i>Cakile maritima</i>	93
<i>Salsola kali</i> aggr.	59
<i>Xanthium orientale</i>	33
<i>Eryngium maritimum</i>	30
<i>Elytrigia juncea</i>	26
<i>Euphorbia peplis</i>	24
<i>Polygonum maritimum</i>	21
<i>Sporobolus pungens</i>	14
<i>Cyperus capitatus</i>	14
<i>Leymus racemosus</i>	12
<i>Medicago marina</i>	11
<i>Calystegia soldanella</i>	11
<i>Atriplex prostrata</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Cakile maritima</i>	54
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N13 – Atlantic and Baltic shifting coastal dune

Primary, shifting (so-called 'white') dunes of dynamic coastal sands along the Atlantic, North Sea and Baltic coasts. Early pioneers upshore from the strandline catch sand blown from the beach and initiate foredune, then embryo dune, development stages. They may come and go with subsequent storms, or continue to build higher, mobile dunes that move inland, sometimes to enormous size and in distinct ridges with intervening valleys. *Ammophila arenaria* is the widespread dominant in the middle to later stages. This grass is especially well-equipped to cope with rapid upbuild and continually shifting sands. *Leymus arenarius* and *xAmmodon baltica* play a similar role in colder regions. The latter hybrid is preferred in plantings related to coastal defence measures. The vegetation cover on the sharply-draining, nutrient-poor sand, more or less without organic matter, is typically open with few species, some indicative of the regional temperature contrasts, and some striking fungi. Specialised beetles are also characteristic.



Corresponding alliances in EuroVegChecklist 2016

- > AMM-01C Elymion arenarii Christiansen 1927
- > AMM-02A Agropyro-Honckenyon peploidis Tx. in Br.-Bl. et Tx. 1952 nom. mut. propos.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Ammophila arenaria</i>	37
<i>Leymus arenarius</i>	32
<i>x_Ammocalamagrostis baltica</i>	28
<i>Elytrigia juncea</i>	24
<i>Honckenya peploides</i>	19

Constant species (percentage frequencies)

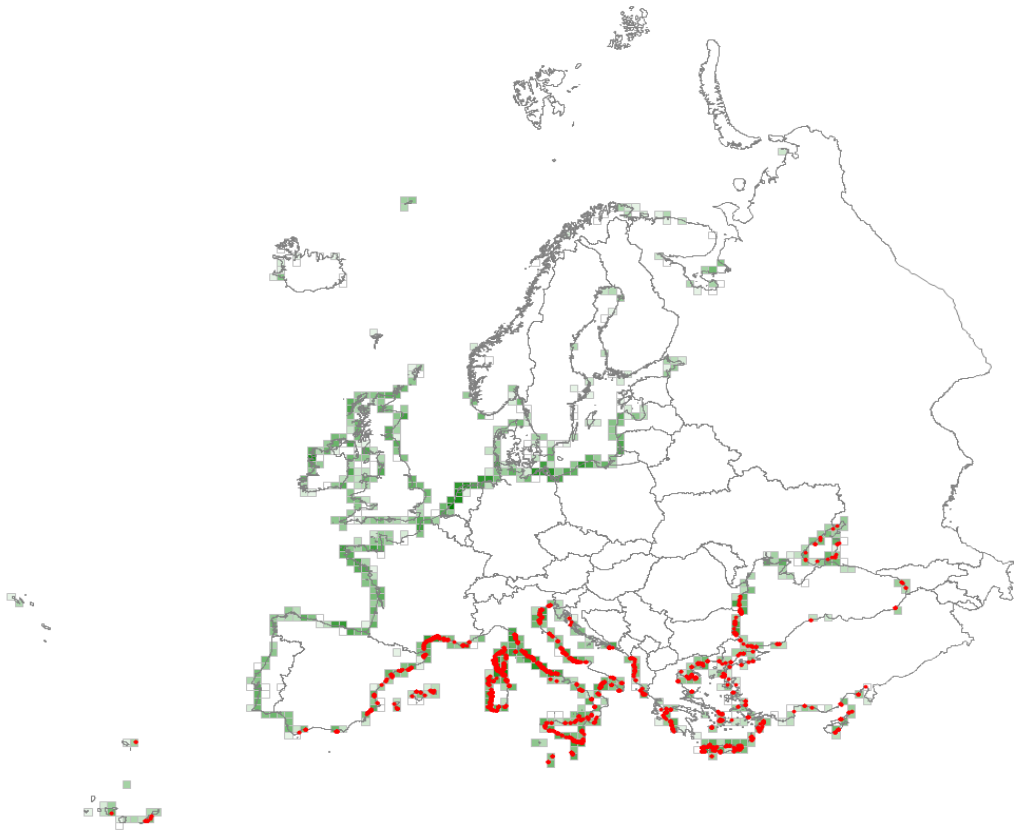
<i>Ammophila arenaria</i>	71
<i>Elytrigia juncea</i>	49
<i>Festuca rubra</i> aggr.	37
<i>Leymus arenarius</i>	31
<i>Eryngium maritimum</i>	21
<i>Carex arenaria</i>	20
<i>Honckenya peploides</i>	19
<i>x_Ammocalamagrostis baltica</i>	15
<i>Euphorbia paralias</i>	15
<i>Calystegia soldanella</i>	15
<i>Cakile maritima</i>	15
<i>Sonchus arvensis</i>	11
<i>Jacobaea vulgaris</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Ammophila arenaria</i>	55
<i>Elytrigia juncea</i>	26

N14 – Mediterranean, Macaronesian and Black Sea shifting coastal dune

Primary, shifting ('white') dunes of dynamic coastal sands around the Black and Mediterranean Seas, and into the Atlantic around SW Iberia and Macaronesia. Early pioneers upshore from the strandline catch sand blown from the beach and initiate embryo dune development. These may come and go with subsequent storms, or continue to build higher mobile white dunes that move inland. Except in Macaronesia, the dominant plant in the middle to later stages is *Ammophila arenaria* (subsp. *arundinacea* in the Mediterranean), and the associated flora on the permeable, impoverished sands is limited and sparse.



Corresponding alliances in EuroVegChecklist 2016

- > AMM-01A Ammophilion Br.-Bl. 1921
- > AMM-01B Elymion gigantei Morariu 1957

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Echinophora spinosa</i>	47
<i>Medicago marina</i>	39
<i>Eryngium maritimum</i>	38
<i>Elytrigia juncea</i>	38

<i>Euphorbia paralias</i>	32
<i>Cyperus capitatus</i>	29
<i>Cutandia maritima</i>	29
<i>Achillea maritima</i>	29
<i>Pancratium maritimum</i>	28
<i>Calystegia soldanella</i>	26
<i>Ammophila arenaria</i>	25
<i>Anthemis maritima</i>	24
<i>Sporobolus pungens</i>	22
<i>Cakile maritima</i>	17
<i>Silene succulenta</i>	15

Constant species (percentage frequencies)

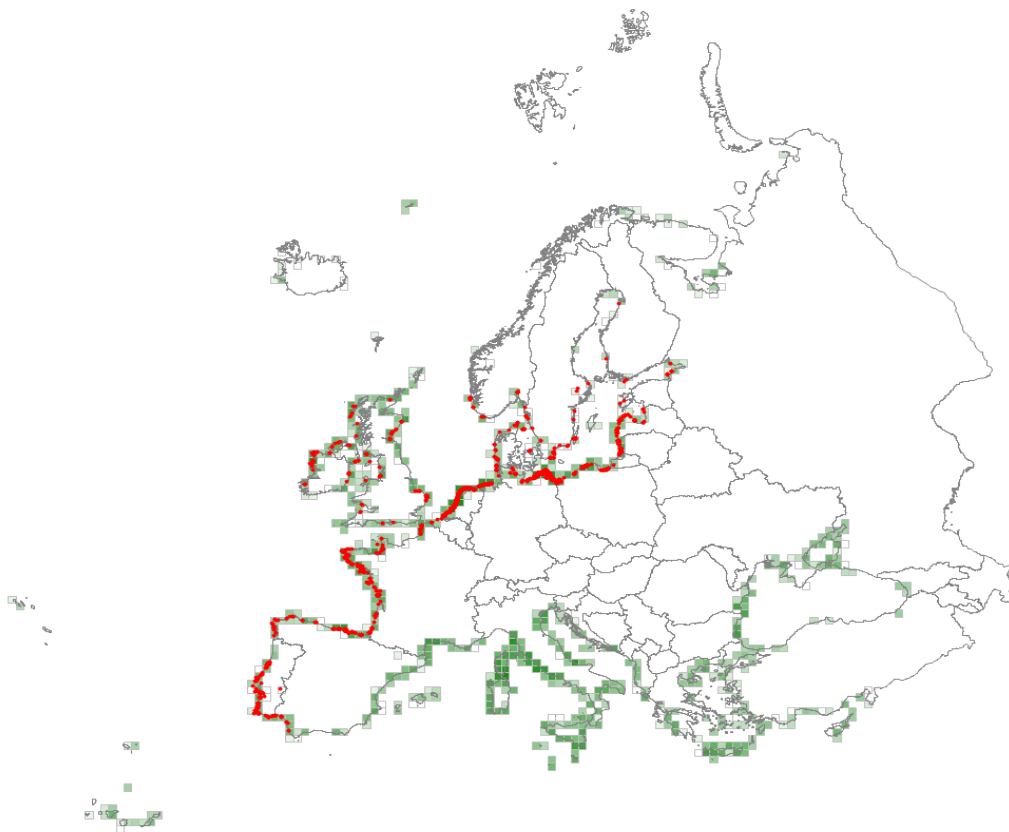
<i>Elytrigia juncea</i>	76
<i>Eryngium maritimum</i>	64
<i>Ammophila arenaria</i>	48
<i>Medicago marina</i>	45
<i>Echinophora spinosa</i>	43
<i>Pancratium maritimum</i>	36
<i>Euphorbia paralias</i>	36
<i>Cakile maritima</i>	33
<i>Cyperus capitatus</i>	29
<i>Calystegia soldanella</i>	27
<i>Sporobolus pungens</i>	24
<i>Achillea maritima</i>	24
<i>Cutandia maritima</i>	23
<i>Anthemis maritima</i>	18
<i>Salsola kali</i> aggr.	11
<i>Polygonum maritimum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Elytrigia juncea</i>	36
<i>Ammophila arenaria</i>	33

N15 – Atlantic and Baltic coastal dune grassland (grey dune)

Grasslands that develop on the stabilised sands of older (grey) dunes along the Atlantic (southern to middle Portugal), North Sea and Baltic coasts. The sandy substrate, thinly enriched with accumulating humus, is well-drained and can dry out during summer. Typically with a more or less complete cover of (relatively low) grasses, herbs, bryophytes and lichens, sometimes with low shrubs, they comprise one of the most species-rich habitats on the temperate European coast. The flora can vary with the regional climate, with the character of the substrate, from acid to highly calcareous, and with the local dune topography. Individual dune systems can vary from narrow strips to enormous stretches, though most are not a dynamic stage in succession, but maintained in a more or less stable fixed state. They were often grazed or mown in the past, and missing dune fixation prevented the development of dense, tall grasslands as well as scrub and woodland. The habitat is threatened in most countries by the abandonment of traditional farming, by eutrophication through nitrogen deposition, overuse and urbanisation, often related to tourism.



Corresponding alliances in EuroVegChecklist 2016

- <> COR-01A *Corynephorion canescentis* Klika 1931
- <> COR-01B *Koelerion glaucae* Volk 1931
- > CRU-01A *Koelerion arenariae* Tx. 1937 corr. Gutermann et Mucina 1993
- > CRU-01B *Euphorbio portlandicae*-*Helichryson stoechadis* Sissingh 1974
- <> CRU-02B *Helichryson picardii* (Rivas-Mart., M. Costa et Izco in Rivas-Mart. et al. 1990)
Rivas-Mart. et al. 1999

- <> TUB-02A *Linarion pedunculatae* Díez Garretas et al. in Izco et al. 1988
- <> TUB-02B *Alkanno-Maresion nanae* Rivas Goday in Rivas Goday et Rivas-Mart. 1963
corr. Díez Garretas et al. 2001
- <> TUB-03A *Anthyllido hamosae-Malcolmion lacerae* Rivas Goday 1958

Characteristic species combination

Diagnostic species (phi coefficient * 100)

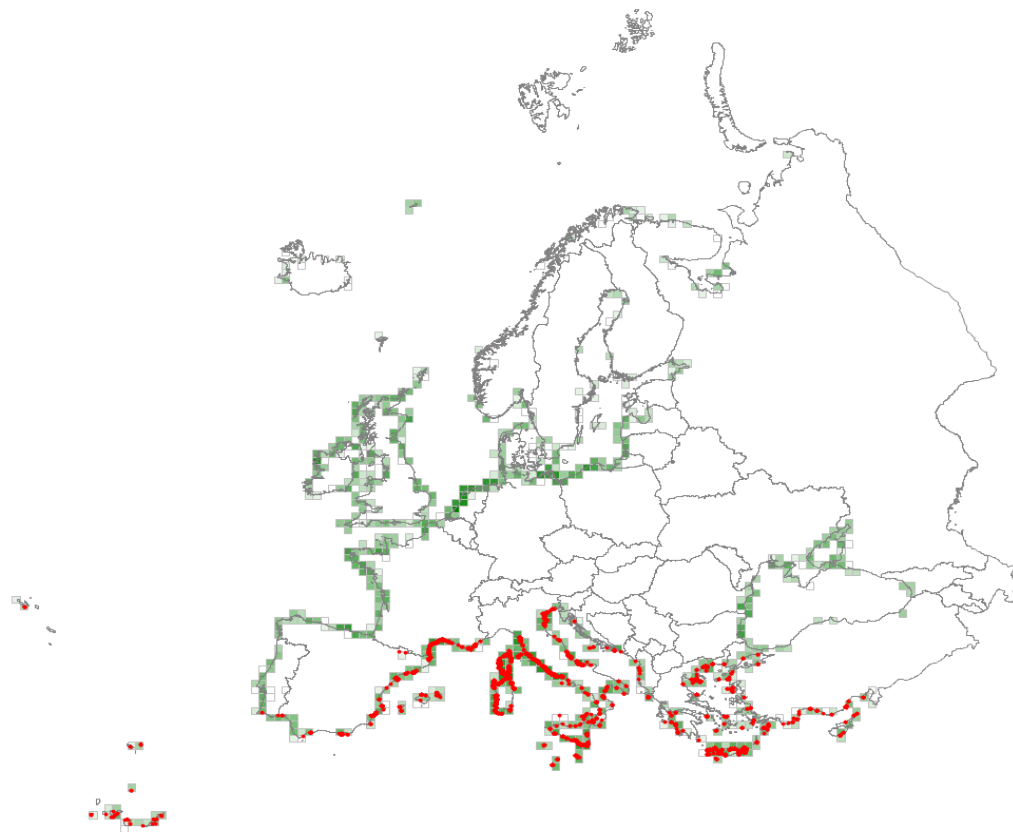
<i>Corynephorus canescens</i>	31
<i>Carex arenaria</i>	28
<i>Festuca polesica</i>	22
<i>Phleum arenarium</i>	21
<i>Ammophila arenaria</i>	17
<i>Galium arenarium</i>	16
<i>Herniaria ciliolata</i>	15

Constant species (percentage frequencies)

<i>Carex arenaria</i>	67
<i>Corynephorus canescens</i>	52
<i>Festuca rubra</i> aggr.	33
<i>Ammophila arenaria</i>	33
<i>Jasione montana</i>	25
<i>Hieracium umbellatum</i>	23
<i>Ceratodon purpureus</i>	21
<i>Hypochaeris radicata</i>	20
<i>Cetraria aculeata</i>	20
<i>Sedum acre</i>	19
<i>Galium verum</i>	19
<i>Rumex acetosella</i>	18
<i>Hypnum cupressiforme</i> aggr.	18
<i>Dicranum scoparium</i>	18
<i>Cerastium semidecandrum</i>	18
<i>Calamagrostis epigejos</i>	18
<i>Cladonia furcata</i>	17
<i>Cladonia foliacea</i>	17
<i>Syntrichia ruralis</i> aggr.	16
<i>Phleum arenarium</i>	15
<i>Aira praecox</i>	14
<i>Cladonia pyxidata</i> aggr.	13
<i>Artemisia campestris</i>	13
<i>Poa pratensis</i> aggr.	12
<i>Luzula campestris</i> aggr.	11
<i>Cladonia macilenta</i> aggr.	11

N16 – Mediterranean and Macaronesian coastal dune grassland (grey dune)

Stable (grey) dunes of fixed sands along the Mediterranean and Macaronesian coasts, and of the thermo-Atlantic coasts of Portugal, southwestern Spain and North Africa inland from wind erosion and salt deposition. They have a more or less complete cover of graminoids and herbs, often with a contingent of colourful spring annuals capitalising on early rains. The flora varies according to regional climate and dune topography. They may represent a temporary phase, giving way to evergreen sclerophyll scrub and woodland, or may form more permanent grassland at sites not suitable for shrubland. Through much of the Mediterranean, the habitat has been destroyed, contaminated by the invasion of non-native species or is much influenced by tourism, urbanisation, infrastructure development, arable cultivation, nitrogen deposition and afforestation.



Corresponding alliances in EuroVegChecklist 2016

- <> CHE-01K *Laguro ovati-Vulpion fasciculatae* Géhu et Biondi 1994
- > CRU-01C *Diantho catalaunici-Scrophularion humifusae* Baudière et Simonneau 1974
- > CRU-01D *Syntrichio-Lomelosion argenteae* Biondi, Sburlino et Theurillat in Sburlino et al. 2014
- > CRU-02A *Crucianellion maritimae* Rivas Goday et Rivas-Mart. 1958
- <> CRU-02B *Helichryson picardii* (Rivas-Mart., M. Costa et Izco in Rivas-Mart. et al. 1990) Rivas-Mart. et al. 1999
- > MOQ-01C *Euphobio paraliae-Lotion glauci* Jardim et al. 2003
- <> TUB-02A *Linarion pedunculatae* Díez Garretas et al. in Izco et al. 1988

- <> TUB-02B Alkanno-Maresion nanae Rivas Goday in Rivas Goday et Rivas-Mart. 1963
corr. Díez Garretas et al. 2001
- > TUB-02C Psammo-Vulpion Pignatti 1953
- > TUB-02D Vulpio-Lotion Horvatić 1963
- > TUB-02E Maresion nanae Géhu et al. 1987
- > TUB-02F Medicagini-Triplachnion nitentis Mayer 1995
- > TUB-02G Ononidion tournefortii Géhu et al. 1996

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Vulpia fasciculata</i>	39
<i>Silene niceensis</i>	31
<i>Crucianella maritima</i>	28
<i>Medicago marina</i>	27
<i>Malcolmia ramosissima</i>	26
<i>Pseudorlaya pumila</i>	25
<i>Medicago littoralis</i>	25
<i>Ononis variegata</i>	24
<i>Pancratium maritimum</i>	24
<i>Cyperus capitatus</i>	24
<i>Lomelosia rutifolia</i>	23
<i>Silene colorata</i>	22
<i>Cutandia maritima</i>	21
<i>Echinophora spinosa</i>	20
<i>Elytrigia juncea</i>	20
<i>Lotus cytisoides</i>	19
<i>Erodium laciniatum</i>	19
<i>Lotus creticus</i>	19
<i>Euphorbia terracina</i>	19
<i>Anthemis maritima</i>	18
<i>Eryngium maritimum</i>	17
<i>Silene sericea</i>	17
<i>Lagurus ovatus</i>	16
<i>Sporobolus pungens</i>	16
<i>Silene succulenta</i>	15

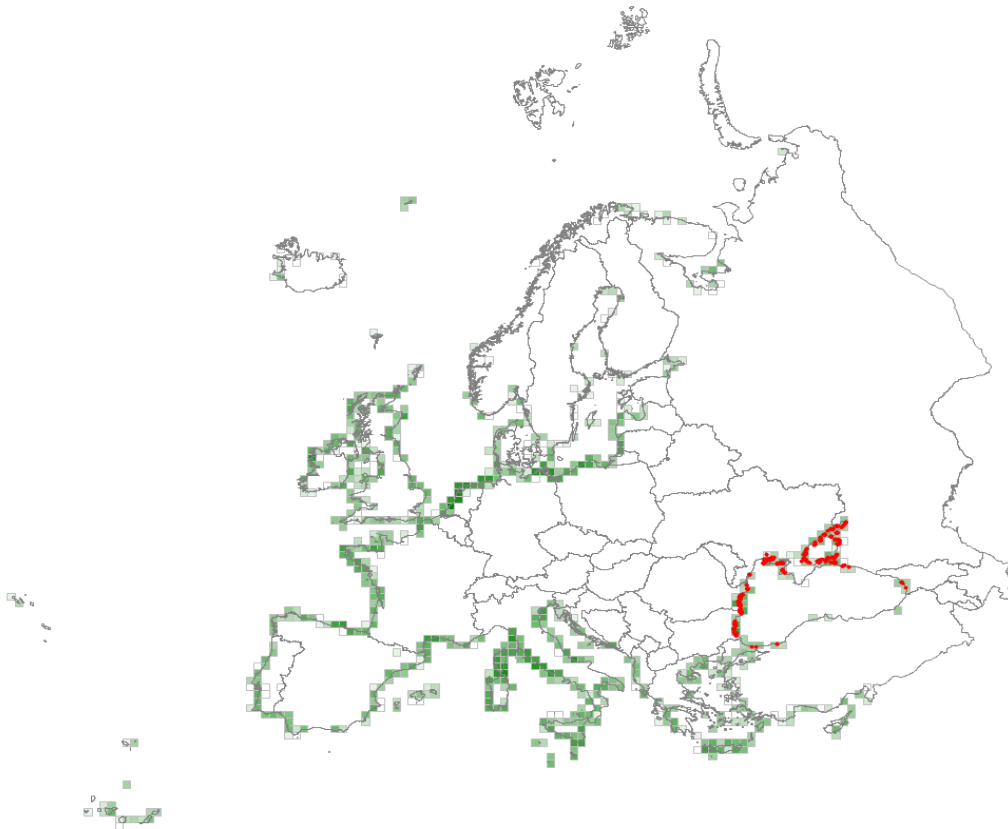
Constant species (percentage frequencies)

<i>Elytrigia juncea</i>	41
<i>Vulpia fasciculata</i>	35
<i>Medicago marina</i>	31
<i>Pancratium maritimum</i>	30
<i>Eryngium maritimum</i>	30
<i>Medicago littoralis</i>	26
<i>Lotus cytisoides</i>	26
<i>Lagurus ovatus</i>	25
<i>Cyperus capitatus</i>	23
<i>Crucianella maritima</i>	22
<i>Ammophila arenaria</i>	22
<i>Echinophora spinosa</i>	19
<i>Silene colorata</i>	18
<i>Sporobolus pungens</i>	17
<i>Silene niceensis</i>	17
<i>Cutandia maritima</i>	17

<i>Pseudorlaya pumila</i>	15
<i>Cakile maritima</i>	15
<i>Euphorbia terracina</i>	14
<i>Anthemis maritima</i>	14
<i>Helichrysum stoechas</i>	13
<i>Sonchus bulbosus</i>	12
<i>Calystegia soldanella</i>	12
<i>Silene sericea</i>	11
<i>Ononis variegata</i>	11
<i>Ononis natrix</i>	11
<i>Malcolmia ramosissima</i>	11
<i>Lotus creticus</i>	11
<i>Euphorbia paralias</i>	11

N17 – Black Sea coastal dune grassland (grey dune)

Dune grassland on stabilised or semi-stabilised coastal sands around the Black Sea, mostly on the western and north-western stretches and now only very locally. The dunes are best developed on broader flatter shores, and the ridges can vary in height from just a few metres to over 50 m, with moist depressions between. The flora is variable with a shift from the Mediterranean to Pontic regions moving northwards, with many regional endemic plant species among its grasses and herbs. Perennials predominate, but there can be striking contingents of annuals on more mobile stretches of sand on the ridges. Mosses and lichens can be extensive on north-facing, less sunny slopes.



Corresponding alliances in EuroVegChecklist 2016

- > CRU-03A *Sileno thymifoliae*-*Jurineion kilaeae* Géhu et Uslu ex Mucina in Mucina et al. 2016
- > CRU-03B *Scabiosion ucranicae* Sanda et al. 1980
- > CRU-03C *Cynodonto*-*Teucrium polii* Korzhenevskii et Kliukin 1990

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Odontarrhena borzaeana</i>	44
<i>Secale sylvestre</i>	42

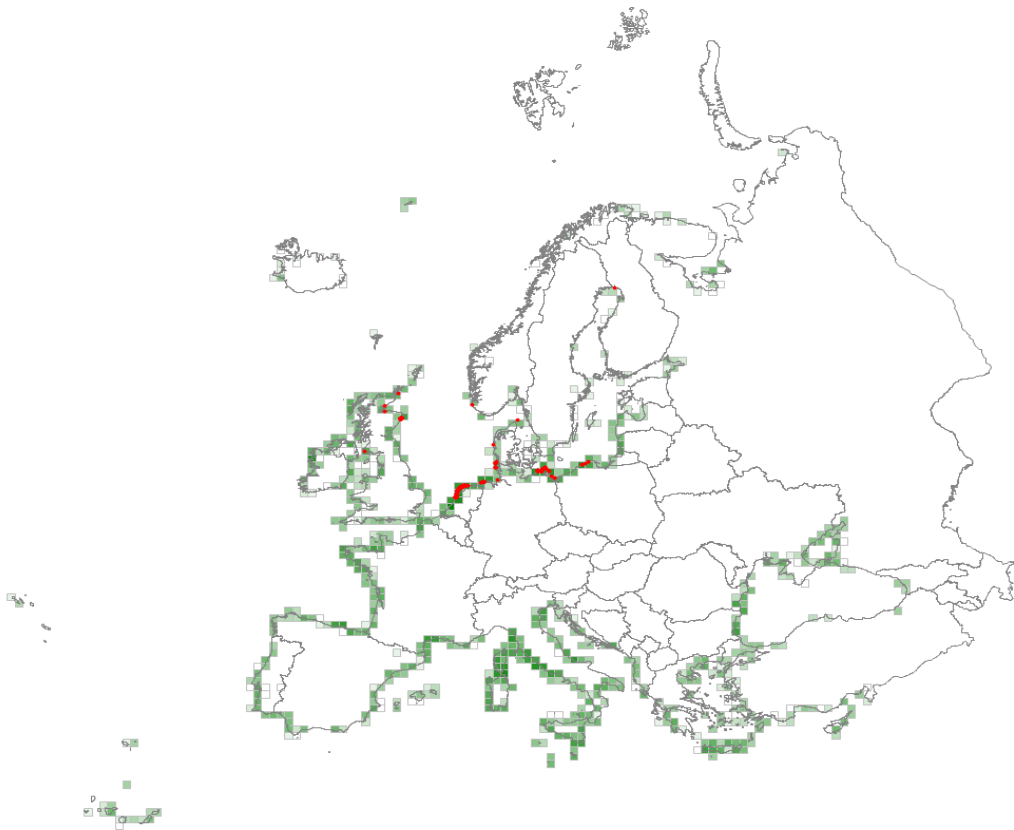
<i>Lepidotrichum uechtritizianum</i>	42
<i>Carex colchica</i>	42
<i>Jurinea kilaea</i>	41
<i>Centaurea odessana</i>	41
<i>Silene thymifolia</i>	39
<i>Leymus racemosus</i>	31
<i>Silene euxina</i>	29
<i>Alyssum hirsutum</i>	28
<i>Stachys atherocalyx</i>	27
<i>Peucedanum arenarium</i>	26
<i>Centaurea arenaria</i> aggr.	24
<i>Verbascum purpureum</i>	23
<i>Cionura erecta</i>	22
<i>Linaria genistifolia</i>	20
<i>Astragalus varius</i>	19
<i>Euphorbia seguieriana</i>	18
<i>Ephedra distachya</i>	17
<i>Seseli tortuosum</i>	17
<i>Festuca arenicola</i>	17
<i>Festuca beckeri</i>	16
<i>Anchusa leptophylla</i>	16
<i>Astrodaucus littoralis</i>	16

Constant species (percentage frequencies)

<i>Carex colchica</i>	40
<i>Euphorbia seguieriana</i>	39
<i>Secale sylvestre</i>	38
<i>Leymus racemosus</i>	33
<i>Linaria genistifolia</i>	32
<i>Artemisia campestris</i>	26
<i>Anisantha tectorum</i>	23
<i>Eryngium maritimum</i>	22
<i>Centaurea odessana</i>	21
<i>Odontarrhena borzaeana</i>	20
<i>Medicago falcata</i>	20
<i>Centaurea arenaria</i> aggr.	20
<i>Silene thymifolia</i>	19
<i>Jurinea kilaea</i>	19
<i>Seseli tortuosum</i>	18
<i>Lepidotrichum uechtritizianum</i>	18
<i>Syntrichia ruralis</i> aggr.	17
<i>Ephedra distachya</i>	17
<i>Alyssum hirsutum</i>	17
<i>Crambe maritima</i>	16
<i>Teucrium polium</i> aggr.	15
<i>Festuca beckeri</i>	15
<i>Artemisia arenaria</i>	15
<i>Cynanchum acutum</i>	14
<i>Poa bulbosa</i>	13
<i>Lomelosia argentea</i>	12
<i>Cynodon dactylon</i>	12
<i>Chondrilla juncea</i>	12
<i>Astragalus varius</i>	12
<i>Astragalus onobrychis</i>	12

N18 – Atlantic and Baltic coastal *Empetrum* heath

Heath on stable, decalcified dune sands along the cooler north Atlantic and Baltic coasts of Europe, dominated by *Empetrum nigrum*, with or without *Calluna vulgaris*, or occurring in dune slacks where *Erica tetralix* may also be abundant or even replace *Empetrum* with the same suite of associates. Persistent where wind-exposure or light grazing prevent succession to scrub or woodland. Dry *Empetrum* heaths are probably threatened by increased temperature and less precipitation during spring and summer.



Corresponding alliances in EuroVegChecklist 2016

<> ULI-02A *Empetrum nigrum* Schubert ex Westhoff et Den Held 1969

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Carex arenaria</i>	37
<i>Empetrum nigrum</i> aggr.	33
<i>Salix repens</i>	26
<i>Carex trinervis</i>	26
<i>Ammophila arenaria</i>	22
<i>Hypnum cupressiforme</i> aggr.	20

<i>Hieracium umbellatum</i>	18
<i>Dicranum scoparium</i>	18
<i>Calluna vulgaris</i>	16
<i>Cladonia portentosa</i>	15

Constant species (percentage frequencies)

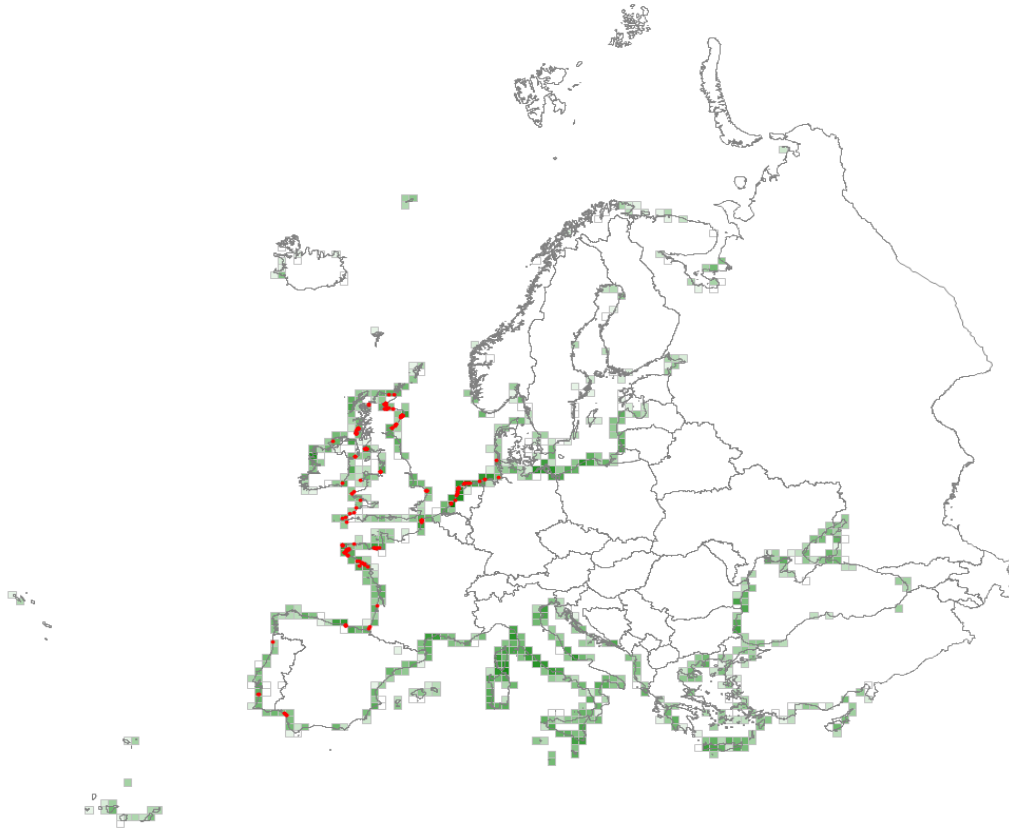
<i>Empetrum nigrum</i> aggr.	100
<i>Carex arenaria</i>	86
<i>Calluna vulgaris</i>	66
<i>Hypnum cupressiforme</i> aggr.	60
<i>Dicranum scoparium</i>	58
<i>Salix repens</i>	46
<i>Ammophila arenaria</i>	43
<i>Erica tetralix</i>	32
<i>Hieracium umbellatum</i>	31
<i>Pleurozium schreberi</i>	28
<i>Luzula campestris</i> aggr.	27
<i>Calamagrostis epigejos</i>	27
<i>Agrostis capillaris</i>	24
<i>Polypodium vulgare</i>	22
<i>Festuca ovina</i>	22
<i>Cladonia portentosa</i>	22
<i>Cladonia pyxidata</i> aggr.	20
<i>Cladonia arbuscula</i> aggr.	20
<i>Festuca rubra</i> aggr.	18
<i>Pseudoscleropodium purum</i>	17
<i>Potentilla erecta</i>	17
<i>Lotus corniculatus</i>	17
<i>Festuca filiformis</i>	17
<i>Carex trinervis</i>	17
<i>Anthoxanthum odoratum</i> aggr.	17
<i>Holcus lanatus</i>	16
<i>Lophocolea bidentata</i>	15
<i>Avenella flexuosa</i>	14
<i>Poa pratensis</i> aggr.	12
<i>Viola canina</i>	11
<i>Hypochaeris radicata</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Empetrum nigrum</i> aggr.	84
<i>Calluna vulgaris</i>	35

N19 – Atlantic coastal *Calluna* and *Ulex* heath

Heath on stable, decalcified, sharply-draining dune sands along the warmer, more humid Atlantic coast of Europe, dominated by *Calluna vulgaris*, *Erica* spp., *Ulex* spp. or other low spiny legumes, often with a strong contingent of grasses and sedges. Persistent where wind-exposure or light grazing prevent succession to scrub or woodland.



Corresponding alliances in EuroVegChecklist 2016

- <> ULI-01A *Ericion cinereae* Böcher 1940
- <> ULI-01B *Ulicion Malcuit* 1929
- <> ULI-01D *Ericion umbellatae* Br.-Bl. in Br.-Bl. et al. 1952
- <> ULI-02A *Empetrium nigri* Schubert ex Westhoff et Den Held 1969
- <> ULI-02B *Calluno-Genistion pilosae* P. Duvigneaud 1945

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Erica cinerea</i>	34
<i>Carex arenaria</i>	25
<i>Calluna vulgaris</i>	23
<i>Ulex europaeus</i>	23

Constant species (percentage frequencies)

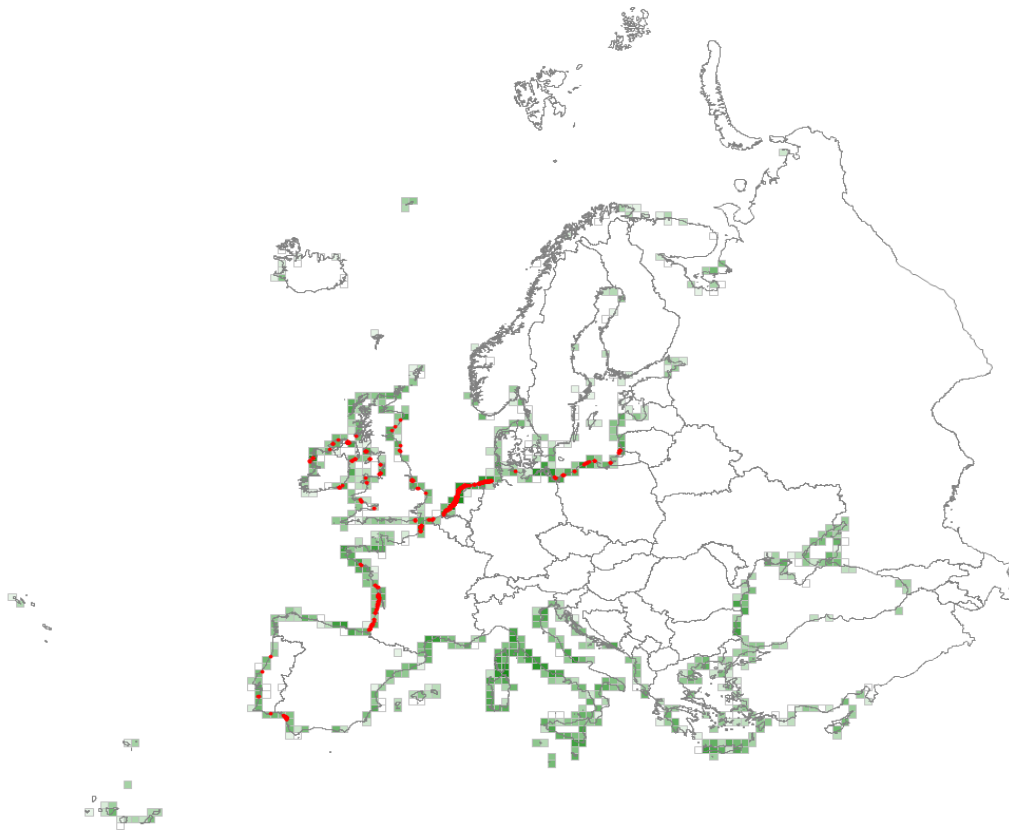
<i>Calluna vulgaris</i>	91
<i>Carex arenaria</i>	59
<i>Erica cinerea</i>	47
<i>Festuca ovina</i>	33
<i>Anthoxanthum odoratum</i> aggr.	33
<i>Agrostis capillaris</i>	33
<i>Lotus corniculatus</i>	30
<i>Potentilla erecta</i>	27
<i>Ulex europaeus</i>	25
<i>Luzula campestris</i> aggr.	25
<i>Festuca rubra</i> aggr.	23
<i>Ammophila arenaria</i>	21
<i>Hypochaeris radicata</i>	20
<i>Pilosella officinarum</i>	18
<i>Holcus lanatus</i>	18
<i>Danthonia decumbens</i>	18
<i>Hypnum cupressiforme</i> aggr.	16
<i>Empetrum nigrum</i> aggr.	16
<i>Viola riviniana</i>	15
<i>Veronica officinalis</i>	14
<i>Plantago lanceolata</i>	14
<i>Leontodon saxatilis</i>	14
<i>Galium saxatile</i>	14
<i>Erica tetralix</i>	14
<i>Dicranum scoparium</i>	13
<i>Thymus praecox</i>	12
<i>Rumex acetosella</i>	12
<i>Galium verum</i>	12
<i>Salix repens</i>	11
<i>Poa pratensis</i> aggr.	11
<i>Festuca filiformis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Calluna vulgaris</i>	75
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N1A – Atlantic and Baltic coastal dune scrub

Scrub dominated by a wide diversity of low to tall shrubs on stabilised dry dune sands and in dune slacks along the Atlantic and Baltic coasts. The composition varies according to regional climate and soil conditions. Fen vegetation with low *Salix repens* or grasslands with *Rosa spinosissima* are not included.



Corresponding alliances in EuroVegChecklist 2016

- > ARE-01A Salicion arenariae Tx. ex Passarge in Scamoni 1963
- > ARE-01B Ligustro-Hippophaeion Géhu et Géhu-Franck 1983
- <> ARE-01C Holoschoeno australis-Salicion arenariae Neto et al. 2004
- <> LAV-02A Coremation albi Rothmaler 1943
- <> RHA-01A Berberidion vulgaris Br.-Bl. ex Tx. 1952 nom. conserv. propos.
- <> RHA-01D Urtico-Crataegion Passarge et G. Hofmann 1968
- <> RHA-03A Pruno spinosae-Rubion ulmifolii O. de Bolòs 1954

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Hippophae rhamnoides</i>	48
<i>Cynoglossum officinale</i>	32
<i>Rubus caesius</i>	29

<i>Claytonia perfoliata</i>	24
<i>Calamagrostis epigejos</i>	24
<i>Carex arenaria</i>	23
<i>Jacobaea vulgaris</i>	21
<i>Rosa spinosissima</i>	18
<i>Rhynchosygium megapolitanum</i>	17
<i>Avenula pubescens</i>	17
<i>Brachythecium rutabulum</i>	17
<i>Stellaria pallida</i>	16
<i>Ligustrum vulgare</i>	16
<i>Senecio sylvaticus</i>	15

Constant species (percentage frequencies)

<i>Rubus caesius</i>	65
<i>Calamagrostis epigejos</i>	60
<i>Carex arenaria</i>	53
<i>Hippophae rhamnoides</i>	50
<i>Poa pratensis</i> aggr.	49
<i>Festuca rubra</i> aggr.	45
<i>Urtica dioica</i>	38
<i>Hypnum cupressiforme</i> aggr.	36
<i>Jacobaea vulgaris</i>	35
<i>Galium verum</i>	34
<i>Brachythecium rutabulum</i>	33
<i>Ligustrum vulgare</i>	32
<i>Cynoglossum officinale</i>	32
<i>Luzula campestris</i> aggr.	29
<i>Galium mollugo</i> aggr.	28
<i>Salix repens</i>	24
<i>Pseudoscleropodium purum</i>	24
<i>Dicranum scoparium</i>	23
<i>Crataegus monogyna</i>	22
<i>Ammophila arenaria</i>	22
<i>Solanum dulcamara</i>	20
<i>Sambucus nigra</i>	19
<i>Rosa spinosissima</i>	19
<i>Avenula pubescens</i>	19
<i>Veronica officinalis</i>	18
<i>Lotus corniculatus</i>	18
<i>Koeleria macrantha</i>	18
<i>Holcus lanatus</i>	17
<i>Cerastium semidecandrum</i>	17
<i>Taraxacum</i> sect. <i>Erythrosperma</i>	16
<i>Galium aparine</i>	16
<i>Cirsium arvense</i>	16
<i>Moehringia trinervia</i>	15
<i>Senecio sylvaticus</i>	14
<i>Plagiomnium affine</i> aggr.	14
<i>Festuca filiformis</i>	14
<i>Thymus pulegioides</i>	13
<i>Myosotis ramosissima</i>	13
<i>Lonicera periclymenum</i>	13
<i>Bryonia dioica</i>	13
<i>Polypodium vulgare</i>	12
<i>Polygonatum odoratum</i>	12

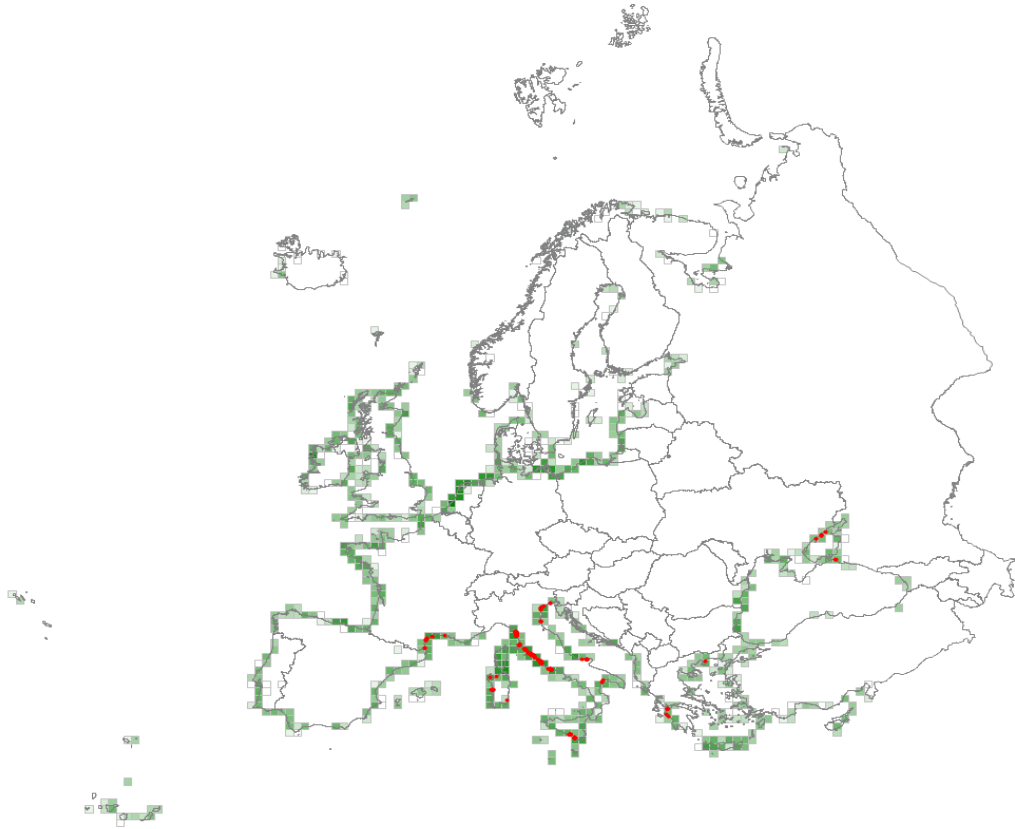
<i>Plantago lanceolata</i>	12
<i>Cirsium vulgare</i>	12
<i>Cardamine hirsuta</i>	12
<i>Picris hieracioides</i>	11
<i>Cladonia furcata</i>	11
<i>Ceratodon purpureus</i>	11
<i>Cerastium arvense</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Hippophae rhamnoides</i>	30
<i>Rubus caesius</i>	25

N1B – Mediterranean and Black Sea coastal dune scrub

Scrub dominated by a wide diversity of low to tall shrubs on stabilised dry dune sands along the Mediterranean and Black Sea coasts, often grading to dune grassland or woodland, the associated herb flora showing elements from these neighbouring vegetation types or mosaics.



Corresponding alliances in EuroVegChecklist 2016

- <> ARE-01C *Holoschoeno australis*-*Salicion arenariae* Neto et al. 2004
- > ARE-01D *Pyraeantho coccineae*-*Hippophaeion fluviatilis* de Foucault et Julve 2001
- > CRU-02C *Helichryso barrelieri*-*Centaureion spinosae* Mucina et Dimopoulos in Mucina et al. 2016
- <> LAV-01D *Quercion fruticosae* Rothmaler 1954
- <> LAV-02A *Coremation albi* Rothmaler 1943
- > QUI-04B *Juniperion turbinatae* Rivas-Mart. 1975 corr. 1987
- <> QUI-04H *Oleo-Ceratonion siliquae* Br.-Bl. ex Guinochet et Drouineau 1944
- > QUI-04I *Asparago orientalis*-*Juniperion macrocarpae* (Díez Garretas et Asensi 2014) Mucina in Mucina et al. 2016
- <> QUI-04L *Ceratonio-Pistacion lentisci* Zohary et Orshan 1959
- <> RHA-01A *Berberidion vulgaris* Br.-Bl. ex Tx. 1952 nom. conserv. propos.
- <> RHA-03A *Pruno spinosae*-*Rubion ulmifolii* O. de Bolòs 1954

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Smilax aspera</i>	22
<i>Phillyrea angustifolia</i>	22
<i>Juniperus oxycedrus</i> aggr.	21
<i>Lonicera implexa</i>	19
<i>Asparagus acutifolius</i>	18
<i>Rubia peregrina</i>	15

Constant species (percentage frequencies)

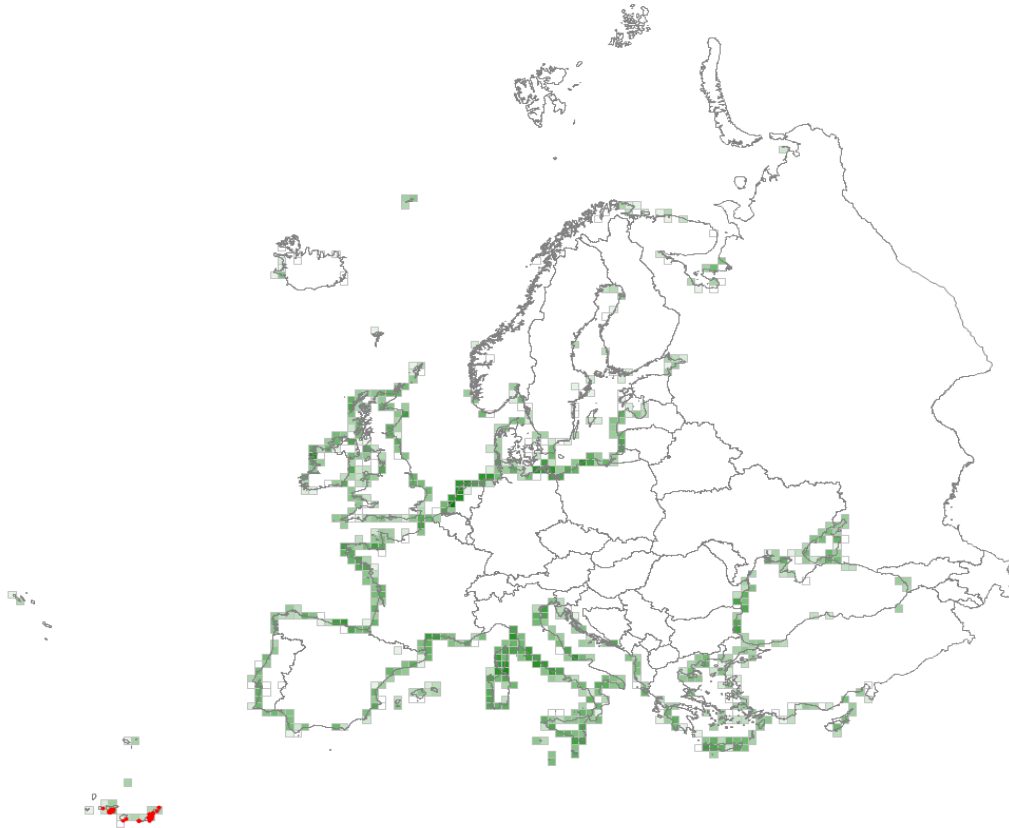
<i>Smilax aspera</i>	57
<i>Juniperus oxycedrus</i> aggr.	49
<i>Asparagus acutifolius</i>	48
<i>Rubia peregrina</i>	47
<i>Pistacia lentiscus</i>	37
<i>Phillyrea angustifolia</i>	36
<i>Lonicera implexa</i>	28
<i>Cistus creticus</i>	23
<i>Rhamnus alaternus</i>	22
<i>Quercus ilex</i>	20
<i>Helichrysum stoechas</i>	20
<i>Daphne gnidium</i>	20
<i>Prasium majus</i>	18
<i>Clematis flammula</i>	17
<i>Dorycnium hirsutum</i>	16
<i>Lagurus ovatus</i>	15
<i>Seseli tortuosum</i>	14
<i>Daucus carota</i>	14
<i>Phillyrea latifolia</i>	13
<i>Teucrium flavum</i>	12
<i>Arbutus unedo</i>	12
<i>Spartium junceum</i>	11
<i>Pinus pinaster</i>	11
<i>Hedera helix</i> aggr.	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Juniperus oxycedrus</i> aggr.	34
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N1C – Macaronesian coastal dune scrub

Often sparse scrub on coastal dune sands in the arid mediterranean climate in parts of the Canary archipelago.



Corresponding alliances in EuroVegChecklist 2016

- > MOQ-01A *Traganion moquinii* Sunding 1972
- > MOQ-01B *Polycarpaeo niveae-Euphorbion paraliae* Rivas-Mart. et Wildpret in Rivas-Mart. et al. 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Tetraena fontanesii</i>	69
<i>Polycarpaea nivea</i>	69
<i>Traganum moquinii</i>	55
<i>Atriplex glauca</i>	49
<i>Heliotropium crispum</i>	44
<i>Frankenia laevis</i>	38
<i>Pulicaria burchardii</i>	31
<i>Launaea arborescens</i>	30
<i>Helianthemum canariense</i>	27

<i>Polygonum balansae</i>	26
<i>Ononis tournefortii</i>	26
<i>Astragalus solandri</i>	25
<i>Reichardia crystallina</i>	24
<i>Lotus sessilifolius</i>	24
<i>Schizogyne sericea</i>	24
<i>Heliotropium erosum</i>	24
<i>Reseda crystallina</i>	23
<i>Kickxia sagittata</i>	23
<i>Aizoon canariense</i>	23
<i>Bassia tomentosa</i>	23
<i>Launaea nudicaulis</i>	22
<i>Medicago laciniata</i>	21
<i>Lotus lancerottensis</i>	21
<i>Trigonella stellata</i>	20
<i>Mairetis microsperma</i>	18
<i>Limonium pectinatum</i>	18
<i>Salsola vermiculata</i>	17
<i>Mesembryanthemum nodiflorum</i>	16
<i>Suaeda vermiculata</i>	16
<i>Rumex bipinnatus</i>	15
<i>Ifloga spicata</i>	15

Constant species (percentage frequencies)

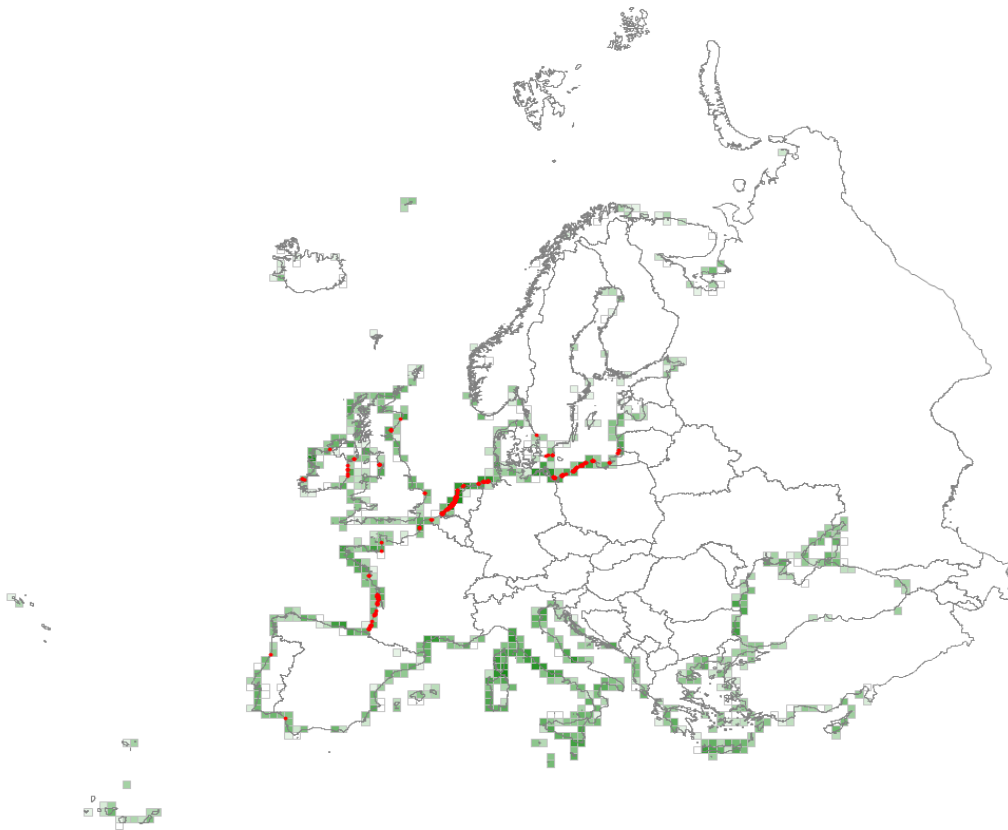
<i>Tetraena fontanesii</i>	65
<i>Polycarpaea nivea</i>	61
<i>Frankenia laevis</i>	48
<i>Launaea arborescens</i>	38
<i>Atriplex glauca</i>	37
<i>Traganum moquinii</i>	31
<i>Heliotropium crispum</i>	28
<i>Schizogyne sericea</i>	23
<i>Lotus sessilifolius</i>	18
<i>Limonium pectinatum</i>	17
<i>Helianthemum canariense</i>	17
<i>Suaeda vera</i>	15
<i>Salsola vermiculata</i>	15
<i>Euphorbia paralias</i>	15
<i>Ononis natrix</i>	14
<i>Euphorbia balsamifera</i>	14
<i>Reichardia crystallina</i>	13
<i>Bassia tomentosa</i>	13
<i>Aizoon canariense</i>	13
<i>Pulicaria burchardii</i>	11
<i>Mesembryanthemum nodiflorum</i>	11
<i>Lycium intricatum</i>	11
<i>Lotus lancerottensis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Tetraena fontanesii</i>	31
<i>Polycarpaea nivea</i>	30

N1D – Atlantic and Baltic broad-leaved coastal dune forest

A forest type with a wide range of variation, comprising a diversity of relatively open to closed forests on Atlantic and Baltic coastal dunes. It develops where more stable coastal sands are invaded by broadleaved trees typical of the local soil and climatic conditions. It includes forests in dry and wet conditions, on calcareous and acidic sands and along the climatic gradient from southern Norway and the Baltics towards central Portugal. Many of these forests are indistinguishable in their floristic composition from inland examples of the same general type.



Corresponding alliances in EuroVegChecklist 2016

- ◊ ALN-01A Alnion glutinosae Malcuit 1929
- ◊ FAG-03A Carpinion betuli Issler 1931
- ◊ POP-02A Alnion incanae Pawłowski et al. 1928
- ◊ QUE-01B Quercion roboris Malcuit 1929
- ◊ QUE-02B Lonicero periclymeni-Betulion pubescentis Géhu 2006

Characteristic species combination

Diagnostic species (phi coefficient * 100)

Moehringia trinervia

23

Quercus robur

19

<i>Rubus caesius</i>	19
<i>Lonicera periclymenum</i>	19
<i>Brachythecium rutabulum</i>	18
<i>Cynoglossum officinale</i>	18
<i>Kindbergia praelonga</i>	17
<i>Ribes rubrum</i> aggr.	16
<i>Populus x canescens</i>	15

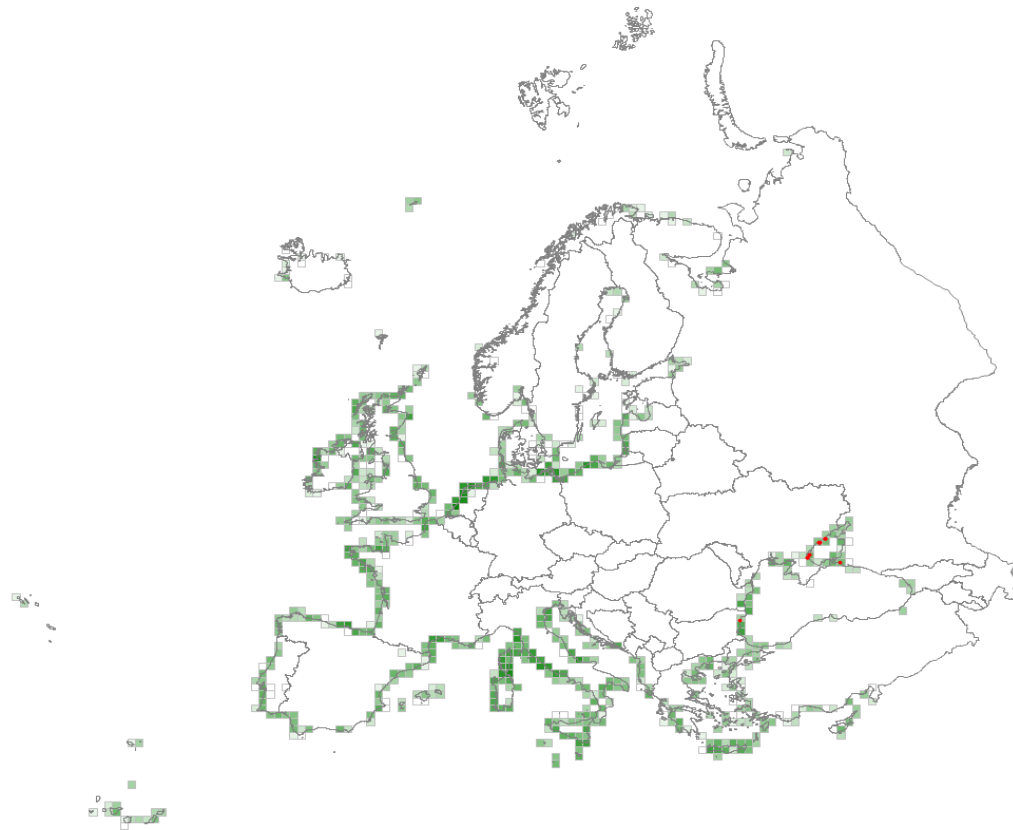
Constant species (percentage frequencies)

<i>Quercus robur</i>	57
<i>Urtica dioica</i>	48
<i>Crataegus monogyna</i>	48
<i>Rubus caesius</i>	43
<i>Lonicera periclymenum</i>	41
<i>Moehringia trinervia</i>	38
<i>Sorbus aucuparia</i>	37
<i>Brachythecium rutabulum</i>	36
<i>Geum urbanum</i>	35
<i>Calamagrostis epigejos</i>	35
<i>Galium aparine</i>	34
<i>Carex arenaria</i>	33
<i>Ligustrum vulgare</i>	28
<i>Poa pratensis</i> aggr.	26
<i>Kindbergia praelonga</i>	26
<i>Sambucus nigra</i>	25
<i>Rosa canina</i> aggr.	25
<i>Dryopteris carthusiana</i> aggr.	25
<i>Betula pubescens</i>	24
<i>Acer pseudoplatanus</i>	24
<i>Poa trivialis</i>	23
<i>Euonymus europaeus</i>	23
<i>Rubus fruticosus</i> aggr.	22
<i>Pseudoscleropodium purum</i>	22
<i>Glechoma hederacea</i>	22
<i>Geranium robertianum</i>	21
<i>Betula pendula</i>	21
<i>Holcus lanatus</i>	20
<i>Populus tremula</i>	19
<i>Hypnum cupressiforme</i> aggr.	18
<i>Cynoglossum officinale</i>	18
<i>Solanum dulcamara</i>	17
<i>Alnus glutinosa</i>	17
<i>Agrostis capillaris</i>	17
<i>Plagiomnium affine</i> aggr.	16
<i>Hedera helix</i> aggr.	15
<i>Fraxinus excelsior</i>	15
<i>Frangula alnus</i>	15
<i>Fagus sylvatica</i>	15
<i>Avenella flexuosa</i>	15
<i>Ribes rubrum</i> aggr.	14
<i>Polypodium vulgare</i>	14
<i>Pinus sylvestris</i>	14
<i>Dicranum scoparium</i>	14
<i>Dactylis glomerata</i>	14
<i>Taraxacum</i> sect. <i>Taraxacum</i>	13

<i>Luzula campestris</i> aggr.	13
<i>Galium mollugo</i> aggr.	13
<i>Viburnum opulus</i>	12
<i>Prunus serotina</i>	12
<i>Oxalis acetosella</i>	12
<i>Mnium hornum</i>	12
<i>Maianthemum bifolium</i>	12
<i>Jacobaea vulgaris</i>	12
<i>Fragaria vesca</i>	12
<i>Festuca rubra</i> aggr.	12
<i>Bryonia dioica</i>	12
<i>Anthriscus sylvestris</i>	12
<i>Teucrium scorodonia</i>	11
<i>Rubus idaeus</i>	11
<i>Prunus padus</i>	11
<i>Pinus pinaster</i>	11
<i>Dryopteris filix-mas</i>	11

N1E – Black Sea broad-leaved coastal dune forest

Natural or semi-natural tree and tree-shrub communities on coastal dunes along the Black Sea coast. The forests on larger dunes have xerothermic features, the trees being small and strongly branched while on smaller dunes species more typical of alluvial forest are found. Lianas are frequent. Although non-disturbed stands are dominated by native species, invasive aliens such as *Amorpha fruticosa*, *Robinia pseudoacacia* and *Elaeagnus angustifolia* can be frequent.



Corresponding alliances in EuroVegChecklist 2016

- <> FAG-03A Carpinion betuli Issler 1931
- <> POP-02A Alnion incanae Pawłowski et al. 1928
- <> POP-02D Alno-Quercion roboris Horvat 1950

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Elaeagnus angustifolia</i>	85
<i>Inula caspica</i>	42
<i>Elytrigia elongata</i>	42
<i>Gypsophila perfoliata</i>	39
<i>Lotus ucrainicus</i>	28

<i>Scorzonera parviflora</i>	27
<i>Anthriscus cerefolium</i>	27
<i>Limonium meyeri</i>	27
<i>Carex extensa</i>	27
<i>Juncus soranthus</i>	25
<i>Centaurium anatolicum</i>	25
<i>Asparagus trichophyllus</i>	24
<i>Senecio leucanthemifolius</i>	23
<i>Potentilla chrysantha</i>	23
<i>Achillea euxina</i>	23
<i>Astragalus asper</i>	23
<i>Plantago cornutii</i>	23
<i>Althaea armeniaca</i>	22
<i>Salvia sclarea</i>	22
<i>Bryonia alba</i>	21
<i>Lycium barbarum</i>	21
<i>Cirsium alatum</i>	21
<i>Asperugo procumbens</i>	20
<i>Myosotis sicula</i>	19
<i>Bupleurum rotundifolium</i>	19
<i>Euphorbia platyphyllos</i>	19
<i>Erysimum cuspidatum</i>	19
<i>Echinops bannaticus</i>	19
<i>Cynoglossum officinale</i>	19
<i>Centaurea salonitana</i>	18
<i>Papaver dubium</i> aggr.	17
<i>Asparagus verticillatus</i>	17
<i>Veronica triphyllos</i>	17
<i>Achillea clypeolata</i>	16
<i>Galium aparine</i>	16
<i>Sonchus palustris</i>	15
<i>Cynanchum acutum</i>	15
<i>Phragmites australis</i>	15
<i>Prunus dulcis</i>	15
<i>Melilotus neapolitanus</i>	15

Constant species (percentage frequencies)

<i>Elaeagnus angustifolia</i>	88
<i>Phragmites australis</i>	50
<i>Galium aparine</i>	50
<i>Elytrigia elongata</i>	50
<i>Limonium meyeri</i>	38
<i>Elytrigia repens</i> aggr.	38
<i>Calamagrostis epigejos</i>	38
<i>Senecio leucanthemifolius</i>	31
<i>Gypsophila perfoliata</i>	31
<i>Carex extensa</i>	25
<i>Ulmus minor</i>	19
<i>Scorzonera parviflora</i>	19
<i>Plantago maritima</i>	19
<i>Juncus maritimus</i>	19
<i>Inula caspica</i>	19
<i>Cynoglossum officinale</i>	19
<i>Cynanchum acutum</i>	19
<i>Cichorium intybus</i>	19

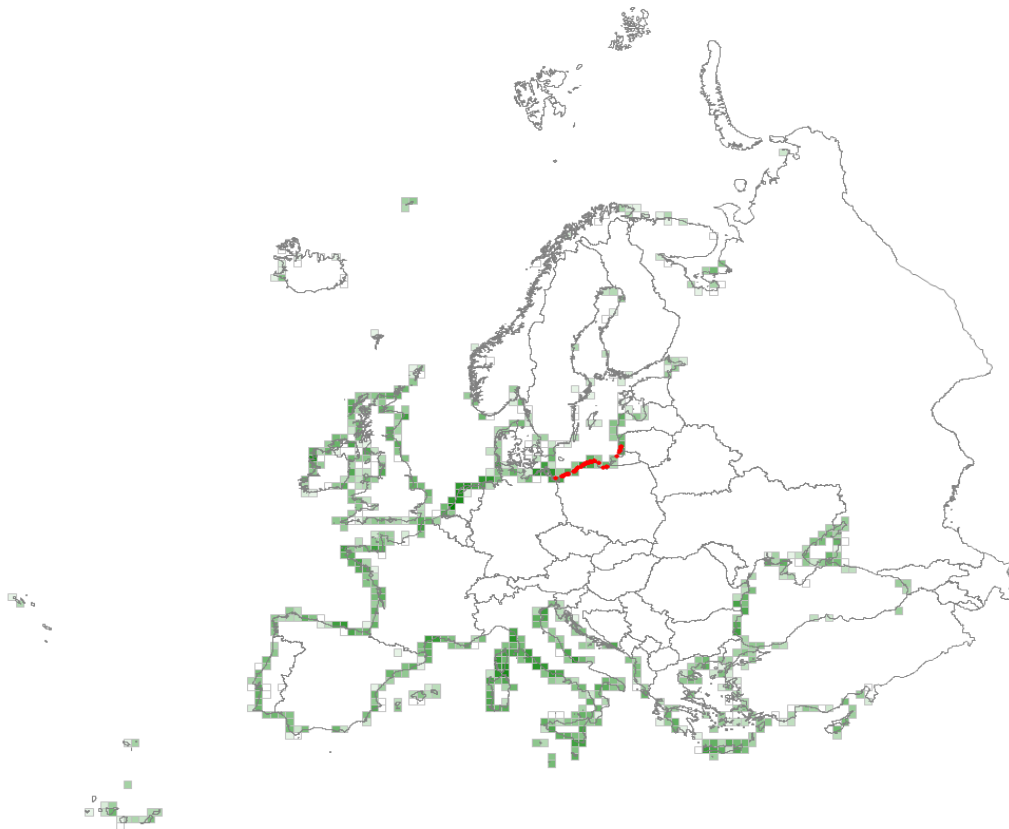
<i>Chenopodium album</i> aggr.	19
<i>Calystegia sepium</i>	19
<i>Veronica triphyllos</i>	12
<i>Tripolium pannonicum</i>	12
<i>Stellaria media</i>	12
<i>Seseli tortuosum</i>	12
<i>Puccinellia distans</i>	12
<i>Poa pratensis</i> aggr.	12
<i>Plantago cornutii</i>	12
<i>Papaver dubium</i> aggr.	12
<i>Myosotis sicula</i>	12
<i>Lycopus europaeus</i>	12
<i>Lotus ucrainicus</i>	12
<i>Lepidium draba</i>	12
<i>Lamium amplexicaule</i>	12
<i>Lactuca tatarica</i>	12
<i>Falcaria vulgaris</i>	12
<i>Descurainia sophia</i>	12
<i>Capsella bursa-pastoris</i>	12
<i>Buglossoides arvensis</i>	12
<i>Artemisia santonicum</i>	12
<i>Arabidopsis thaliana</i>	12
<i>Anthriscus cerefolium</i>	12
<i>Anisantha tectorum</i>	12
<i>Anisantha sterilis</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Elaeagnus angustifolia</i>	69
<i>Elytrigia elongata</i>	25

N1F – Baltic coniferous coastal dune forest

Forests on coastal dunes on the Baltic coast dominated by *Pinus sylvestris*. Many of these forests are indistinguishable in their floristic composition from inland examples of the same general type.



Corresponding alliances in EuroVegChecklist 2016

- <> PIC-03A Dicrano-Pinion sylvestris (Libbert 1933) W. Matuszkiewicz 1962 nom. conserv. propos.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Dicranum undulatum</i>	49
<i>Goodyera repens</i>	41
<i>Pseudoscleropodium purum</i>	37
<i>Carex arenaria</i>	30
<i>Pinus sylvestris</i>	27
<i>Melampyrum pratense</i>	25
<i>Empetrum nigrum</i> aggr.	25
<i>Pleurozium schreberi</i>	25
<i>Moneses uniflora</i>	23

<i>Cladonia portentosa</i>	22
<i>Betula pendula</i>	21
<i>Neottia cordata</i>	19
<i>Dicranum scoparium</i>	19
<i>Dicranum polysetum</i>	18
<i>Leucobryum glaucum</i>	18
<i>Polypodium vulgare</i>	18
<i>Hylocomium splendens</i>	18
<i>Vaccinium vitis-idaea</i>	17
<i>Quercus robur</i>	17
<i>Calluna vulgaris</i>	17
<i>Avenella flexuosa</i>	17
<i>Cladonia ciliata</i>	17
<i>Salix repens</i>	15
<i>Pyrola chlorantha</i>	15

Constant species (percentage frequencies)

<i>Pinus sylvestris</i>	99
<i>Pleurozium schreberi</i>	85
<i>Pseudoscleropodium purum</i>	79
<i>Avenella flexuosa</i>	78
<i>Empetrum nigrum</i> aggr.	76
<i>Carex arenaria</i>	70
<i>Vaccinium vitis-idaea</i>	69
<i>Calluna vulgaris</i>	69
<i>Dicranum scoparium</i>	60
<i>Betula pendula</i>	57
<i>Melampyrum pratense</i>	56
<i>Hylocomium splendens</i>	55
<i>Quercus robur</i>	52
<i>Vaccinium myrtillus</i>	50
<i>Hypnum cupressiforme</i> aggr.	46
<i>Dicranum undulatum</i>	46
<i>Sorbus aucuparia</i>	41
<i>Goodyera repens</i>	38
<i>Polypodium vulgare</i>	33
<i>Cladonia portentosa</i>	32
<i>Frangula alnus</i>	31
<i>Luzula campestris</i> aggr.	30
<i>Juniperus communis</i> subsp. <i>communis</i>	29
<i>Cladonia arbuscula</i> aggr.	29
<i>Salix repens</i>	27
<i>Dicranum polysetum</i>	26
<i>Luzula pilosa</i>	24
<i>Hieracium umbellatum</i>	24
<i>Vaccinium uliginosum</i>	23
<i>Leucobryum glaucum</i>	23
<i>Dryopteris carthusiana</i> aggr.	21
<i>Cladonia rangiferina</i>	20
<i>Cladonia furcata</i>	20
<i>Cladonia pyxidata</i> aggr.	19
<i>Trientalis europaea</i>	18
<i>Betula pubescens</i>	18
<i>Anthoxanthum odoratum</i> aggr.	18
<i>Picea abies</i>	17

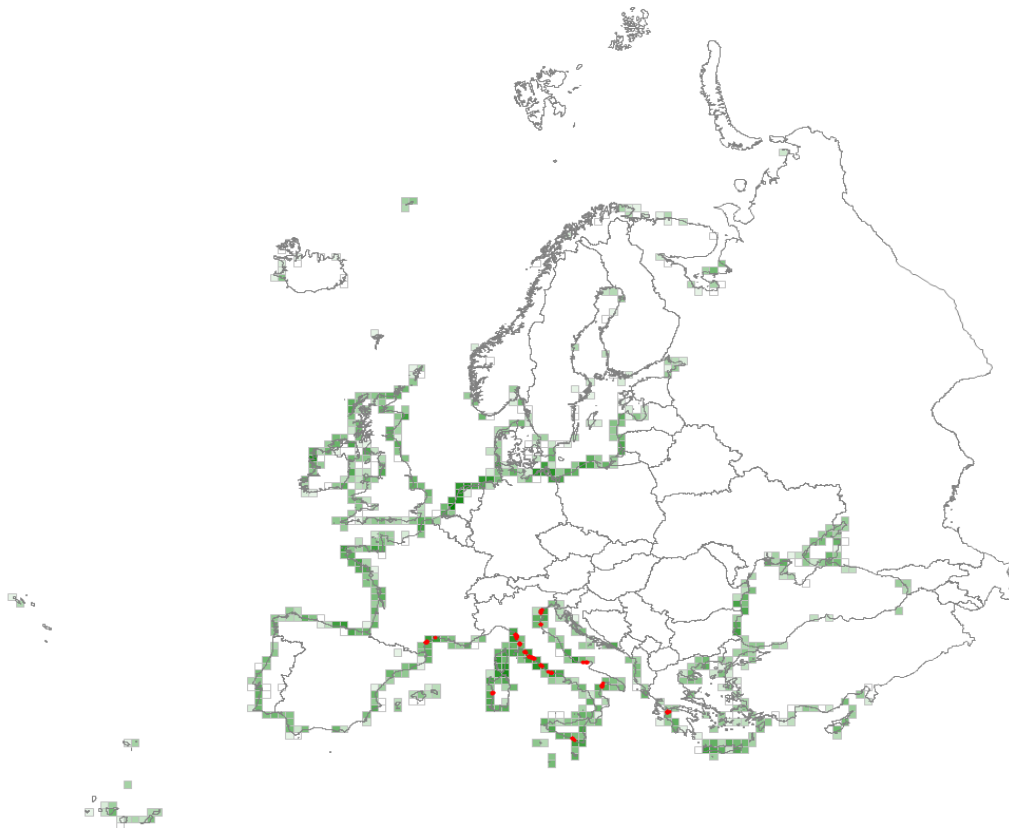
<i>Rhododendron tomentosum</i>	16
<i>Neottia cordata</i>	16
<i>Moneses uniflora</i>	16
<i>Maianthemum bifolium</i>	15
<i>Erica tetralix</i>	15
<i>Pohlia nutans</i>	13
<i>Orthilia secunda</i>	13
<i>Cladonia gracilis</i>	13
<i>Sphagnum capillifolium</i> aggr.	12
<i>Rhytidiadelphus triquetrus</i>	11
<i>Ptilium crista-castrensis</i>	11
<i>Polytrichum commune</i>	11
<i>Corynephorus canescens</i>	11
<i>Carex nigra</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus sylvestris</i>	96
<i>Pseudoscleropodium purum</i>	48
<i>Pleurozium schreberi</i>	45

N1G – Mediterranean coniferous coastal dune forest

Forests on coastal dunes in the Mediterranean Basin are dominated by different species of pine. Many stands are of planted origin. A variety of other woody species occur including shrubs such as junipers. Where shrubs exceed the cover of pine, the habitat should be considered N19 Mediterranean and Black Sea coastal dune scrub.



Corresponding alliances in EuroVegChecklist 2016

- <> QUI-03A Pistacio lentisci-Pinion halepensis Biondi, Blasi, Galdenzi, Pesaresi et Vagge in Biondi et al. 2014
- <> QUI-03D Pinion pineae Feinbrun 1959

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinus pinea</i>	59
<i>Smilax aspera</i>	23
<i>Quercus ilex</i>	22
<i>Phillyrea angustifolia</i>	21
<i>Asparagus acutifolius</i>	21
<i>Rubia peregrina</i>	16
<i>Rhamnus alaternus</i>	16

<i>Pinus halepensis</i>	15
<i>Pistacia lentiscus</i>	15

Constant species (percentage frequencies)

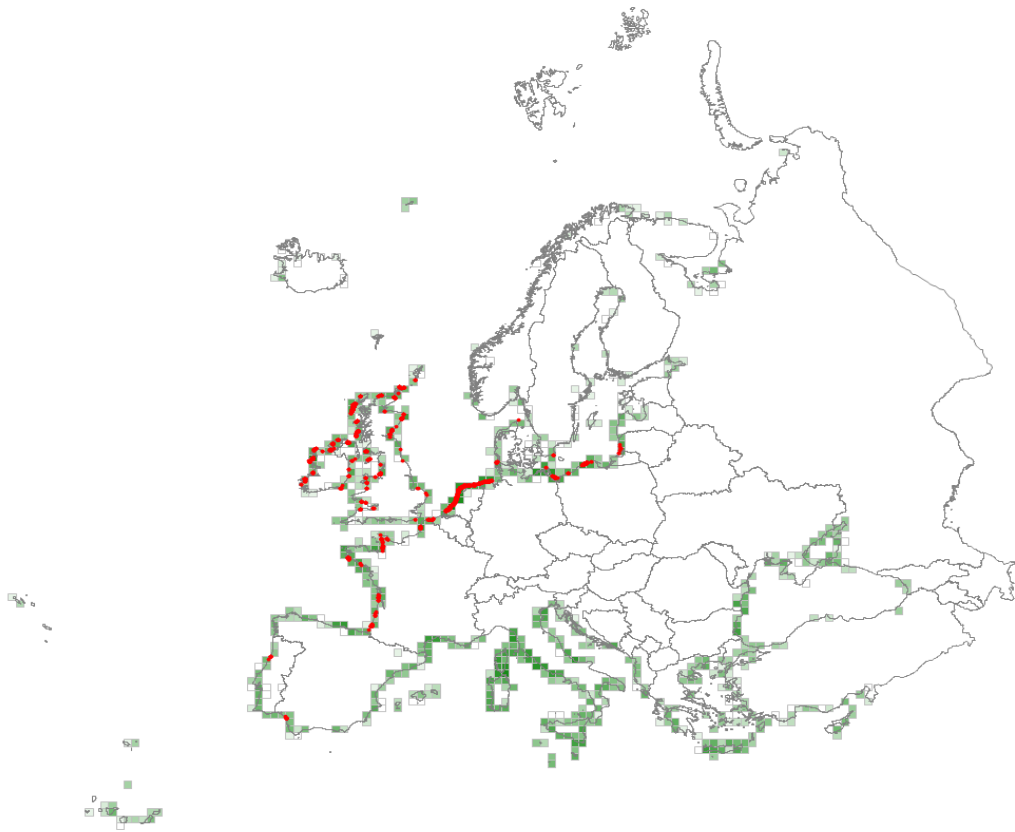
<i>Pinus pinea</i>	62
<i>Smilax aspera</i>	57
<i>Asparagus acutifolius</i>	55
<i>Rubia peregrina</i>	50
<i>Quercus ilex</i>	48
<i>Pistacia lentiscus</i>	40
<i>Phillyrea angustifolia</i>	36
<i>Hedera helix</i> aggr.	28
<i>Rhamnus alaternus</i>	26
<i>Pinus halepensis</i>	25
<i>Rubus ulmifolius</i>	22
<i>Juniperus oxycedrus</i> aggr.	21
<i>Daphne gnidium</i>	21
<i>Clematis flammula</i>	20
<i>Ruscus aculeatus</i>	19
<i>Myrtus communis</i>	19
<i>Brachypodium sylvaticum</i>	19
<i>Cistus creticus</i>	18
<i>Lagurus ovatus</i>	16
<i>Sonchus bulbosus</i>	15
<i>Cistus salviifolius</i>	15
<i>Rosmarinus officinalis</i>	14
<i>Pinus pinaster</i>	14
<i>Lonicera implexa</i>	13
<i>Phillyrea latifolia</i>	12
<i>Quercus coccifera</i>	11
<i>Anagallis arvensis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus pinea</i>	58
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N1H – Atlantic and Baltic moist and wet dune slack

Dune slacks develop in Atlantic and Baltic dune systems as moist-wet depressions between dune ridges. Primary slacks originate from the development of the beach-dune-slack-system, while secondary slacks occur where blow-outs have lowered the sand level of dune systems to that of groundwater or, unusually in the Wadden Sea, where parts of barrier islands are occasionally flooded by tidal inundation (so-called “green beaches”). The water table fluctuates seasonally, less so around the Baltic, and the mean wetness of slacks can vary so that the range of vegetation is considerable from dwarf rush and bryophyte pioneer vegetation, through wet grasslands, to various kinds of mire and swamp, with persistent areas of open water with aquatic plants.



Corresponding alliances in EuroVegChecklist 2016

- ◊ CHA-01A Charion intermediae Sauer 1937
- ◊ CHA-01C Charion canescentis Krausch 1964
- ◊ ISO-02A Nanocyperion Koch 1926
- ◊ LIT-01F Hyperico elodis-Sparganion Br.-Bl. et Tx. ex Oberd. 1957
- ◊ MOL-10B Loto tenuis-Trifolion fragiferi Westhoff et Den Held ex de Foucault 2009
- ◊ PHR-01A Phragmition communis Koch 1926
- ◊ PHR-02A Scirpion maritimi Dahl et Hadač 1941
- ◊ PHR-04A Magnocaricion elatae Koch 1926
- ◊ POT-01A Potamogetonion Libbert 1931
- ◊ POT-01B Nymphaeion albae Oberd. 1957

- <> SAG-01A Saginion maritimae Westhoff et al. 1962
- <> SCH-01A Caricion davallianae Klika 1934
- <> SCH-01B Caricion viridulo-trinervis Julve ex Hájek et Mucina in Theurillat et al. 2015
- <> SCH-03B Caricion fuscae Koch 1926 nom. conserv. propos.
- <> SCH-03C Anagallido tenellae-Juncion bulbosi Br.-Bl. 1967

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Hydrocotyle vulgaris</i>	33
<i>Salix repens</i>	25
<i>Mentha aquatica</i>	20
<i>Ranunculus flammula</i>	20
<i>Juncus articulatus</i>	19
<i>Carex trinervis</i>	18

Constant species (percentage frequencies)

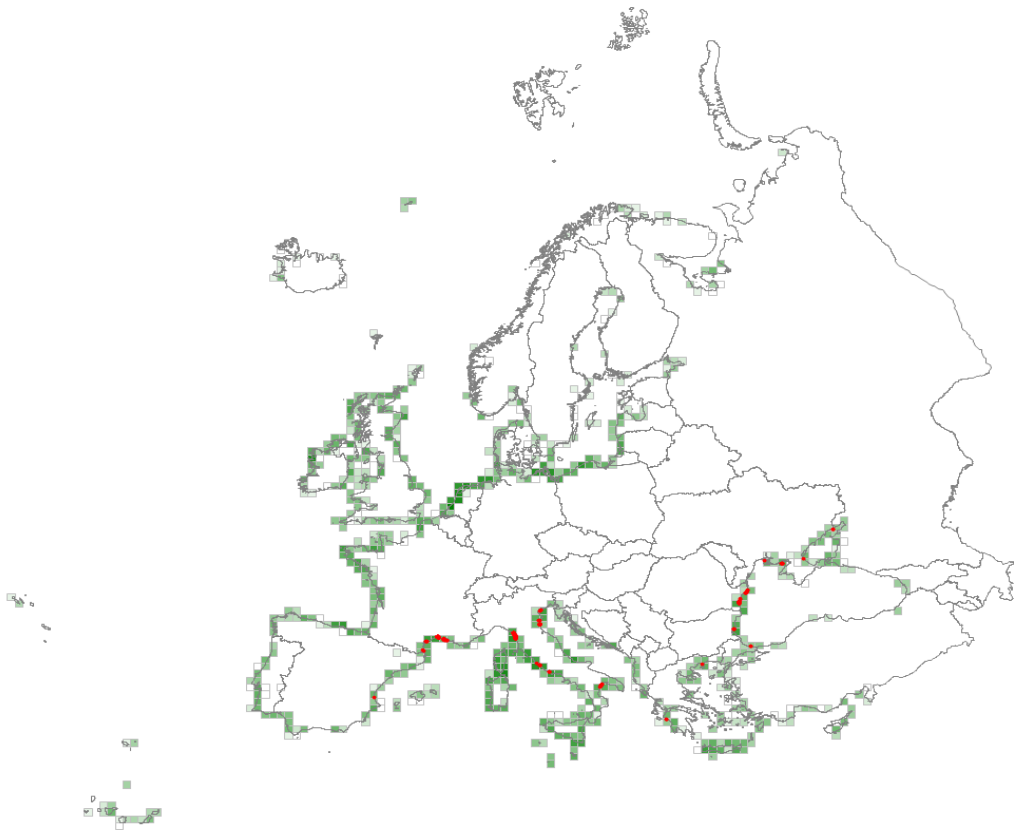
<i>Agrostis stolonifera</i>	45
<i>Salix repens</i>	43
<i>Hydrocotyle vulgaris</i>	41
<i>Juncus articulatus</i>	37
<i>Mentha aquatica</i>	36
<i>Carex nigra</i>	32
<i>Phragmites australis</i>	31
<i>Holcus lanatus</i>	31
<i>Calliergonella cuspidata</i>	26
<i>Galium palustre</i> aggr.	25
<i>Argentina anserina</i>	25
<i>Ranunculus flammula</i>	24
<i>Carex flacca</i>	24
<i>Festuca rubra</i> aggr.	23
<i>Trifolium repens</i>	22
<i>Prunella vulgaris</i>	20
<i>Eleocharis palustris</i>	20
<i>Lotus corniculatus</i>	17
<i>Carex arenaria</i>	17
<i>Calamagrostis epigejos</i>	16
<i>Poa pratensis</i> aggr.	15
<i>Parnassia palustris</i>	15
<i>Anthoxanthum odoratum</i> aggr.	15
<i>Potentilla erecta</i>	14
<i>Luzula campestris</i> aggr.	14
<i>Epipactis palustris</i>	14
<i>Carex panicea</i>	14
<i>Cardamine pratensis</i>	14
<i>Linum catharticum</i>	13
<i>Ranunculus repens</i>	12
<i>Plantago lanceolata</i>	12
<i>Epilobium palustre</i>	12
<i>Carex trinervis</i>	12
<i>Schoenus nigricans</i>	11
<i>Ranunculus acris</i> aggr.	11
<i>Lythrum salicaria</i>	11
<i>Leontodon saxatilis</i>	11

Equisetum fluviatile

11

N1J – Mediterranean and Black Sea moist and wet dune slack

Small permanent or temporary freshwater bodies that develop in the depressions between sand ridges in the dune systems along the Mediterranean and Black Sea coasts. The constituent vegetation depends on the depth and persistence of the water which is very variable, and also on the level of enrichment, which is usually eutrophic to mesotrophic, though locally dystrophic. There can be aquatic communities in the open waters and swamps around the margins and, where the slacks dry out in summer, conditions can become saline with ephemerals colonising.



Corresponding alliances in EuroVegChecklist 2016

- ◊ ISO-01A Isoëtion Br.-Bl. 1935
- ◊ JUN-01C Plantaginion crassifoliae Br.-Bl. in Br.-Bl. et al. 1952
- ◊ JUN-01D Limonion etrusci Viciani et al. 2012
- ◊ JUN-01E Agropyro-Plantaginion maritimi Horvatić 1934
- ◊ MOL-07A Molinio-Holoschoenion Br.-Bl. ex Tchou 1948
- ◊ PHR-01A Phragmition communis Koch 1926
- ◊ PHR-02A Scirpion maritimi Dahl et Hadač 1941
- > PHR-03A Imperato cylindricae-Saccharion ravennae Br.-Bl. et O. de Bolòs 1958
- ◊ SAG-01A Saginion maritimae Westhoff et al. 1962
- ◊ SAG-01B Spergularion macrorhizae Gamisans 1990
- ◊ SAG-01C Junco ranarii-Plantaginion commutatae Horvatić 1934
- ◊ SAG-01D Romuleo-Saginion (Wolff 1968) Mucina in Mucina et al. 2016

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Tripidium ravennae</i>	53
<i>Juncus acutus</i>	40
<i>Scirpoides holoschoenus</i>	34
<i>Linum maritimum</i>	32
<i>Periploca graeca</i>	31
<i>Schoenus nigricans</i>	30
<i>Sonchus maritimus</i>	26
<i>Plantago crassifolia</i>	24
<i>Juncus anceps</i>	24
<i>Ceratophyllum demersum</i>	21
<i>Anacamptis palustris</i> aggr.	18
<i>Juncus littoralis</i>	18
<i>Pulicaria dysenterica</i>	16

Constant species (percentage frequencies)

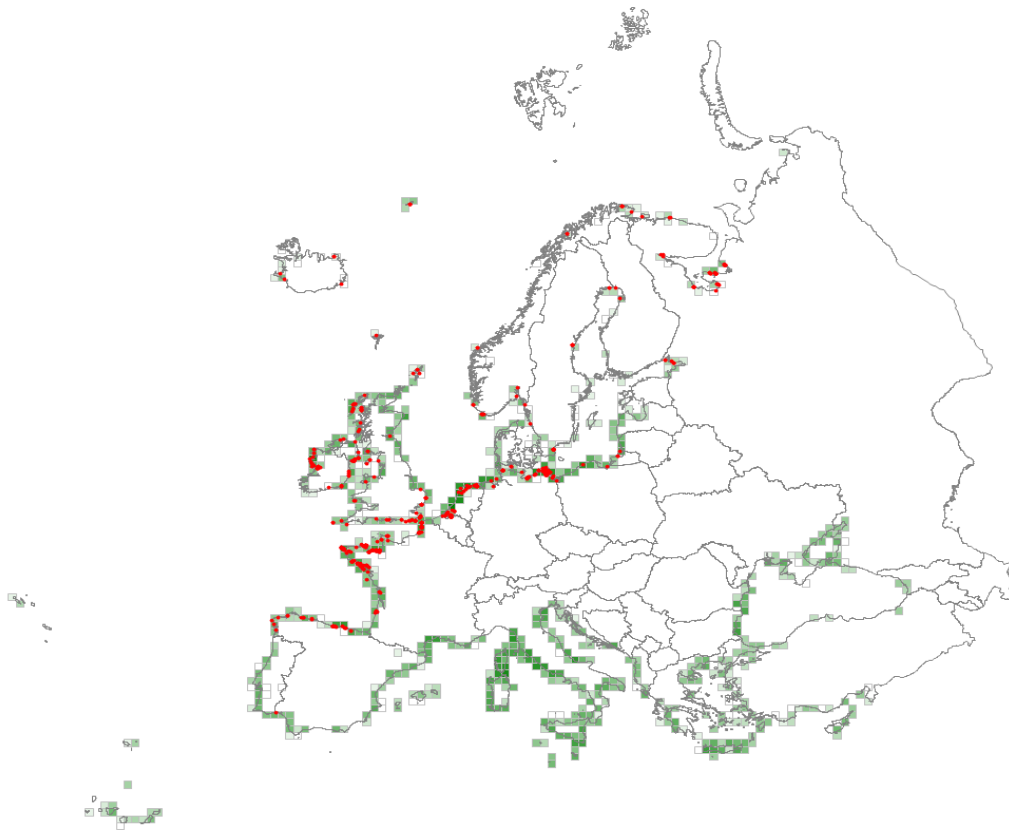
<i>Scirpoides holoschoenus</i>	56
<i>Schoenus nigricans</i>	55
<i>Juncus acutus</i>	48
<i>Tripidium ravennae</i>	42
<i>Phragmites australis</i>	32
<i>Agrostis stolonifera</i>	27
<i>Sonchus maritimus</i>	23
<i>Juncus maritimus</i>	21
<i>Dittrichia viscosa</i>	19
<i>Plantago crassifolia</i>	16
<i>Linum maritimum</i>	16
<i>Pulicaria dysenterica</i>	15
<i>Periploca graeca</i>	15
<i>Hypochaeris radicata</i>	14
<i>Anacamptis palustris</i> aggr.	14
<i>Juncus anceps</i>	13
<i>Carex distans</i>	13
<i>Typha angustifolia</i>	12
<i>Lythrum salicaria</i>	12
<i>Blackstonia perfoliata</i>	12
<i>Mentha aquatica</i>	11
<i>Calystegia sepium</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Schoenus nigricans</i>	38
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N21 – Atlantic, Baltic and Arctic coastal shingle beach

These deposits of shingle are most typical of highly dynamic beaches along the Atlantic, Arctic and Baltic coasts, with concentrations along the English Channel. Often mobile and largely bare, they provide an inhospitable environment colonised only in more stable situations, with some deposition of finer material and drift detritus, by a distinctive suite of salt-tolerant and nitrophilous perennial plants. They also provide a habitat suitable for some nesting waders and seabirds and a variety of distinctive invertebrates. Locally, in southern England and the Baltic, larger apposition beaches are more extensively colonised by vegetation.



Corresponding alliances in EuroVegChecklist 2016

- > AMM-02B *Mertensio maritimae-Honckenyon diffusae* Tx. et Géhu in Géhu 1998
- ◊ CAK-01A *Atriplicion littoralis* Nordhagen 1940
- ◊ CAK-01C *Agropyro-Rumicion* Nordhagen 1940 nom. ambig. rejic. propos.
- ◊ CAK-02A *Cakilion edentulae* Thannheiser 1981
- ◊ CAK-02B *Atriplicion nudicaulis* Golub et al. 2003

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Honckenya peploides</i>	33
<i>Beta vulgaris</i> subsp. <i>maritima</i>	32

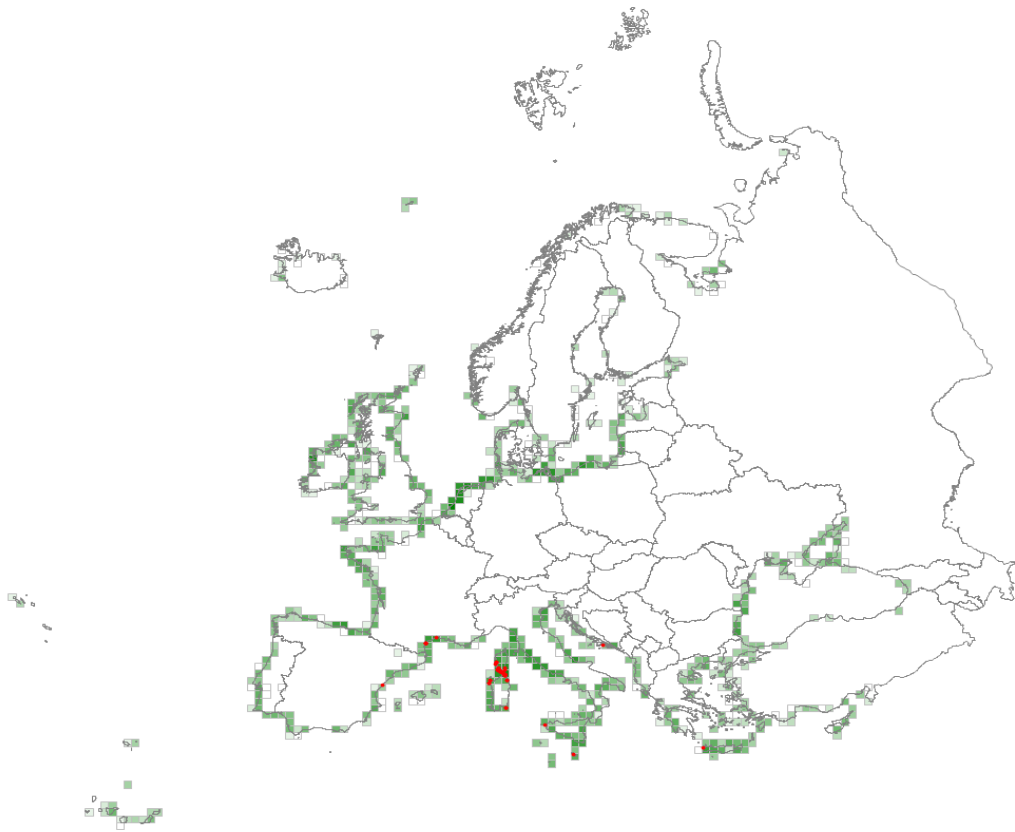
<i>Lathyrus japonicus</i>	27
<i>Atriplex prostrata</i>	23
<i>Atriplex praecox</i>	23
<i>Atriplex littoralis</i>	20
<i>Atriplex glabriuscula</i>	20
<i>Tripleurospermum maritimum</i> aggr.	19
<i>Atriplex laciniata</i>	16

Constant species (percentage frequencies)

<i>Atriplex prostrata</i>	47
<i>Tripleurospermum maritimum</i> aggr.	37
<i>Beta vulgaris</i> subsp. <i>maritima</i>	35
<i>Honckenya peploides</i>	34
<i>Rumex crispus</i>	26
<i>Atriplex littoralis</i>	21
<i>Argentina anserina</i>	17
<i>Elytrigia juncea</i>	16
<i>Festuca rubra</i> aggr.	15
<i>Tripolium pannonicum</i>	14
<i>Lathyrus japonicus</i>	14
<i>Crambe maritima</i>	14
<i>Sonchus arvensis</i>	12
<i>Cakile maritima</i>	12
<i>Leymus arenarius</i>	11
<i>Elytrigia repens</i> aggr.	11
<i>Elytrigia atherica</i>	11

N22 – Mediterranean and Black Sea coastal shingle beach

Shingle and cobble beaches formed on dynamic coasts around the Mediterranean and Black Seas, where waves, mostly in winter, weather cliffs and redeposit the eroded material. Mixed with shells and decaying algae and sea grass washed ashore, it provides a nitrogen-rich surface for patchy and sporadic colonisation by annuals and some perennials, also sometimes weedy assemblages. Though widespread, its stands are narrow and localised and highly vulnerable to tourist recreation and coastal development.



Corresponding alliances in EuroVegChecklist 2016

- <> CAK-03A Euphorbion peplidis Tx. ex Oberd. 1952
- <> CAK-03B Cakilion euxinae Géhu et al. 1994
- > CRI-02G Elytrigio bessarabicae-Lactucion tataricae Korzhenevskii ex Didukh et Mucina in Mucina et al. 2016

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Crithmum maritimum</i>	49
<i>Elytrigia juncea</i>	42
<i>Matthiola tricuspida</i>	41
<i>Pancratium maritimum</i>	40

<i>Eryngium maritimum</i>	37
<i>Glaucium flavum</i>	32
<i>Sporobolus pungens</i>	31
<i>Senecio transiens</i>	25
<i>Lotus cytisoides</i>	18
<i>Achillea maritima</i>	17
<i>Calystegia soldanella</i>	16

Constant species (percentage frequencies)

<i>Elytrigia juncea</i>	84
<i>Crithmum maritimum</i>	84
<i>Eryngium maritimum</i>	62
<i>Pancratium maritimum</i>	51
<i>Sporobolus pungens</i>	34
<i>Matthiola tricuspidata</i>	31
<i>Glaucium flavum</i>	26
<i>Lotus cytisoides</i>	25
<i>Cakile maritima</i>	25
<i>Reichardia picroides</i>	17
<i>Medicago marina</i>	17
<i>Calystegia soldanella</i>	17
<i>Euphorbia paralias</i>	16
<i>Helichrysum italicum</i>	14
<i>Frankenia laevis</i>	14
<i>Daucus carota</i>	14
<i>Achillea maritima</i>	14
<i>Beta vulgaris</i> subsp. <i>maritima</i>	13
<i>Salsola kali</i> aggr.	12
<i>Ammophila arenaria</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Crithmum maritimum</i>	60
<i>Elytrigia juncea</i>	38

N23 – Shingle and gravel beach with scrub

[This habitat could not be formally defined in the expert system.]

Coastal gravel banks with scrub. Included are dense thermomediterranean scrub on gravel banks and heaths on shingle in the temperate zone.

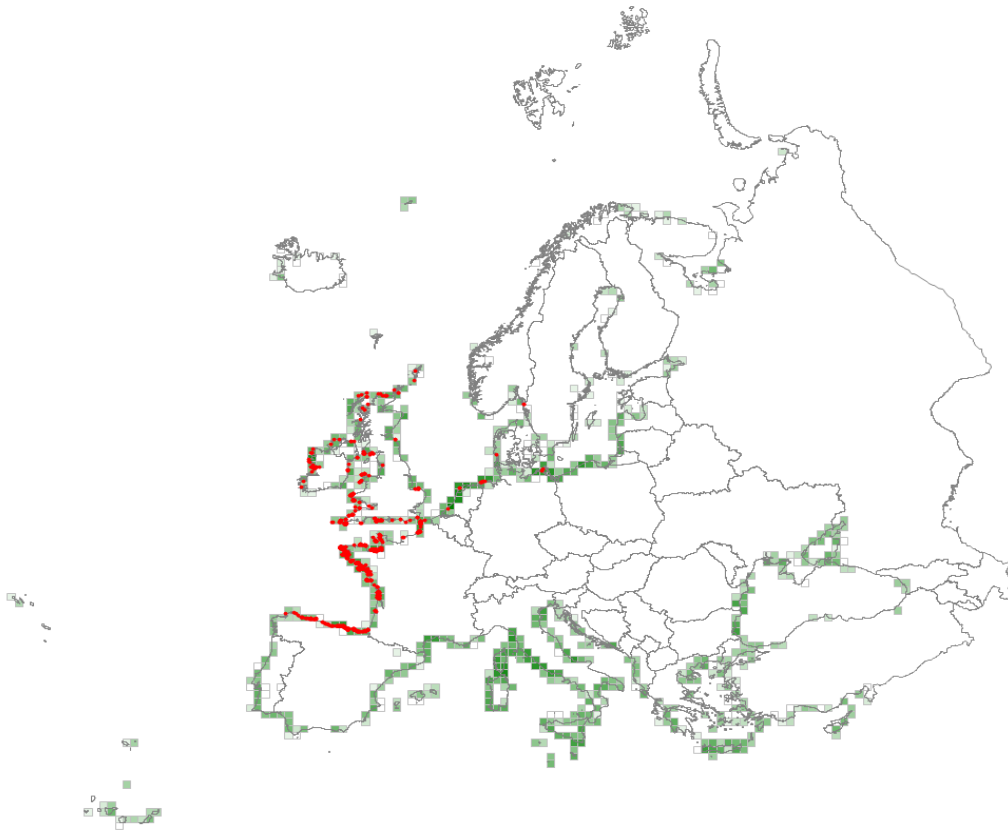
N24 – Shingle and gravel beach forest

[This habitat could not be formally defined in the expert system.]

Coastal gravel banks, colonised by trees or riparian thickets, in particular, Mediterranean gravel banks colonised by *Quercus ilex* low forests, by *Tamarix africana* or *Vitex agnus-castus*.

N31 – Atlantic and Baltic rocky sea cliff and shore

Cliffs, together with vegetated crevices, ledges and cliff-tops along the coasts of the Baltic Sea, the North Sea and the Atlantic Ocean south to middle Portugal. Exposed bedrock dominates the habitat, and its very variable composition and structure determine the character of available surfaces. The height and slope of the cliffs influence the input of salt spray which, on exposed coasts, can be very high close to the sea. This combination of local climatic and topographic conditions determines the often strong zonation of crevice vegetation, grasslands and heaths found on the cliffs, with regional climate also affecting the flora. Nesting seabirds also add a distinctive nutrient-demanding element to the flora on their guano.



Corresponding alliances in EuroVegChecklist 2016

- > ASP-10A *Asplenion marini* Segal 1969
- > CRI-01A *Crithmion maritimi* Tx. et Oberd. 1958
- <> CRI-01B *Crithmo-Staticion* Molinier 1934
- <> CRI-01C *Crithmo-Daucion halophili* Rivas-Mart. et al. 1990
- > CRI-02A *Dactylido hispanicae-Helichryson stoechadis* Géhu et Biondi in Géhu 1994
- <> CRI-03A *Cochleario officinalis-Armerion maritimae* Géhu et Géhu-Franck 1984

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Spergularia rupicola</i>	48
<i>Limonium binervosum</i> aggr.	31
<i>Crithmum maritimum</i>	30
<i>Armeria maritima</i>	29
<i>Limonium dodartii</i>	24
<i>Cochlearia danica</i>	24
<i>Asplenium marinum</i>	22
<i>Armeria pubigera</i>	22
<i>Limonium ovalifolium</i>	22
<i>Catapodium marinum</i>	21
<i>Plantago coronopus</i> aggr.	17
<i>Sagina maritima</i>	17
<i>Silene uniflora</i>	16

Constant species (percentage frequencies)

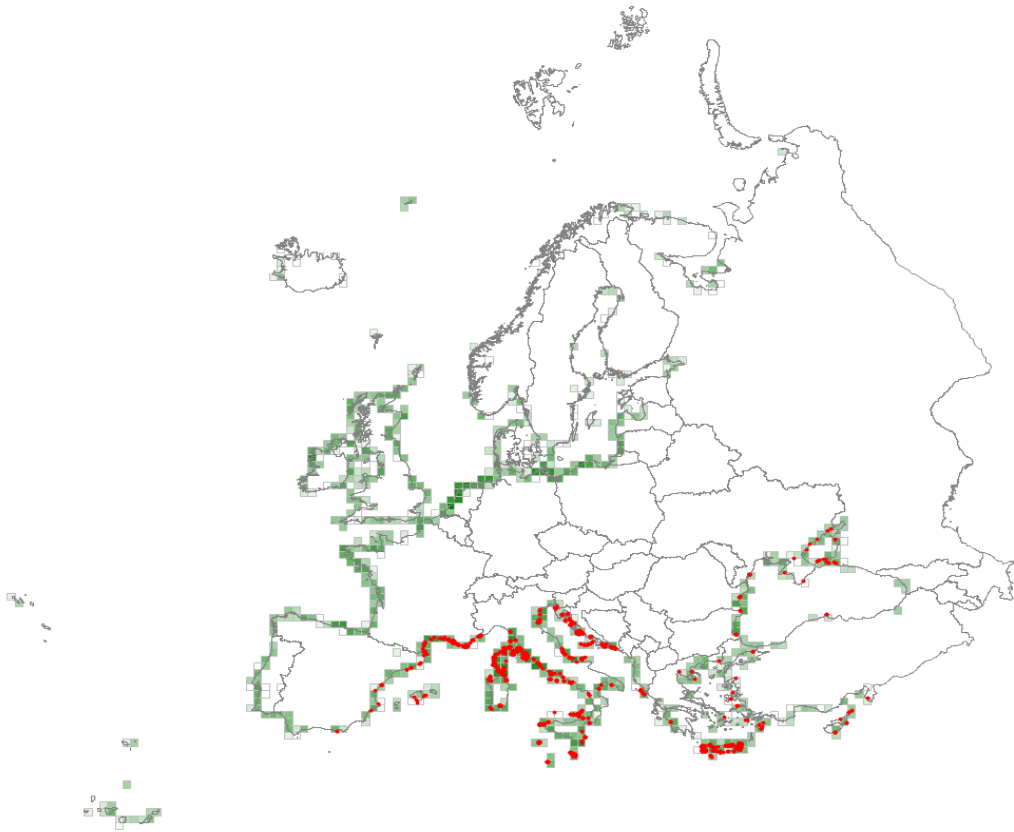
<i>Crithmum maritimum</i>	51
<i>Armeria maritima</i>	51
<i>Festuca rubra</i> aggr.	43
<i>Plantago coronopus</i> aggr.	38
<i>Spergularia rupicola</i>	32
<i>Silene uniflora</i>	19
<i>Limbarda crithmoides</i>	19
<i>Cochlearia danica</i>	19
<i>Catapodium marinum</i>	19
<i>Plantago maritima</i>	18
<i>Limonium binervosum</i> aggr.	17
<i>Daucus carota</i>	16
<i>Beta vulgaris</i> subsp. <i>maritima</i>	15
<i>Sagina maritima</i>	14
<i>Asplenium marinum</i>	13

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Crithmum maritimum</i>	32
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N32 – Mediterranean and Black Sea rocky sea cliff and shore

Cliffs, together with vegetated crevices, ledges and cliff-tops along the coasts of the Mediterranean Sea and the Atlantic Ocean in southern Portugal, and more locally, the Black Sea. Exposed bedrock dominates the habitat, and its variable composition and structure determine the character of available surfaces, the height and slope of the cliffs influencing the input of salt spray which, on exposed coasts, can be very high close to the sea. This combination of local climatic and topographic conditions determines the often strong zonation of crevice vegetation and grasslands found on the cliffs, with regional climate also affecting the flora, with many Mediterranean endemics.



Corresponding alliances in EuroVegChecklist 2016

- <> CRI-01B *Crithmo-Staticion* Molinier 1934
- <> CRI-01C *Crithmo-Daucion halophili* Rivas-Mart. et al. 1990
- > CRI-01F *Kochio prostratae-Limonion meyeri* Korzhenevskii 1987
- > CRI-02F *Crucianellion rupestris* S. Brullo et Furnari 1990
- > DRY-02A *Ptilostemonion echinocephali* Korzhenevskii 1990

Characteristic species combination

Diagnostic species (phi coefficient * 100)

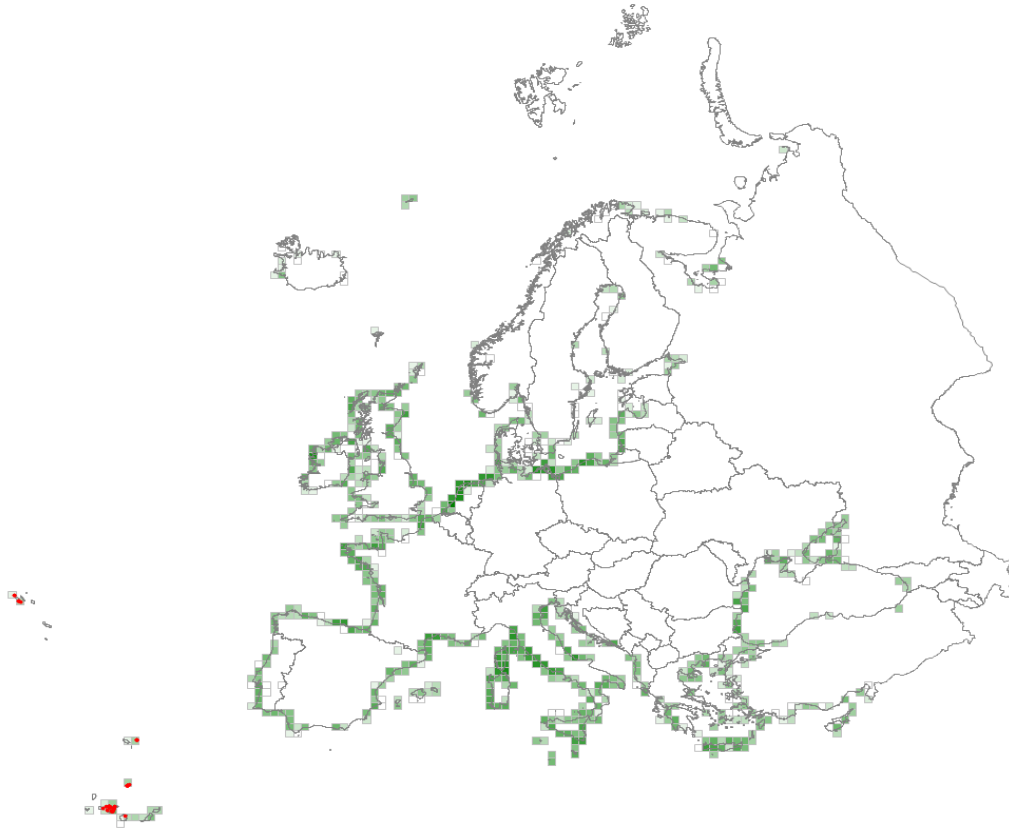
<i>Helichrysum litoreum</i>	30
<i>Lotus cytisoides</i>	29
<i>Jacobaea maritima</i>	28
<i>Silene sedoides</i>	26
<i>Crithmum maritimum</i>	26
<i>Limonium ilvae</i>	19
<i>Limonium graecum</i>	18
<i>Limonium cancellatum</i>	18
<i>Reichardia picroides</i>	17
<i>Limonium sommierianum</i>	17
<i>Limonium multifforme</i>	15
<i>Limonium minutum</i>	15
<i>Limonium contortirameum</i>	15
<i>Plantago macrorhiza</i>	15

Constant species (percentage frequencies)

<i>Crithmum maritimum</i>	45
<i>Lotus cytisoides</i>	38
<i>Reichardia picroides</i>	32
<i>Daucus carota</i>	32
<i>Dactylis glomerata</i>	28
<i>Jacobaea maritima</i>	25
<i>Silene sedoides</i>	16
<i>Helichrysum litoreum</i>	14
<i>Parapholis incurva</i>	11
<i>Limbarda crithmoides</i>	11
<i>Euphorbia segetalis</i>	11

N33 – Macaronesian rocky sea cliff and shore

The rocky cliffs of the Macaronesian islands comprise a narrow strip of basalt lava influenced by salt-spray whose zonation of crevice and ledge vegetation vary on the different island groups of the Canaries, Madeira and the Azores, with endemics providing a highly distinctive aspect to the flora. The habitat also provides important sites for nesting seabirds whose guano offers a nutrient-rich surface for colonisation.



Corresponding alliances in EuroVegChecklist 2016

- > CRI-01D Limonion anfracti-cancellati (Horvatić 1934) Mucina in Mucina et al. 2016
- > CRI-01E Crithmo-Frankenion hirsutae Mayer 1995
- > CRI-04A Frankenio-Astydasion latifoliae Santos 1976
- > CRI-04B Euphorbio azoricae-Festucion petraeae Lüpnitz 1976
- > CRI-04C Helichryson obconico-devium Rivas-Mart. et al. 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Lotus glaucus</i>	49
<i>Limonium pectinatum</i>	47
<i>Frankenia ericifolia</i>	43
<i>Astydamia latifolia</i>	39

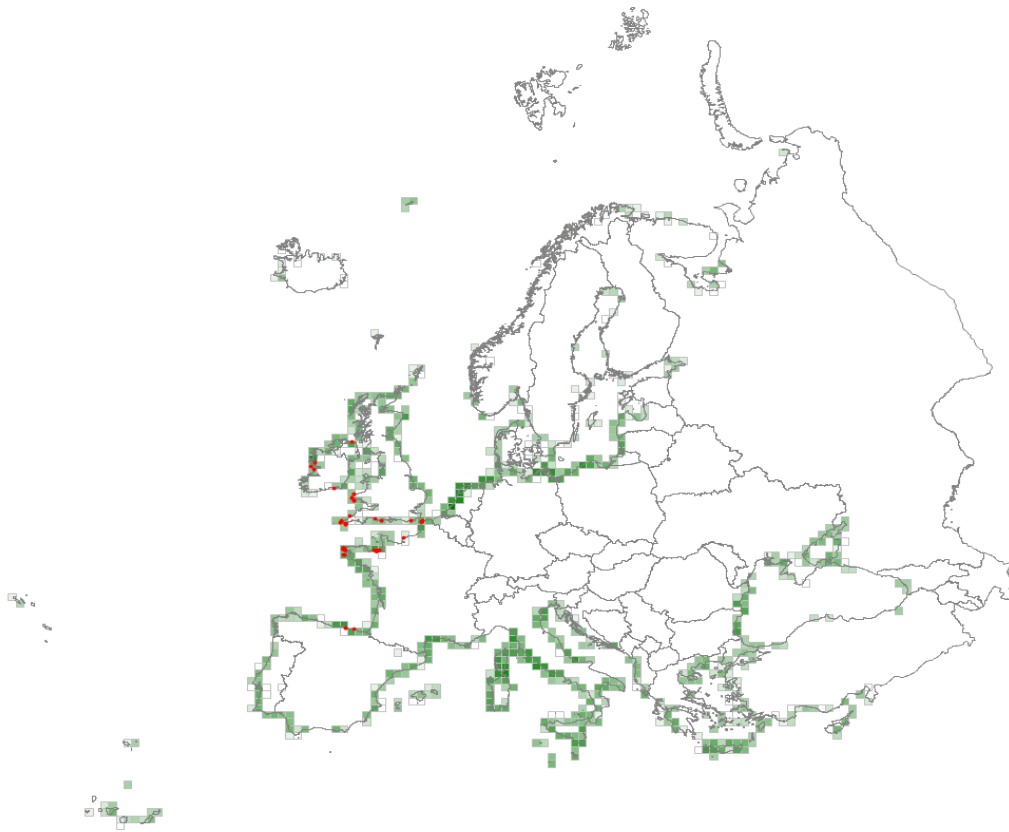
<i>Senecio incrassatus</i>	33
<i>Frankenia laevis</i>	28
<i>Limonium papillatum</i>	27
<i>Argyranthemum frutescens</i>	27
<i>Spergularia azorica</i>	26
<i>Lotus loweanus</i>	26
<i>Atriplex semibaccata</i>	25
<i>Lotus sessilifolius</i>	23
<i>Mesembryanthemum crystallinum</i>	22
<i>Tetraena fontanesii</i>	20
<i>Reichardia crystallina</i>	20
<i>Umbilicus gaditanus</i>	19
<i>Crithmum maritimum</i>	19
<i>Limonium pyramidatum</i>	19
<i>Schizogyne sericea</i>	18
<i>Echium giganteum</i>	17
<i>Mesembryanthemum nodiflorum</i>	17

Constant species (percentage frequencies)

<i>Limonium pectinatum</i>	43
<i>Frankenia laevis</i>	36
<i>Crithmum maritimum</i>	33
<i>Lotus glaucus</i>	28
<i>Frankenia ericifolia</i>	28
<i>Astydamia latifolia</i>	24
<i>Argyranthemum frutescens</i>	22
<i>Tetraena fontanesii</i>	19
<i>Schizogyne sericea</i>	17
<i>Lotus sessilifolius</i>	17
<i>Senecio incrassatus</i>	16
<i>Suaeda vera</i>	14
<i>Euphorbia balsamifera</i>	14
<i>Plantago coronopus</i> aggr.	12
<i>Mesembryanthemum nodiflorum</i>	12

N34 – Atlantic and Baltic soft sea cliff

Coastal loamy cliffs, with a bedrock of clays, shales or loamy sands, erode much quicker than cliffs with a hard bedrock, and therefore usually have a less steep slope and are often unstable. Along the Atlantic and Baltic coasts, they harbour relatively common and widespread species, even though a range of different micro-habitats may be found with ephemeral plant communities on the bare sediments, rank grasslands and scrub on more stable ground and flush vegetation around seepages.



Corresponding alliances in EuroVegChecklist 2016

- <> ART-03A Convolvulo arvensis-Agropyrion repentis Görs 1967
- <> CRI-03A Cochleario officinalis-Armerion maritima Géhu et Géhu-Franck 1984
- > JUN-02A Agropyron pungentis Géhu 1968

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Silene uniflora</i>	53
<i>Armeria maritima</i>	44
<i>Plantago coronopus</i> aggr.	25
<i>Erodium maritimum</i>	24
<i>Sedum anglicum</i>	24

<i>Anthyllis vulneraria</i>	22
<i>Cochlearia danica</i>	19
<i>Brassica oleracea</i>	19
<i>Jacobaea vulgaris</i>	18
<i>Daucus carota</i>	17
<i>Cerastium diffusum</i>	16
<i>Festuca rubra</i> aggr.	16
<i>Leontodon saxatilis</i>	15

Constant species (percentage frequencies)

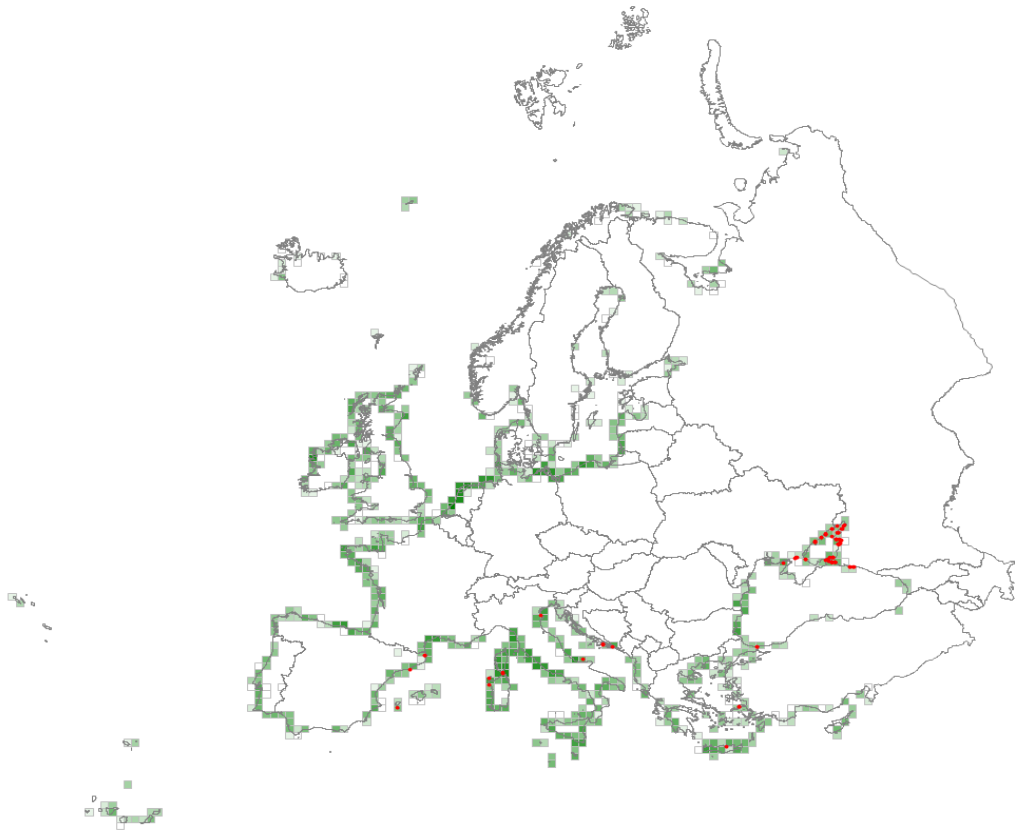
<i>Armeria maritima</i>	77
<i>Festuca rubra</i> aggr.	70
<i>Silene uniflora</i>	62
<i>Anthyllis vulneraria</i>	60
<i>Plantago coronopus</i> aggr.	57
<i>Daucus carota</i>	50
<i>Lotus corniculatus</i>	40
<i>Dactylis glomerata</i>	40
<i>Plantago lanceolata</i>	33
<i>Jacobaea vulgaris</i>	30
<i>Holcus lanatus</i>	30
<i>Leontodon saxatilis</i>	27
<i>Trifolium repens</i>	22
<i>Sedum anglicum</i>	20
<i>Anagallis arvensis</i>	20
<i>Agrostis stolonifera</i>	20
<i>Plantago maritima</i>	18
<i>Cirsium vulgare</i>	17
<i>Cochlearia danica</i>	15
<i>Centaurium erythraea</i>	15
<i>Sonchus oleraceus</i>	13
<i>Bromus hordeaceus</i>	13
<i>Hypochaeris radicata</i>	12
<i>Cerastium diffusum</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Armeria maritima</i>	32
<i>Anthyllis vulneraria</i>	30

N35 – Mediterranean and Black Sea soft sea cliff

Coastal soft cliffs around the Mediterranean and Black Seas that consist of readily-eroded clays, shales and sands. Usually, they have gently sloping and often unstable surfaces with a mixture of open soil, pioneer vegetation, scrub and flushes influenced by percolating waters. This habitat is poorly known, and there is little information on its ecological and floristic features.



Corresponding alliances in EuroVegChecklist 2016

- > JUN-02B Agrostio-Elytrigion athericae S. Brullo et Siracusa 2000

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Glycyrrhiza glabra</i>	45
<i>Galium humifusum</i>	22
<i>Elytrigia elongata</i>	21
<i>Cynanchum acutum</i>	21
<i>Seseli ponticum</i>	20
<i>Artemisia santonicum</i>	17

Constant species (percentage frequencies)

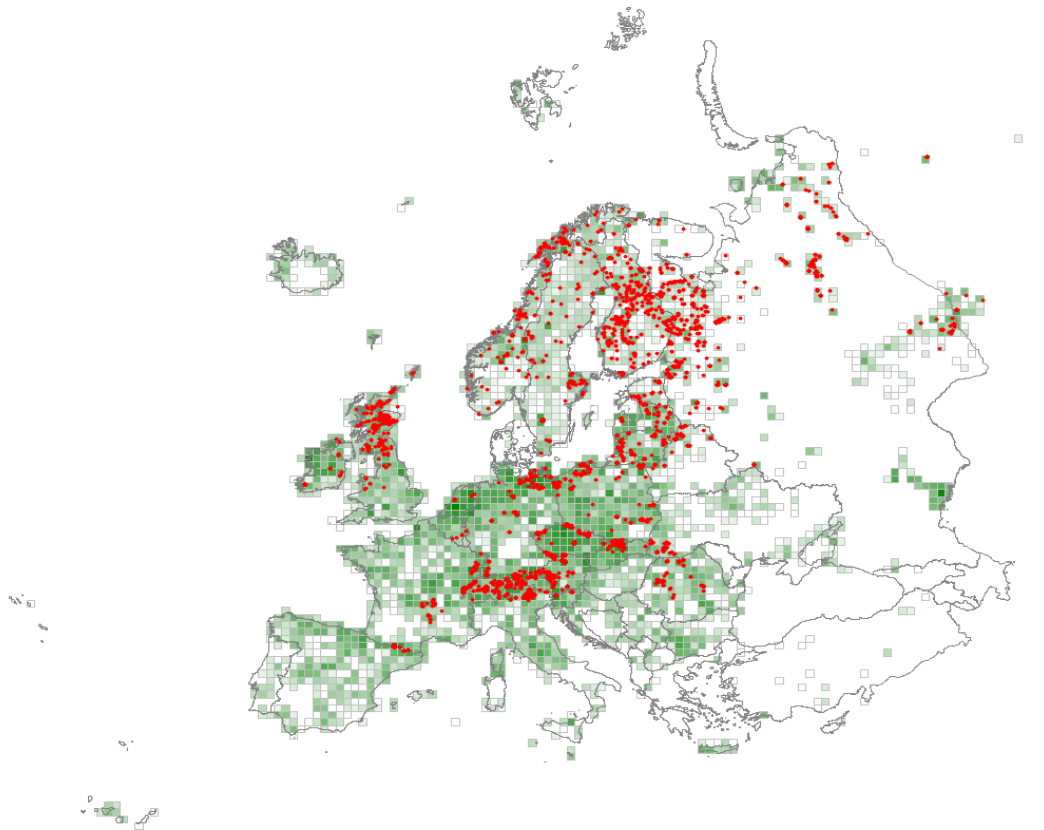
<i>Glycyrrhiza glabra</i>	56
<i>Artemisia santonicum</i>	27
<i>Elytrigia elongata</i>	26
<i>Cynanchum acutum</i>	26
<i>Galium humifusum</i>	22
<i>Elytrigia repens</i> aggr.	22
<i>Limonium meyeri</i>	17
<i>Lactuca tatarica</i>	16
<i>Calamagrostis epigejos</i>	16
<i>Leymus racemosus</i>	15
<i>Teucrium polium</i> aggr.	14
<i>Phragmites australis</i>	14
<i>Medicago falcata</i>	12
<i>Cynodon dactylon</i>	12
<i>Crambe maritima</i>	12
<i>Convolvulus arvensis</i>	12
<i>Poa pratensis</i> aggr.	11
<i>Falcaria vulgaris</i>	11
<i>Cichorium intybus</i>	11
<i>Bromus squarrosus</i>	11
<i>Artemisia absinthium</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Glycyrrhiza glabra</i>	51
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Q11 – Raised bog

The mire surface and underlying peat of highly oligotrophic, strongly acidic peatlands with a raised centre from which water drains towards the edges. The peat is composed mainly of sphagnum remains. Raised bogs form on nearly flat ground and are ombrotrophic, i.e. derive moisture and nutrients only from rainfall. Raised bog complexes include larger and smaller bog pools, lawns, elevated hummocks and their associated vegetation. Raised bogs form only in cool climates with high rainfall, and they are most widespread in the boreal zone and in the mountains and hills of the temperate zone; they also occur locally in the lowlands of the temperate zone. They are characteristic of lowlands and hills of North-Western and Northern Europe, the adjacent Hercynian ranges, the Jura, the Alps and the Carpathians. Bogs harbour, in addition to sphagna such as *Sphagnum fuscum*, *S. magellanicum* aggr. and *S. majus*, which are often abundant, a small number of dwarf shrubs such as *Andromeda polifolia*, *Rhododendron tomentosum*, *Vaccinium oxycoccos*, and sedges such as *Carex magellanica*, *Carex pauciflora*, *Eriophorum vaginatum* and *Trichophorum cespitosum*, non-sphagnaceous bryophytes and lichens.



Corresponding alliances in EuroVegChecklist 2016

- > OXY-02A *Oxycocco microcarpi*-*Empetrium hermaphroditi* Nordhagen ex Du Rietz 1954
nom. conserv. propos.
- <> OXY-02B *Sphagnion medii* Kästner et Flössner 1933
- <> SCH-04A *Scheuchzerion palustris* Nordhagen ex Tx. 1937

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sphagnum magellanicum</i> aggr.	45
<i>Eriophorum vaginatum</i>	39
<i>Sphagnum fuscum</i>	36
<i>Vaccinium oxycoccos</i>	34
<i>Carex pauciflora</i>	33
<i>Sphagnum recurvum</i> aggr.	31
<i>Andromeda polifolia</i>	31
<i>Sphagnum rubellum</i>	30
<i>Polytrichum strictum</i>	28
<i>Chamaedaphne calyculata</i>	27
<i>Vaccinium microcarpum</i>	25
<i>Mylia anomala</i>	24
<i>Drosera rotundifolia</i>	23
<i>Sphagnum capillifolium</i> aggr.	18
<i>Rubus chamaemorus</i>	18
<i>Rhododendron tomentosum</i>	16

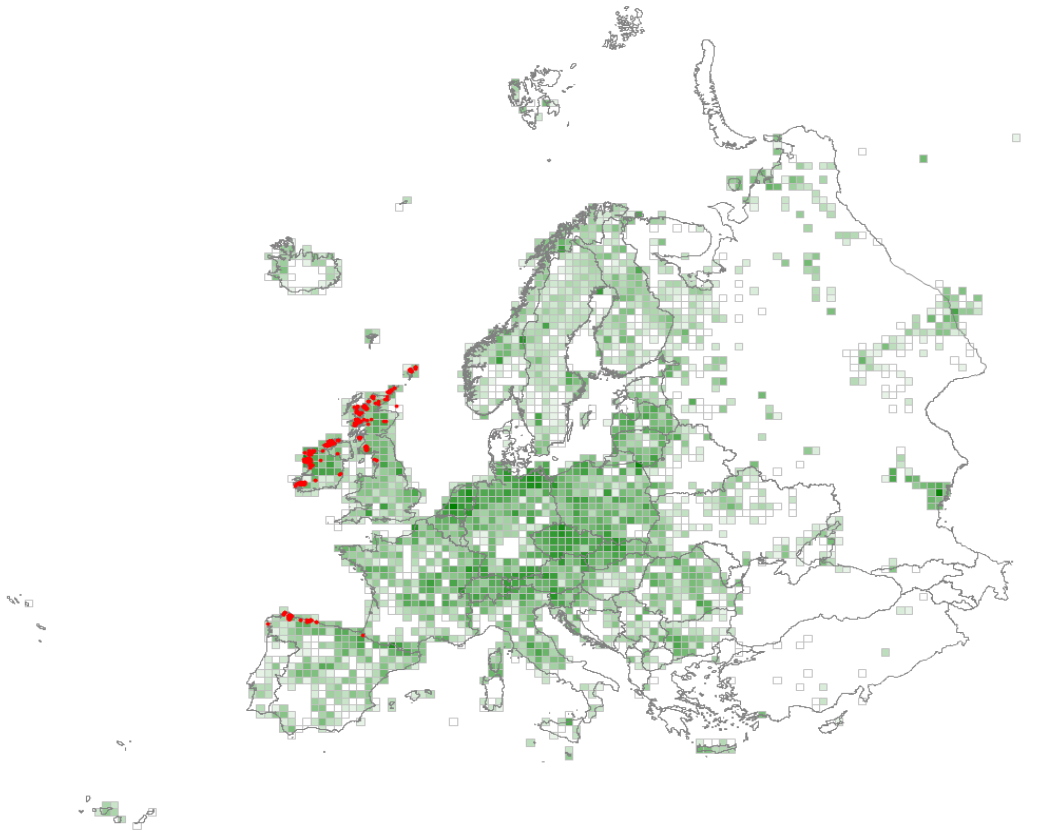
Constant species (percentage frequencies)

<i>Eriophorum vaginatum</i>	87
<i>Sphagnum magellanicum</i> aggr.	66
<i>Vaccinium oxycoccos</i>	65
<i>Sphagnum recurvum</i> aggr.	62
<i>Andromeda polifolia</i>	61
<i>Calluna vulgaris</i>	56
<i>Polytrichum strictum</i>	46
<i>Drosera rotundifolia</i>	46
<i>Vaccinium uliginosum</i>	39
<i>Sphagnum fuscum</i>	39
<i>Empetrum nigrum</i> aggr.	39
<i>Rubus chamaemorus</i>	31
<i>Vaccinium myrtillus</i>	28
<i>Sphagnum capillifolium</i> aggr.	28
<i>Carex pauciflora</i>	27
<i>Sphagnum rubellum</i>	26
<i>Rhododendron tomentosum</i>	26
<i>Pinus sylvestris</i>	26
<i>Aulacomnium palustre</i>	26
<i>Pleurozium schreberi</i>	25
<i>Vaccinium microcarpum</i>	23
<i>Vaccinium vitis-idaea</i>	21
<i>Mylia anomala</i>	19
<i>Trichophorum cespitosum</i>	17
<i>Molinia caerulea</i> aggr.	17
<i>Chamaedaphne calyculata</i>	17
<i>Betula nana</i>	16
<i>Sphagnum russowii</i>	14
<i>Betula pubescens</i>	14
<i>Eriophorum angustifolium</i>	12
<i>Cladonia arbuscula</i> aggr.	12
<i>Carex nigra</i>	12
<i>Polytrichum commune</i>	11
<i>Cladonia rangiferina</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)	
<i>Sphagnum magellanicum</i> aggr.	31
<i>Sphagnum recurvum</i> aggr.	26

Q12 – Blanket bog

The mire surface and underlying peat of ombrotrophic peatlands, formed on flat or gently sloping ground with poor surface drainage, in oceanic climates with high rainfall. The mire surface may on flatter ground be very similar to that of a raised bog, with a complex of small pools and terrestrial hummocks. Blanket bogs are a habitat of North-Western Europe, characteristic of the western and northern British Isles, the Faeroe Islands and the western seaboard of Scandinavia with small outliers in France, Portugal and Spain. They often cover extensive areas with local topographic features supporting distinct communities. Sphagna such as *Sphagnum compactum*, *S. papillosum*, *S. rubellum* and *S. tenellum* play an important role in all of them, accompanied by *Calluna vulgaris*, *Eriophorum angustifolium*, *E. vaginatum*, *Molinia caerulea*, *Narthecium ossifragum*, *Schoenus nigricans* and *Trichophorum cespitosum*. Blanket bog complexes include dystrophic pools and acidic flushes as well as the mire surface.



Corresponding alliances in EuroVegChecklist 2016

- <> OXY-01A *Ericion tetralicis* Schwickerath 1933
- <> OXY-01B *Oxycocco-Ericion tetralicis* Nordhagen ex Tx. 1937
- > *Erico mackaiana*-*Sphagnion papillosum* (Fernández Prieto et al. 1987) Rivas-Mart. et al.1999

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pleurozia purpurea</i>	72
<i>Campylopus atrovirens</i>	59
<i>Racomitrium lanuginosum</i>	54
<i>Narthecium ossifragum</i>	53
<i>Odontoschisma sphagni</i>	48
<i>Sphagnum tenellum</i>	45
<i>Zygogonium ericetorum</i>	40
<i>Erica tetralix</i>	39
<i>Cladonia portentosa</i>	37
<i>Trichophorum cespitosum</i>	34
<i>Polygala serpyllifolia</i>	33
<i>Sphagnum subnitens</i>	33
<i>Sphagnum papillosum</i>	32
<i>Rhynchospora alba</i>	32
<i>Sphagnum capillifolium</i> aggr.	29
<i>Eriophorum angustifolium</i>	29
<i>Kurzia pauciflora</i>	29
<i>Diplophyllum albicans</i>	29
<i>Sphagnum auriculatum</i> aggr.	28
<i>Schoenus nigricans</i>	28
<i>Drosera rotundifolia</i>	27
<i>Erica mackaiana</i>	26
<i>Molinia caerulea</i> aggr.	25
<i>Carex durieui</i>	25
<i>Cladonia uncialis</i>	24
<i>Campylopus flexuosus</i>	23
<i>Calluna vulgaris</i>	23
<i>Sphagnum compactum</i>	21
<i>Eriophorum vaginatum</i>	20
<i>Erica cinerea</i>	19
<i>Breutelia chrysocoma</i>	19
<i>Hypnum cupressiforme</i> aggr.	18
<i>Potentilla erecta</i>	18
<i>Sphagnum cuspidatum</i>	18
<i>Mylia taylorii</i>	16
<i>Cephalozia bicuspidata</i>	16
<i>Sphagnum rubellum</i>	16
<i>Nowellia curvifolia</i>	16
<i>Cephalozia connivens</i>	15
<i>Pedicularis sylvatica</i>	15

Constant species (percentage frequencies)

<i>Molinia caerulea</i> aggr.	91
<i>Calluna vulgaris</i>	90
<i>Erica tetralix</i>	82
<i>Racomitrium lanuginosum</i>	77
<i>Eriophorum angustifolium</i>	77
<i>Narthecium ossifragum</i>	75
<i>Potentilla erecta</i>	68
<i>Trichophorum cespitosum</i>	64
<i>Pleurozia purpurea</i>	57
<i>Hypnum cupressiforme</i> aggr.	56

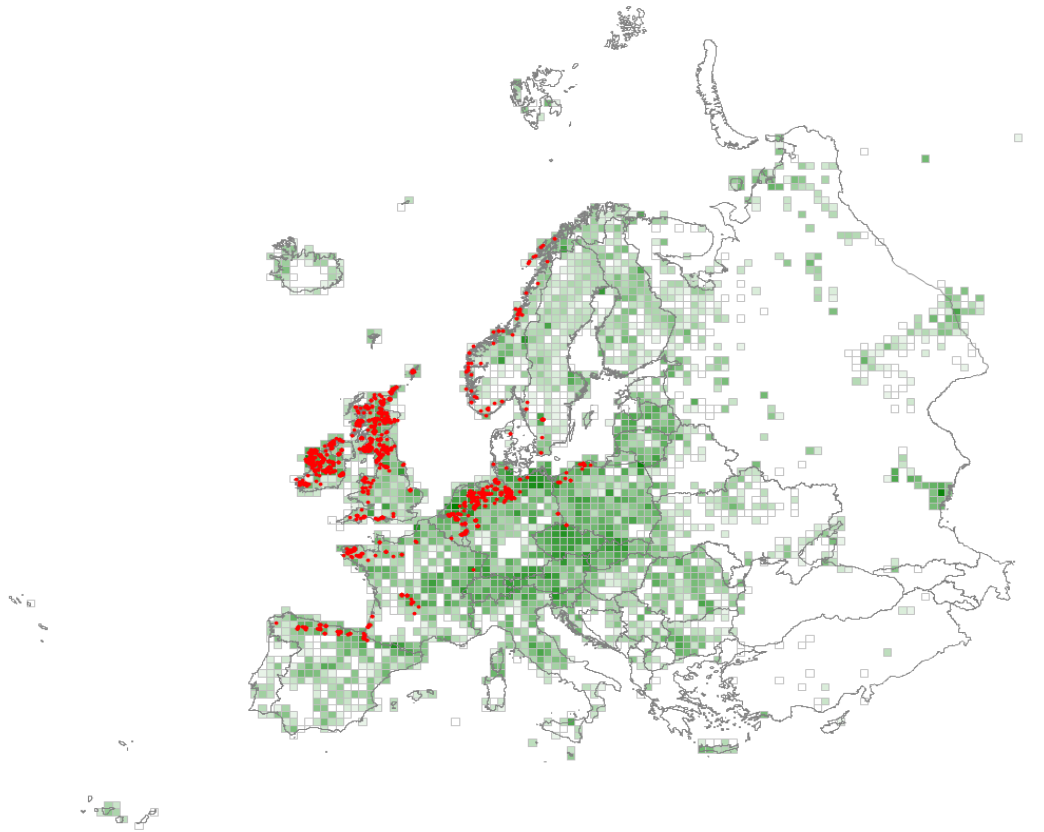
<i>Cladonia portentosa</i>	54
<i>Drosera rotundifolia</i>	52
<i>Schoenus nigricans</i>	51
<i>Odontoschisma sphagni</i>	48
<i>Cladonia uncialis</i>	48
<i>Sphagnum capillifolium</i> aggr.	45
<i>Eriophorum vaginatum</i>	45
<i>Sphagnum tenellum</i>	44
<i>Sphagnum papillosum</i>	42
<i>Rhynchospora alba</i>	39
<i>Campylopus atrovirens</i>	38
<i>Polygala serpyllifolia</i>	33
<i>Sphagnum subnitens</i>	29
<i>Erica cinerea</i>	27
<i>Sphagnum auriculatum</i> aggr.	26
<i>Diplophyllum albicans</i>	21
<i>Zygogonium ericetorum</i>	20
<i>Carex panicea</i>	20
<i>Sphagnum cuspidatum</i>	19
<i>Kurzia pauciflora</i>	19
<i>Sphagnum compactum</i>	17
<i>Leucobryum glaucum</i>	16
<i>Pedicularis sylvatica</i>	15
<i>Campylopus flexuosus</i>	15
<i>Sphagnum rubellum</i>	14
<i>Myrica gale</i>	14
<i>Drosera longifolia</i>	13
<i>Cephalozia bicuspidata</i>	13
<i>Juncus squarrosus</i>	12
<i>Cephalozia connivens</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Molinia caerulea</i> aggr.	47
<i>Calluna vulgaris</i>	27

Q21 – Oceanic valley mire

Topogenous wetlands in which the peat-forming vegetation depends on water draining from the surrounding landscape. Most valley mires are habitat complexes including poor fens, transition mires and pools. Acid valley mires often have vegetation resembling that of bogs, especially in those parts relatively distant from flowing water. Basic and neutral valley mires support mainly poor-fen vegetation, but in large mire systems, this is accompanied by wet acid grassland, large sedges and reeds. *Sphagnum* hummocks form locally, and transition mires or littoral and spring communities colonise small depressions. Excluded are rich-fen valley mires.



Corresponding alliances in EuroVegChecklist 2016

- ◊ OXY-01A *Ericion tetralicis* Schwickerath 1933
- ◊ OXY-01B *Oxycocco-Ericion tetralicis* Nordhagen ex Tx. 1937
- ◊ OXY-02B *Sphagnion medii* Kästner et Flössner 1933

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Narthecium ossifragum</i>	51
<i>Sphagnum papillosum</i>	48
<i>Erica tetralix</i>	46

<i>Odontoschisma sphagni</i>	39
<i>Eriophorum angustifolium</i>	32
<i>Sphagnum tenellum</i>	28
<i>Drosera rotundifolia</i>	26
<i>Sphagnum capillifolium</i> aggr.	25
<i>Trichophorum cespitosum</i>	23
<i>Eriophorum vaginatum</i>	20
<i>Calluna vulgaris</i>	20
<i>Sphagnum subnitens</i>	18
<i>Cephalozia connivens</i>	18
<i>Molinia caerulea</i> aggr.	17
<i>Mylia anomala</i>	17
<i>Rhynchospora alba</i>	17
<i>Sphagnum magellanicum</i> aggr.	16
<i>Calypogeia muelleriana</i>	16
<i>Kurzia pauciflora</i>	16

Constant species (percentage frequencies)

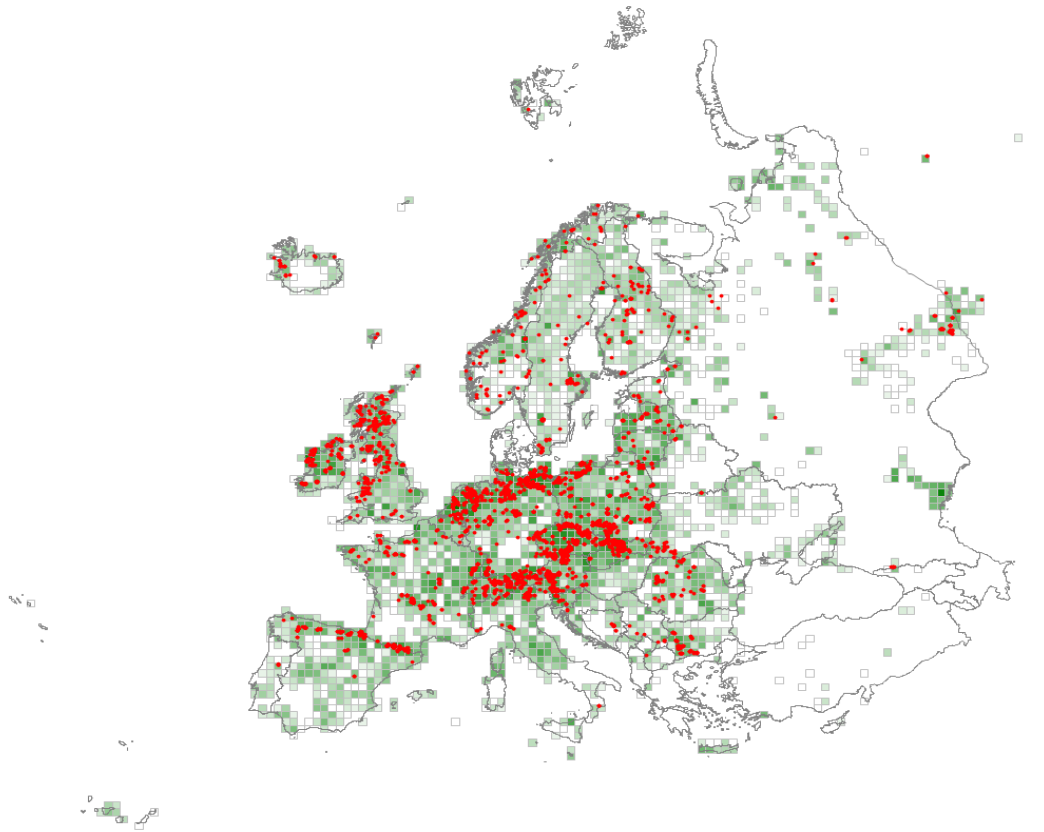
<i>Erica tetralix</i>	96
<i>Eriophorum angustifolium</i>	85
<i>Calluna vulgaris</i>	78
<i>Narthecium ossifragum</i>	72
<i>Molinia caerulea</i> aggr.	63
<i>Sphagnum papillosum</i>	62
<i>Drosera rotundifolia</i>	51
<i>Eriophorum vaginatum</i>	46
<i>Trichophorum cespitosum</i>	44
<i>Sphagnum capillifolium</i> aggr.	39
<i>Odontoschisma sphagni</i>	39
<i>Hypnum cupressiforme</i> aggr.	39
<i>Potentilla erecta</i>	29
<i>Sphagnum tenellum</i>	28
<i>Vaccinium oxycoccus</i>	25
<i>Sphagnum magellanicum</i> aggr.	25
<i>Sphagnum recurvum</i> aggr.	24
<i>Cladonia portentosa</i>	21
<i>Andromeda polifolia</i>	21
<i>Rhynchospora alba</i>	20
<i>Aulacomnium palustre</i>	19
<i>Sphagnum subnitens</i>	16
<i>Sphagnum cuspidatum</i>	16
<i>Pleurozium schreberi</i>	16
<i>Mylia anomala</i>	13
<i>Cephalozia connivens</i>	13
<i>Myrica gale</i>	12
<i>Dicranum scoparium</i>	12
<i>Cladonia uncialis</i>	12
<i>Carex panicea</i>	12
<i>Sphagnum rubellum</i>	11
<i>Polygala serpyllifolia</i>	11
<i>Juncus squarrosus</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Calluna vulgaris</i>	32
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Q22 – Poor fen

This type of mire, fed by a throughput of acid, nutrient-poor groundwater occurs in a variety of topographic situations (around upland springs, in the lags of raised bogs, in forest hollows and among infertile fen-grassland complexes) throughout the siliceous landscapes of temperate Europe, particularly in the north. There is a continuous surface carpet of oligotrophic sphagna and small sedges and an associated flora of mire generalists characteristic of less minerotrophic situations. Surface patterning is usually very limited, but towards the boreal regions, there can be a gentle hummock-hollow pattern with scattered trees in drier areas.



Corresponding alliances in EuroVegChecklist 2016

<> SCH-03D Sphagno-Caricion canescentis Passarge (1964) 1978 nom. conserv. propos.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sphagnum recurvum</i> aggr.	35
<i>Straminergon stramineum</i>	23
<i>Viola palustris</i>	22
<i>Sphagnum palustre</i> aggr.	21
<i>Agrostis canina</i>	20

<i>Carex canescens</i>	19
<i>Eriophorum angustifolium</i>	19
<i>Polytrichum commune</i>	18
<i>Vaccinium oxycoccos</i>	17
<i>Carex rostrata</i>	17
<i>Carex echinata</i>	17
<i>Carex nigra</i>	17
<i>Drosera rotundifolia</i>	16

Constant species (percentage frequencies)

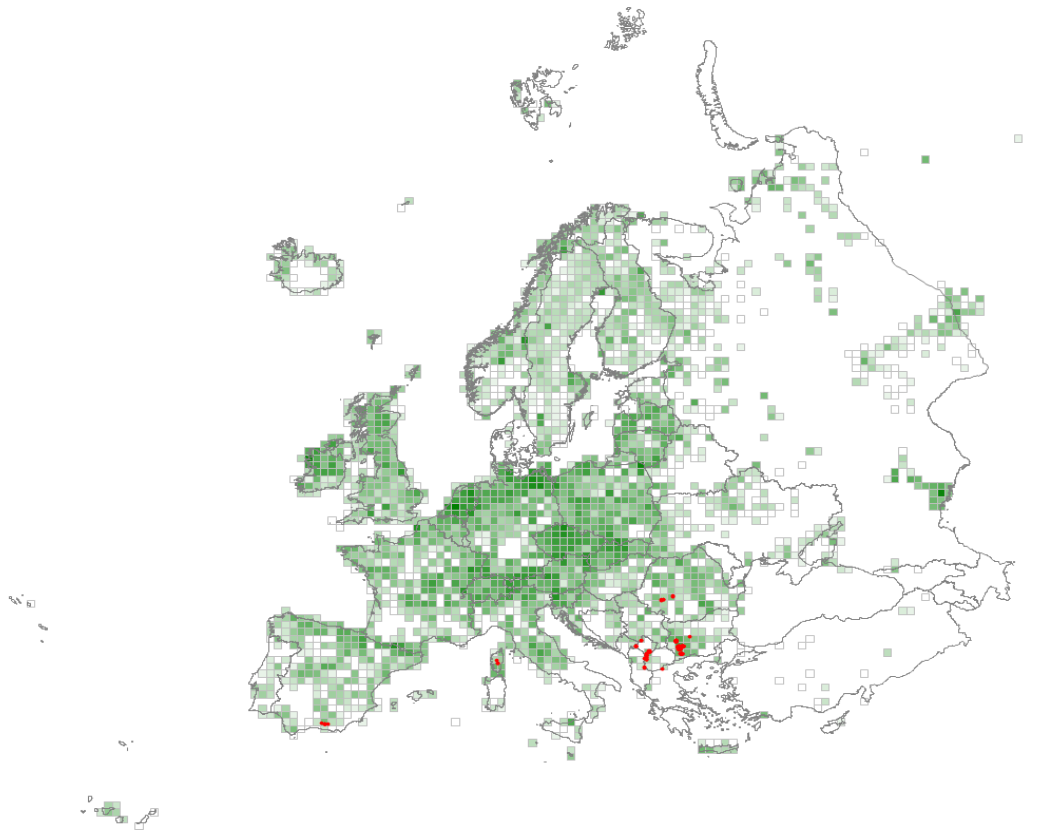
<i>Sphagnum recurvum</i> aggr.	70
<i>Eriophorum angustifolium</i>	50
<i>Carex nigra</i>	44
<i>Potentilla erecta</i>	42
<i>Polytrichum commune</i>	39
<i>Molinia caerulea</i> aggr.	39
<i>Agrostis canina</i>	37
<i>Vaccinium oxycoccos</i>	33
<i>Carex rostrata</i>	33
<i>Viola palustris</i>	32
<i>Drosera rotundifolia</i>	31
<i>Straminergon stramineum</i>	30
<i>Carex echinata</i>	30
<i>Sphagnum palustre</i> aggr.	29
<i>Aulacomnium palustre</i>	26
<i>Eriophorum vaginatum</i>	23
<i>Carex canescens</i>	22
<i>Comarum palustre</i>	18
<i>Sphagnum papillosum</i>	17
<i>Juncus effusus</i>	17
<i>Nardus stricta</i>	16
<i>Anthoxanthum odoratum</i> aggr.	16
<i>Menyanthes trifoliata</i>	14
<i>Calluna vulgaris</i>	14
<i>Sphagnum magellanicum</i> aggr.	13
<i>Lysimachia vulgaris</i>	13
<i>Carex panicea</i>	13
<i>Betula pubescens</i>	13
<i>Festuca rubra</i> aggr.	12
<i>Sphagnum capillifolium</i> aggr.	11
<i>Luzula campestris</i> aggr.	11
<i>Epilobium palustre</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Sphagnum recurvum</i> aggr.	54
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Q23 – Relict mire of Mediterranean mountains

Oligo- to mesotrophic mire occurring on the waterlogged margins of glacial lakes and around streams in the montane and subalpine belts of the Spanish Sierra Nevada, Corsica, and the western Balkan Peninsula (and also the High Atlas of Morocco). It develops on blankets of thin peat over siliceous bedrocks, kept constantly wet and cool (covered by snow in the high Balkan mountains for much of the year) and providing a splash of green in prevailing dry landscapes. The vegetation is dominated by small sedges or graminoids often with distinctive endemic and relict species.



Corresponding alliances in EuroVegChecklist 2016

- > SCH-03E Festucion frigidae Rivas-Mart. et al. 2002
- > SCH-03F Caricion intricatae Quézel 1953
- > SCH-03G Narthecion scardici Horvat ex Lakušić 1968

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinguicula balcanica</i>	87
<i>Gymnadenia frivaldii</i>	69
<i>Plantago gentianoides</i>	63
<i>Primula frondosa</i>	62

<i>Dactylorhiza cordigera</i>	61
<i>Cardamine rivularis</i>	55
<i>Carex bulgarica</i>	50
<i>Taraxacum apenninum</i>	48
<i>Primula deorum</i>	48
<i>Geum coccineum</i>	46
<i>Warnstorfia exannulata</i>	41
<i>Philonotis seriata</i>	41
<i>Scapania irrigua</i>	41
<i>Sphagnum platyphyllum</i>	40
<i>Soldanella pindicola</i>	40
<i>Carex echinata</i>	39
<i>Sesleria comosa</i>	38
<i>Eriophorum latifolium</i>	37
<i>Cirsium heterotrichum</i>	36
<i>Gentiana pyrenaica</i>	36
<i>Sphagnum subsecundum</i>	35
<i>Carex nigra</i>	32
<i>Gentianella bulgarica</i>	30
<i>Warnstorfia sarmentosa</i>	28
<i>Juncus thomasi</i>	28
<i>Nardus stricta</i>	27
<i>Narthecium scardicum</i>	26
<i>Willemetia stipitata</i>	24
<i>Philonotis fontana</i>	22
<i>Bryum pseudotriquetrum</i>	21
<i>Scapania paludicola</i>	21
<i>Ligusticum mutellina</i>	21
<i>Straminergon stramineum</i>	20
<i>Epilobium nutans</i>	20
<i>Palustriella decipiens</i>	20
<i>Juncus filiformis</i>	19
<i>Allium schoenoprasum</i>	19
<i>Festuca frigida</i>	19
<i>Cardamine acris</i>	19
<i>Cirsium appendiculatum</i>	19
<i>Dichodontium palustre</i>	19
<i>Bruckenthalia spiculifolia</i>	19
<i>Veratrum lobelianum</i>	18
<i>Agrostis canina</i>	18
<i>Saxifraga stellaris</i>	18
<i>Scapania undulata</i>	17
<i>Sphagnum contortum</i>	16
<i>Parnassia palustris</i>	16
<i>Blindia acuta</i>	16
<i>Sphagnum warnstorffii</i>	16
<i>Alchemilla glabra</i>	15
<i>Trichophorum cespitosum</i>	15
<i>Juncus alpinoarticulatus</i>	15

Constant species (percentage frequencies)

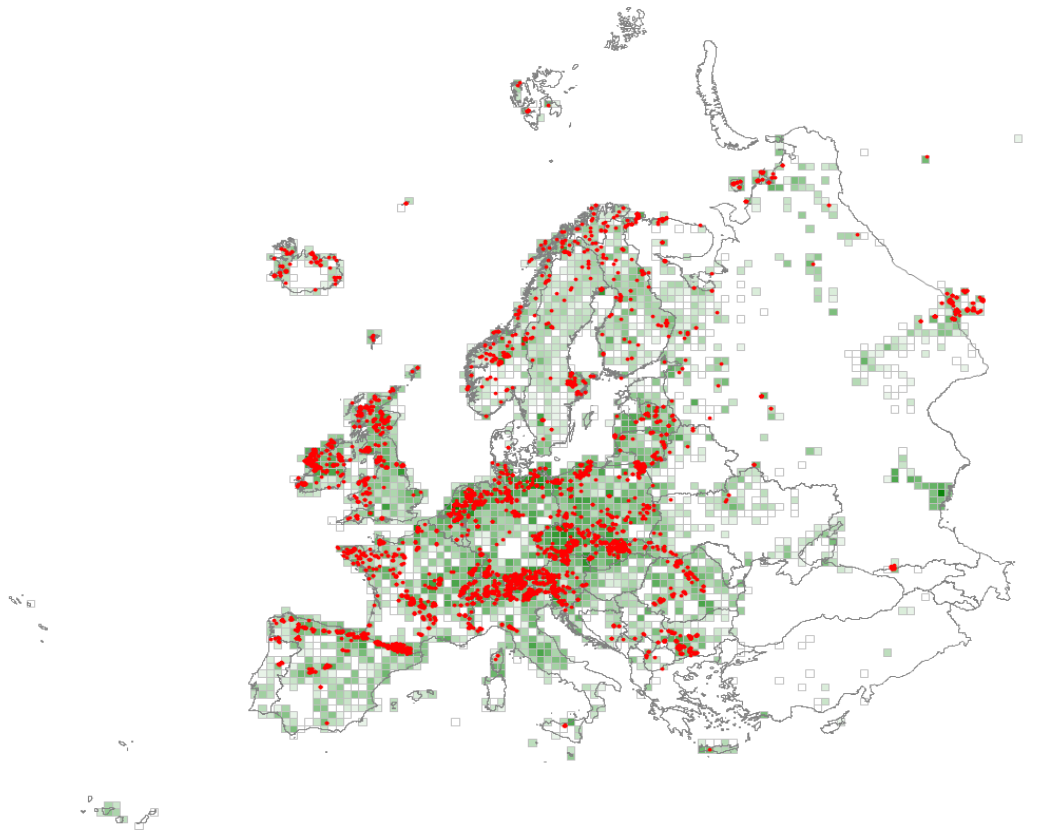
<i>Carex nigra</i>	84
<i>Pinguicula balcanica</i>	79
<i>Nardus stricta</i>	75
<i>Carex echinata</i>	69

<i>Eriophorum latifolium</i>	54
<i>Gymnadenia frivaldii</i>	48
<i>Plantago gentianoides</i>	46
<i>Luzula campestris</i> aggr.	45
<i>Warnstorfia exannulata</i>	43
<i>Dactylorhiza cordigera</i>	41
<i>Deschampsia cespitosa</i> aggr.	40
<i>Primula frondosa</i>	39
<i>Bryum pseudotriquetrum</i>	38
<i>Parnassia palustris</i>	37
<i>Cardamine rivularis</i>	34
<i>Agrostis canina</i>	33
<i>Sphagnum subsecundum</i>	32
<i>Taraxacum apenninum</i>	31
<i>Trichophorum cespitosum</i>	29
<i>Sesleria comosa</i>	28
<i>Carex bulgarica</i>	28
<i>Straminergon stramineum</i>	26
<i>Potentilla erecta</i>	26
<i>Philonotis seriata</i>	26
<i>Ligusticum mutellina</i>	26
<i>Geum coccineum</i>	26
<i>Festuca rubra</i> aggr.	26
<i>Scapania irrigua</i>	24
<i>Primula deorum</i>	24
<i>Aulacomnium palustre</i>	24
<i>Sphagnum platyphyllum</i>	23
<i>Campylium stellatum</i>	23
<i>Juncus articulatus</i>	21
<i>Warnstorfia sarmentosa</i>	19
<i>Veratrum lobelianum</i>	19
<i>Philonotis fontana</i>	19
<i>Saxifraga stellaris</i>	18
<i>Carex sempervirens</i>	18
<i>Soldanella pindicola</i>	17
<i>Gentiana pyrenaica</i>	17
<i>Juncus filiformis</i>	16
<i>Juncus alpinoarticulatus</i>	16
<i>Sphagnum warnstorffii</i>	15
<i>Molinia caerulea</i> aggr.	15
<i>Eriophorum vaginatum</i>	15
<i>Succisa pratensis</i>	14
<i>Gentianella bulgarica</i>	14
<i>Anthoxanthum odoratum</i> aggr.	14
<i>Allium schoenoprasum</i>	14
<i>Willemetia stipitata</i>	13
<i>Trifolium pratense</i>	13
<i>Sphagnum teres</i>	13
<i>Eriophorum angustifolium</i>	13
<i>Cirsium heterotrichum</i>	13
<i>Bruckenthalia spiculifolia</i>	13
<i>Sphagnum contortum</i>	12
<i>Primula farinosa</i>	12
<i>Palustriella commutata</i> aggr.	12
<i>Carex viridula</i>	12

<i>Aneura pinguis</i>	12
<i>Vaccinium uliginosum</i>	11
<i>Selaginella selaginoides</i>	11
<i>Caltha palustris</i>	11
<i>Alchemilla glabra</i>	11

Q24 – Intermediate fen and soft-water spring mire

These weakly acidic minerotrophic mires occur on peat fed from upper catchments by diffuse seepage of non-calcareous groundwater discharged via springs. They occur widely throughout temperate Europe, though at higher altitudes in the warmer south. The vegetation is typically dominated by a carpet of brown mosses and minerotrophic sphagna, small sedges and associated herbs, though generally without rich-fen indicators, and sometimes with drier hummocks on which sub-shrubs and occasional trees can be found.



Corresponding alliances in EuroVegChecklist 2016

- > SCH-03A Drepanocladion exannulati Krajina 1933
- <> SCH-03B Caricion fuscae Koch 1926 nom. conserv. propos.
- <> SCH-03C Anagallido tenellae-Juncion bulbosi Br.-Bl. 1967

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Warnstorfia exannulata</i>	25
<i>Sphagnum auriculatum</i> aggr.	22
<i>Sphagnum subsecundum</i>	19
<i>Comarum palustre</i>	19
<i>Carex rostrata</i>	19

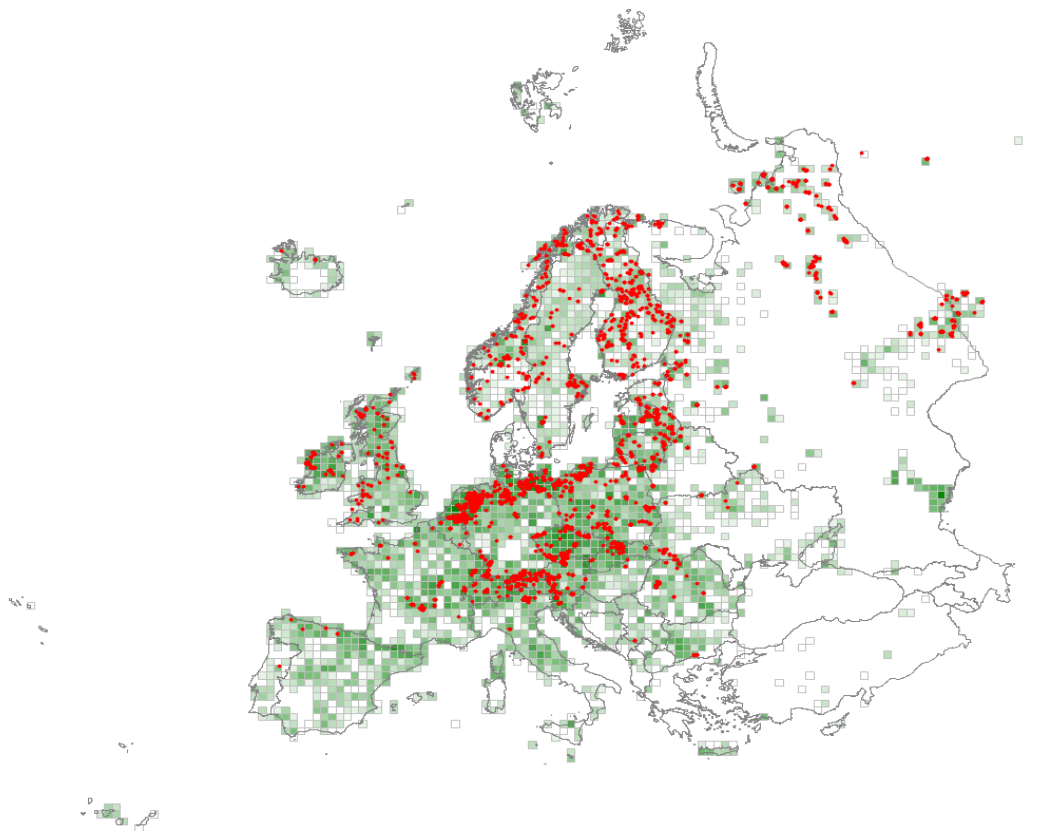
<i>Sphagnum teres</i>	19
<i>Eriophorum angustifolium</i>	18
<i>Potamogeton polygonifolius</i>	17
<i>Menyanthes trifoliata</i>	16
<i>Straminegon stramineum</i>	16
<i>Juncus bulbosus</i>	16
<i>Carex echinata</i>	16
<i>Viola palustris</i>	16
<i>Carex canescens</i>	15

Constant species (percentage frequencies)

<i>Eriophorum angustifolium</i>	49
<i>Carex nigra</i>	39
<i>Carex rostrata</i>	36
<i>Menyanthes trifoliata</i>	30
<i>Comarum palustre</i>	30
<i>Carex echinata</i>	30
<i>Potentilla erecta</i>	28
<i>Warnstorfia exannulata</i>	27
<i>Molinia caerulea</i> aggr.	26
<i>Viola palustris</i>	24
<i>Carex panicea</i>	23
<i>Agrostis canina</i>	23
<i>Galium palustre</i> aggr.	22
<i>Straminegon stramineum</i>	21
<i>Sphagnum auriculatum</i> aggr.	20
<i>Equisetum fluviatile</i>	20
<i>Epilobium palustre</i>	19
<i>Drosera rotundifolia</i>	19
<i>Sphagnum subsecundum</i>	18
<i>Carex canescens</i>	18
<i>Aulacomnium palustre</i>	18
<i>Parnassia palustris</i>	17
<i>Calliergonella cuspidata</i>	17
<i>Sphagnum teres</i>	16
<i>Carex limosa</i>	16
<i>Carex lasiocarpa</i>	16
<i>Caltha palustris</i>	16
<i>Bryum pseudotriquetrum</i>	15
<i>Juncus bulbosus</i>	13
<i>Trichophorum cespitosum</i>	12
<i>Ranunculus flammula</i>	12
<i>Nardus stricta</i>	12
<i>Festuca rubra</i> aggr.	12
<i>Juncus articulatus</i>	11
<i>Equisetum palustre</i>	11
<i>Carex diandra</i>	11

Q25 – Non-calcareous quaking mire

This habitat develops by terrestrialisation of open water through the outgrowth of sodden floating rafts of vegetation and accumulating peat from the margins of acidic lakes and ponds, the whole forming a flat quaking surface. It is widely distributed through Europe, though usually highly localised, with the largest areas reported from the Nordic countries. On the matted carpets of sedges and other vascular plants typical of minerotrophic situations, sphagna, other mosses and often abundant liverworts develop, thicker stretches sometimes forming irregular ombrotrophic hummocks. The main threat for such mires is drainage, leading quickly and often irreversibly to the development of other habitats, like poor fens. Quaking areas in percolation mires (which have a much higher species richness) need a very long time to regenerate after rewetting if the regulatory mechanism of the peat body has been destroyed by drainage.



Corresponding alliances in EuroVegChecklist 2016

- <> LIT-01G Sphagno-Utricularion T. Müller et Görs 1960
- <> SCH-03D Sphagno-Caricion canescentis Passarge (1964) 1978 nom. conserv. propos.
- <> SCH-04A Scheuchzerion palustris Nordhagen ex Tx. 1937

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sphagnum cuspidatum</i>	38
<i>Scheuchzeria palustris</i>	37
<i>Sphagnum majus</i>	31
<i>Carex limosa</i>	29
<i>Sphagnum lindbergii</i>	28
<i>Warnstorfia fluitans</i>	27
<i>Sphagnum recurvum</i> aggr.	23
<i>Carex rostrata</i>	21
<i>Vaccinium oxycoccos</i>	19
<i>Rhynchospora alba</i>	17

Constant species (percentage frequencies)

<i>Sphagnum recurvum</i> aggr.	47
<i>Sphagnum cuspidatum</i>	41
<i>Eriophorum angustifolium</i>	40
<i>Carex rostrata</i>	40
<i>Vaccinium oxycoccos</i>	37
<i>Carex limosa</i>	35
<i>Drosera rotundifolia</i>	29
<i>Scheuchzeria palustris</i>	25
<i>Menyanthes trifoliata</i>	25
<i>Andromeda polifolia</i>	24
<i>Rhynchospora alba</i>	21
<i>Straminergon stramineum</i>	18
<i>Eriophorum vaginatum</i>	18
<i>Warnstorfia fluitans</i>	17
<i>Comarum palustre</i>	17
<i>Molinia caerulea</i> aggr.	15
<i>Carex lasiocarpa</i>	14
<i>Sphagnum majus</i>	12
<i>Sphagnum magellanicum</i> aggr.	12
<i>Sphagnum lindbergii</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

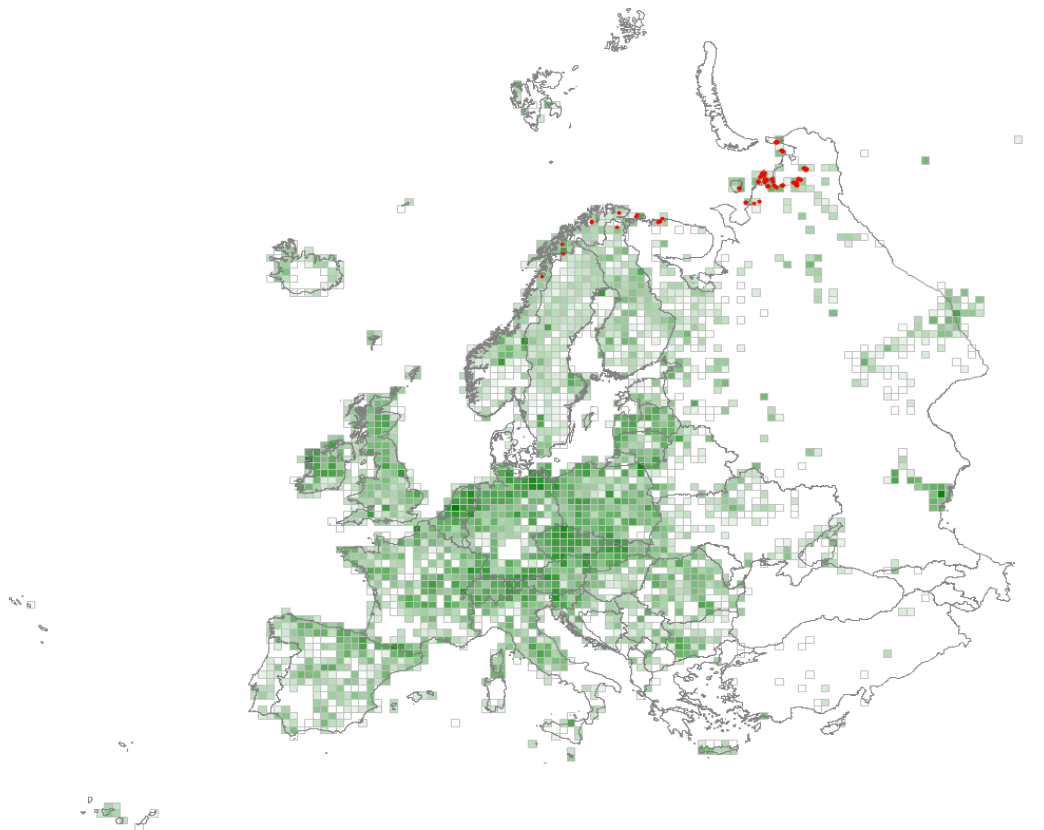
<i>Sphagnum recurvum</i> aggr.	36
<i>Sphagnum cuspidatum</i>	31

Q3 – Palsa and polygon mires

[Individual habitats Q31 and Q32 at hierarchical Level 3 could not be separated by the expert system. Therefore only the habitat Q3 at Level 2 was defined.]

Q31 – Palsa mire Palsa mire develops where thick peat is subject to sporadic permafrost in Iceland, northern Fennoscandia and Arctic Russia where there is low precipitation and an annual mean temperature below -1°C . The permafrost dynamics produce a typical patterning with palsa mounds 2–4 m (sometimes 7 m) high, elevated in central thicker areas by permafrost lenses. The carpet of *Sphagnum* peat limits the penetration of thaw, maintaining a perennially frozen core of peat, silt and ice lenses beneath. Pounikko hummock ridges can be found in marginal areas subject to seasonal freezing, and there are plateau-wide palsas and string mires in the Arctic. Intact palsa mounds show a patterning of weakly minerotrophic vegetation with different assemblages of mosses, herbs and sub-shrubs on their tops and sides. Old palsa mounds can become dry, and erosion may lead to melting and collapse. A complete melting leaves behind thermokarst ponds.

Q32 – Polygon mire Complex mires of the Arctic and subarctic patterned by surface microrelief of large, 10–30 m in diameter, low-centre or high-centre polygons formed by the juxtaposition of dry, 0.3–0.5 m high ridges. The non-sphagnaceous mosses, e.g. *Dicranum elongatum*, and *Polytrichum strictum*, and lichens, especially of the genera *Cladonia* and *Flavocetraria*, outweigh the sphagna and together with dwarf shrubs occur on the ridges. Wet hollows are occupied by grasses, sedges such as *Carex rariflora*, and *Eriophorum scheuchzeri*, and mosses including sphagna. Polygon mires rarely occur in North-Eastern Europe (Novaya Zemlya, Svalbard and Russian Nenets Autonomous Okrug), in the tundra where the mean annual temperature is below -1°C .



Corresponding alliances in EuroVegChecklist 2016

<> Rubo chamaemori-Dicranion elongati Lavrinenko et Lavrinenko 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Dicranum elongatum</i>	85
<i>Cladonia amaurocraea</i>	78
<i>Cladonia subfurcata</i>	75
<i>Alectoria nigricans</i>	72
<i>Bryocaulon divergens</i>	68
<i>Cetraria nivalis</i>	65
<i>Sphenolobus minutus</i>	60
<i>Rubus chamaemorus</i>	59
<i>Sphaerophorus globosus</i> aggr.	58
<i>Ochrolechia androgyna</i>	58
<i>Thamnolia vermicularis</i>	58
<i>Polytrichum hyperboreum</i>	58
<i>Cetraria cucullata</i>	58
<i>Ochrolechia frigida</i>	58
<i>Cladonia gracilis</i>	53
<i>Cladonia bellidiflora</i>	50
<i>Ochrolechia inaequatula</i>	50
<i>Carex rariflora</i>	50
<i>Cetraria islandica</i>	50
<i>Rhododendron tomentosum</i>	50
<i>Cladonia arbuscula</i> aggr.	49
<i>Cladonia rangiferina</i>	48
<i>Cladonia sulphurina</i>	48
<i>Icmadophila ericetorum</i>	47
<i>Cladonia stellaris</i>	45
<i>Omphalina hudsoniana</i>	42
<i>Cladonia coccifera</i> aggr.	42
<i>Polytrichum strictum</i>	41
<i>Cetrariella delisei</i>	41
<i>Betula nana</i>	40
<i>Sphagnum fuscum</i>	39
<i>Cladonia cornuta</i>	38
<i>Pertusaria dactylina</i>	38
<i>Cladonia uncialis</i>	37
<i>Cladonia squamosa</i>	36
<i>Andromeda polifolia</i>	36
<i>Bryoria nitidula</i>	34
<i>Luzula wahlenbergii</i>	34
<i>Empetrum nigrum</i> aggr.	31
<i>Tuckermannopsis inermis</i>	31
<i>Cladonia crispata</i>	29
<i>Dicranum flexicaule</i>	28
<i>Alectoria ochroleuca</i>	28
<i>Vaccinium microcarpum</i>	25
<i>Cladonia deformis</i> aggr.	25

<i>Cladonia groenlandica</i>	25
<i>Vaccinium uliginosum</i>	25
<i>Vaccinium vitis-idaea</i>	24
<i>Polytrichum jensenii</i>	23
<i>Cladonia macrophylla</i>	23
<i>Aulacomnium turgidum</i>	22
<i>Cladonia maxima</i>	21
<i>Sphagnum russowii</i>	21
<i>Cladonia cyanipes</i>	21
<i>Sphagnum balticum</i>	21
<i>Arctostaphylos alpinus</i>	21
<i>Eriophorum vaginatum</i>	20
<i>Arctocetraria andrejevii</i>	20
<i>Peltigera scabrosa</i>	19
<i>Dicranum congestum</i>	19
<i>Eriophorum scheuchzeri</i>	19
<i>Cetrariella fastigiata</i>	19
<i>Carex rotundata</i>	18
<i>Cladonia rei</i>	17
<i>Poa arctica</i>	17
<i>Omphalina umbellifera</i>	17
<i>Peltigera scabrosella</i>	16

Constant species (percentage frequencies)

<i>Dicranum elongatum</i>	100
<i>Cladonia arbuscula</i> aggr.	100
<i>Rubus chamaemorus</i>	99
<i>Cetraria islandica</i>	97
<i>Empetrum nigrum</i> aggr.	96
<i>Cladonia gracilis</i>	95
<i>Cladonia rangiferina</i>	94
<i>Cladonia amaurocraea</i>	94
<i>Vaccinium vitis-idaea</i>	92
<i>Cetraria nivalis</i>	87
<i>Rhododendron tomentosum</i>	76
<i>Betula nana</i>	76
<i>Ochrolechia frigida</i>	72
<i>Cladonia uncialis</i>	71
<i>Andromeda polifolia</i>	71
<i>Alectoria nigricans</i>	69
<i>Polytrichum strictum</i>	68
<i>Vaccinium uliginosum</i>	66
<i>Cladonia coccifera</i> aggr.	66
<i>Cetraria cucullata</i>	65
<i>Thamnolia vermicularis</i>	64
<i>Sphaerophorus globosus</i> aggr.	64
<i>Sphenolobus minutus</i>	63
<i>Cladonia subfurcata</i>	63
<i>Cladonia bellidiflora</i>	62
<i>Bryocaulon divergens</i>	62
<i>Polytrichum hyperboreum</i>	50
<i>Cladonia stellaris</i>	47
<i>Ochrolechia androgyna</i>	46
<i>Eriophorum vaginatum</i>	46
<i>Cladonia sulphurina</i>	45

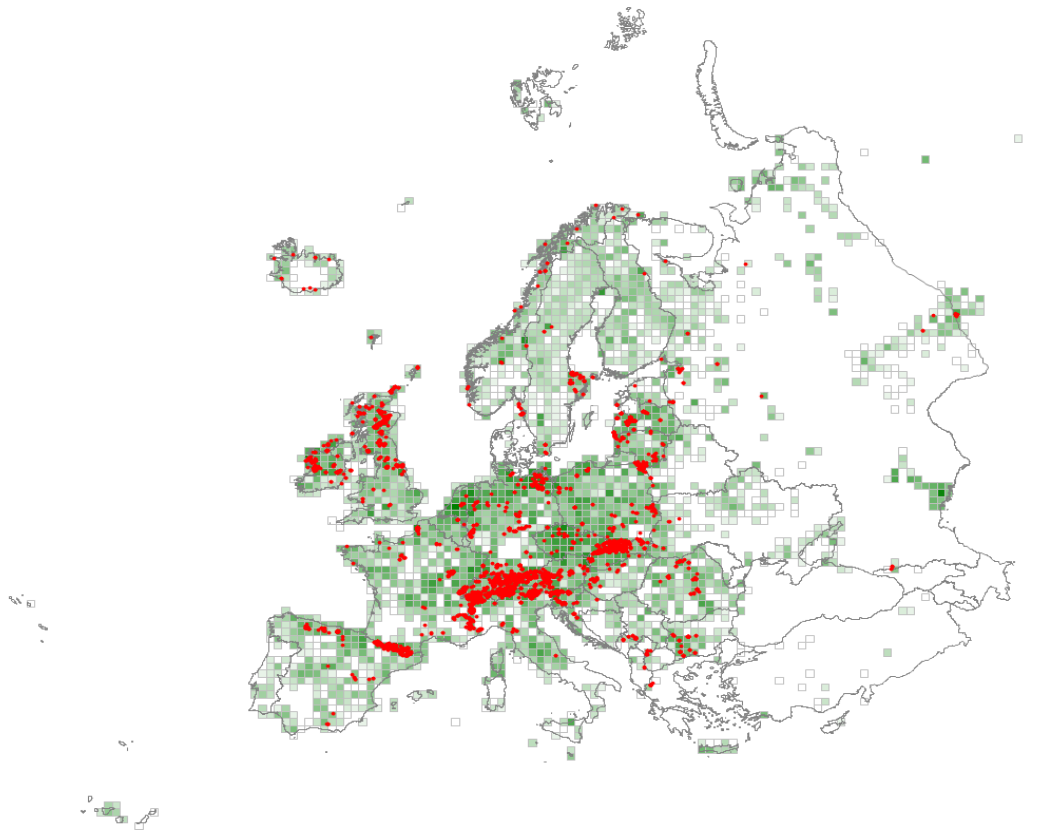
<i>Pleurozium schreberi</i>	43
<i>Sphagnum fuscum</i>	42
<i>Carex rariflora</i>	42
<i>Ochrolechia inaequatula</i>	40
<i>Cladonia cornuta</i>	37
<i>Icmadophila ericetorum</i>	33
<i>Cladonia squamosa</i>	33
<i>Cladonia crispata</i>	32
<i>Cetrariella delisei</i>	31
<i>Pertusaria dactylina</i>	26
<i>Vaccinium microcarpum</i>	22
<i>Omphalina hudsoniana</i>	22
<i>Cladonia deformis</i> aggr.	21
<i>Sphagnum russowii</i>	20
<i>Arctostaphylos alpinus</i>	19
<i>Alectoria ochroleuca</i>	19
<i>Cladonia macrophylla</i>	17
<i>Bryoria nitidula</i>	17
<i>Peltigera scabrosa</i>	16
<i>Cladonia pyxidata</i> aggr.	16
<i>Luzula wahlenbergii</i>	15
<i>Ptilidium ciliare</i>	13
<i>Aulacomnium turgidum</i>	12
<i>Tuckermannopsis inermis</i>	11
<i>Sphagnum balticum</i>	11
<i>Dicranum flexicaule</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Cladonia arbuscula</i> aggr.	57
<i>Cladonia rangiferina</i>	41

Q41 – Alkaline, calcareous, carbonate-rich small-sedge spring fen

Short-sedge fens, spring fens and fen grasslands kept continually wet by base-rich, nutrient-poor waters, occurring through the lowlands and mountains of temperate Europe and more locally in the boreal zone. They are most common, rich and diverse in the limestone massifs of Central European mountains, especially the Alps and Carpathians. The soil is rich in organic matter and has high pH, often with precipitation of carbonate or tufa. Small basiphilous sedges dominate the vegetation with rich associated flora and a patchy carpet of fen bryophytes while sphagna are absent.



Corresponding alliances in EuroVegChecklist 2016

- <> SCH-01A Caricion davallianae Klika 1934
- <> SCH-01B Caricion viridulo-trinervis Julve ex Hájek et Mucina in Theurillat et al. 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Carex davalliana</i>	35
<i>Eleocharis quinqueflora</i>	31
<i>Eriophorum latifolium</i>	31
<i>Carex lepidocarpa</i>	30

<i>Carex panicea</i>	30
<i>Scorpidium revolvens</i> aggr.	27
<i>Palustriella commutata</i> aggr.	27
<i>Campylium stellatum</i>	26
<i>Juncus alpinoarticulatus</i>	26
<i>Carex hostiana</i>	25
<i>Bryum pseudotriquetrum</i>	24
<i>Primula farinosa</i>	24
<i>Philonotis calcarea</i>	24
<i>Tofieldia calyculata</i>	21
<i>Parnassia palustris</i>	21
<i>Pinguicula vulgaris</i>	21
<i>Fissidens adianthoides</i>	20
<i>Equisetum palustre</i>	19
<i>Valeriana dioica</i>	18
<i>Carex flava</i>	18
<i>Dactylorhiza majalis</i>	17
<i>Triglochin palustris</i>	17
<i>Juncus articulatus</i>	17
<i>Epipactis palustris</i>	15

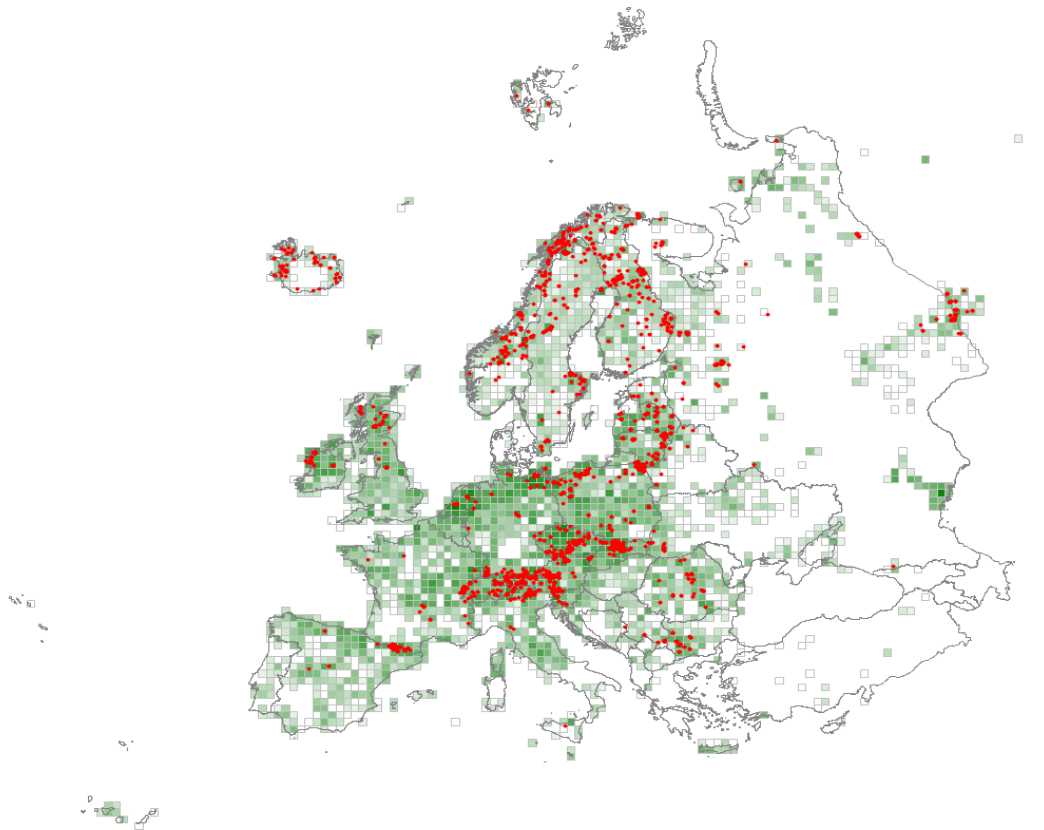
Constant species (percentage frequencies)

<i>Carex panicea</i>	70
<i>Potentilla erecta</i>	57
<i>Campylium stellatum</i>	56
<i>Parnassia palustris</i>	47
<i>Carex davalliana</i>	47
<i>Scorpidium revolvens</i> aggr.	46
<i>Eriophorum latifolium</i>	45
<i>Molinia caerulea</i> aggr.	43
<i>Bryum pseudotriquetrum</i>	43
<i>Carex lepidocarpa</i>	39
<i>Equisetum palustre</i>	38
<i>Eleocharis quinqueflora</i>	37
<i>Eriophorum angustifolium</i>	35
<i>Carex nigra</i>	35
<i>Primula farinosa</i>	34
<i>Juncus articulatus</i>	34
<i>Pinguicula vulgaris</i>	33
<i>Palustriella commutata</i> aggr.	30
<i>Succisa pratensis</i>	29
<i>Calliergonella cuspidata</i>	29
<i>Carex flacca</i>	28
<i>Juncus alpinoarticulatus</i>	27
<i>Briza media</i>	27
<i>Valeriana dioica</i>	26
<i>Tofieldia calyculata</i>	26
<i>Triglochin palustris</i>	25
<i>Carex hostiana</i>	25
<i>Epipactis palustris</i>	21
<i>Fissidens adianthoides</i>	20
<i>Carex flava</i>	20
<i>Plagiomnium affine</i> aggr.	19
<i>Cirsium palustre</i>	18
<i>Menyanthes trifoliata</i>	17

<i>Linum catharticum</i>	17
<i>Selaginella selaginoides</i>	16
<i>Equisetum variegatum</i>	16
<i>Aneura pinguis</i>	16
<i>Prunella vulgaris</i>	15
<i>Phragmites australis</i>	15
<i>Dactylorhiza majalis</i>	15
<i>Agrostis stolonifera</i>	15
<i>Crepis paludosa</i>	14
<i>Caltha palustris</i>	14
<i>Festuca rubra</i> aggr.	13
<i>Carex rostrata</i>	13
<i>Carex dioica</i>	13
<i>Philonotis calcarea</i>	12
<i>Bartsia alpina</i>	12
<i>Ranunculus acris</i> aggr.	11
<i>Leontodon hispidus</i>	11
<i>Galium uliginosum</i>	11
<i>Carex echinata</i>	11
<i>Bellidiastrum michelii</i>	11

Q42 – Extremely rich moss-sedge fen

Base-rich fens without calcium carbonate precipitation, often with calcium-tolerant sphagna, e.g. *Sphagnum contortum*, *S. subfulvum*, *S. teres* and *S. warnstorffii*. The sphagna are accompanied by other mosses such as *Paludella squarrosa* and *Tomentypnum nitens*), sedges, sundews and other calcicole as well as calcifuge vascular plants classifying this habitat among the most species-rich mires.



Corresponding alliances in EuroVegChecklist 2016

- <> SCH-02A Saxifrago-Tomentypnion Lapshina 2010
- > SCH-02D Sphagno warnstorffii-Tomentypnion nitentis Dahl 1957

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sphagnum warnstorffii</i>	52
<i>Paludella squarrosa</i>	40
<i>Sphagnum contortum</i>	34
<i>Tomentypnum nitens</i>	34
<i>Cinclidium stygium</i>	32
<i>Sphagnum teres</i>	30

<i>Trichophorum alpinum</i>	30
<i>Menyanthes trifoliata</i>	27
<i>Carex dioica</i>	26
<i>Carex rostrata</i>	26
<i>Scorpidium revolvens</i> aggr.	26
<i>Campylium stellatum</i>	24
<i>Aulacomnium palustre</i>	24
<i>Carex lasiocarpa</i>	22
<i>Calliergon giganteum</i>	22
<i>Hamatocaulis vernicosus</i>	21
<i>Galium uliginosum</i>	20
<i>Carex diandra</i>	20
<i>Drosera rotundifolia</i>	20
<i>Aneura pinguis</i>	20
<i>Bryum pseudotriquetrum</i>	20
<i>Equisetum fluviatile</i>	19
<i>Comarum palustre</i>	18
<i>Carex panicea</i>	18
<i>Eriophorum angustifolium</i>	18
<i>Straminergon stramineum</i>	17
<i>Carex flava</i>	17
<i>Vaccinium oxycoccos</i>	17
<i>Helodium blandowii</i>	16
<i>Viola palustris</i>	16
<i>Valeriana dioica</i>	16
<i>Eriophorum latifolium</i>	15
<i>Carex limosa</i>	15
<i>Meesia triquetra</i>	15
<i>Carex chordorrhiza</i>	15

Constant species (percentage frequencies)

<i>Campylium stellatum</i>	52
<i>Sphagnum warnstorffii</i>	50
<i>Carex rostrata</i>	50
<i>Menyanthes trifoliata</i>	49
<i>Eriophorum angustifolium</i>	49
<i>Potentilla erecta</i>	46
<i>Aulacomnium palustre</i>	45
<i>Scorpidium revolvens</i> aggr.	44
<i>Carex panicea</i>	44
<i>Drosera rotundifolia</i>	39
<i>Carex nigra</i>	39
<i>Bryum pseudotriquetrum</i>	35
<i>Tomentypnum nitens</i>	34
<i>Vaccinium oxycoccos</i>	33
<i>Molinia caerulea</i> aggr.	33
<i>Parnassia palustris</i>	32
<i>Equisetum fluviatile</i>	32
<i>Carex lasiocarpa</i>	31
<i>Equisetum palustre</i>	30
<i>Comarum palustre</i>	30
<i>Calliergonella cuspidata</i>	29
<i>Galium uliginosum</i>	28
<i>Trichophorum alpinum</i>	27
<i>Sphagnum teres</i>	26

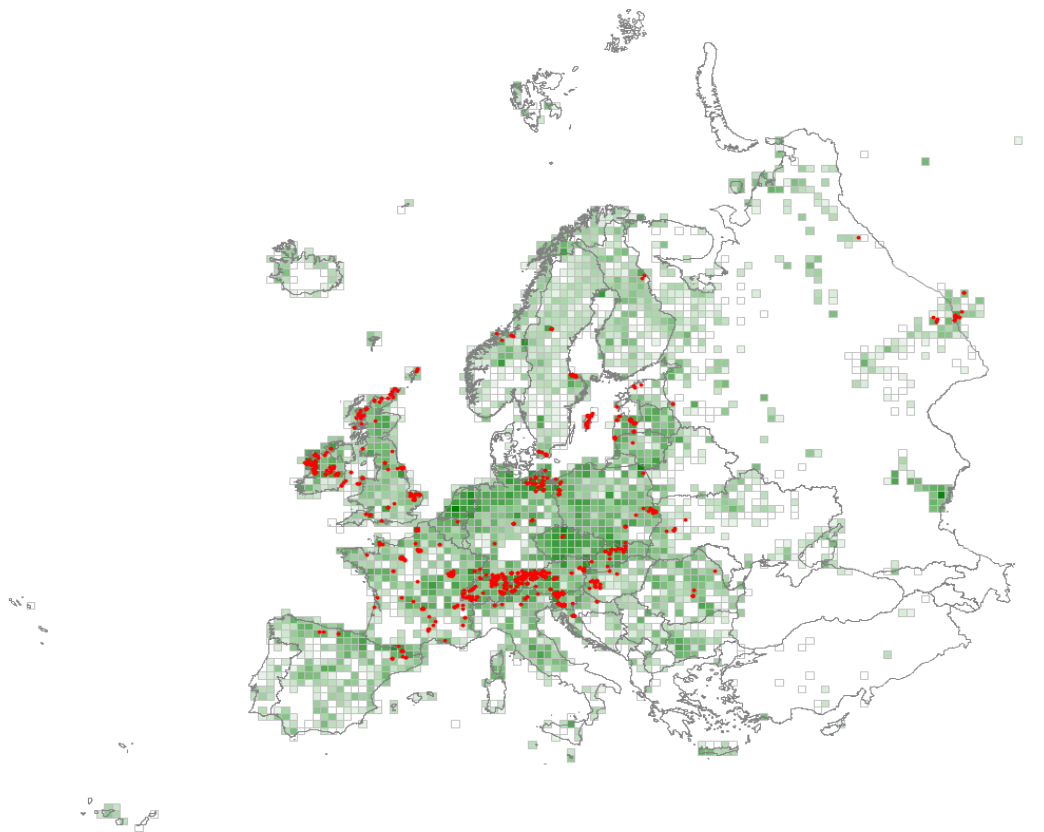
<i>Sphagnum contortum</i>	25
<i>Carex dioica</i>	25
<i>Viola palustris</i>	24
<i>Paludella squarrosa</i>	24
<i>Carex echinata</i>	24
<i>Valeriana dioica</i>	23
<i>Straminergon stramineum</i>	23
<i>Eriophorum latifolium</i>	23
<i>Cinclidium stygium</i>	23
<i>Aneura pinguis</i>	23
<i>Festuca rubra</i> aggr.	21
<i>Cirsium palustre</i>	21
<i>Trichophorum cespitosum</i>	20
<i>Carex flava</i>	20
<i>Andromeda polifolia</i>	20
<i>Plagiomnium affine</i> aggr.	19
<i>Galium palustre</i> aggr.	19
<i>Epilobium palustre</i>	19
<i>Carex limosa</i>	19
<i>Betula pubescens</i>	19
<i>Agrostis canina</i>	19
<i>Succisa pratensis</i>	18
<i>Calliergon giganteum</i>	18
<i>Sphagnum recurvum</i> aggr.	16
<i>Briza media</i>	16
<i>Filipendula ulmaria</i>	15
<i>Crepis paludosa</i>	15
<i>Carex diandra</i>	15
<i>Caltha palustris</i>	15
<i>Salix repens</i>	14
<i>Selaginella selaginoides</i>	13
<i>Scorpidium scorpioides</i>	13
<i>Pinguicula vulgaris</i>	13
<i>Peucedanum palustre</i>	13
<i>Pedicularis palustris</i>	13
<i>Juncus articulatus</i>	13
<i>Fissidens adianthoides</i>	13
<i>Epipactis palustris</i>	13
<i>Anthoxanthum odoratum</i> aggr.	13
<i>Triglochin palustris</i>	12
<i>Phragmites australis</i>	12
<i>Lysimachia vulgaris</i>	12
<i>Hamatocaulis vernicosus</i>	12
<i>Carex lepidocarpa</i>	12
<i>Carex davalliana</i>	12
<i>Carex chordorrhiza</i>	12
<i>Cardamine pratensis</i>	12
<i>Sphagnum subsecundum</i>	11
<i>Pinus sylvestris</i>	11
<i>Luzula campestris</i> aggr.	11
<i>Angelica sylvestris</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Sphagnum warnstorffii</i>	26
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Q43 – Tall-sedge base-rich fen

Tall-sedge fens are dominated by medium to tall graminoids and tall herbs, along with a patchier tier of low plants, and a ground carpet of rich-fen bryophytes. They are limited to flat landforms where base-rich, nutrient-poor groundwater from springs and seepage lines keep the surface very wet, even in summer. They occur throughout Europe, particularly in the Atlantic and Central European lowlands, becoming transitional in species composition northwards to quaking calcareous fens, though sometimes covering large areas in Fennoscandia.



Corresponding alliances in EuroVegChecklist 2016

- <> SCH-01A Caricion davallianae Klika 1934
- <> SCH-02A Saxifrago-Tomentypnion Lapshina 2010

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Schoenus ferrugineus</i>	51
<i>Campylium stellatum</i>	35
<i>Scorpidium revolvens</i> aggr.	30
<i>Carex hostiana</i>	28
<i>Juncus subnodulosus</i>	27

<i>Fissidens adianthoides</i>	24
<i>Schoenus nigricans</i>	24
<i>Pinguicula vulgaris</i>	23
<i>Eriophorum latifolium</i>	23
<i>Parnassia palustris</i>	23
<i>Carex panicea</i>	22
<i>Tofieldia calyculata</i>	22
<i>Scorpidium scorpioides</i>	21
<i>Primula farinosa</i>	21
<i>Molinia caerulea</i> aggr.	21
<i>Succisa pratensis</i>	21
<i>Carex lepidocarpa</i>	21
<i>Dactylorhiza incarnata</i>	19
<i>Carex davalliana</i>	18
<i>Drosera longifolia</i>	17
<i>Epipactis palustris</i>	17
<i>Aneura pinguis</i>	16
<i>Potentilla erecta</i>	15

Constant species (percentage frequencies)

<i>Molinia caerulea</i> aggr.	77
<i>Campylium stellatum</i>	73
<i>Potentilla erecta</i>	59
<i>Carex panicea</i>	53
<i>Scorpidium revolvens</i> aggr.	51
<i>Parnassia palustris</i>	50
<i>Schoenus ferrugineus</i>	49
<i>Schoenus nigricans</i>	44
<i>Phragmites australis</i>	44
<i>Succisa pratensis</i>	40
<i>Pinguicula vulgaris</i>	37
<i>Eriophorum latifolium</i>	34
<i>Primula farinosa</i>	31
<i>Juncus subnodulosus</i>	29
<i>Equisetum palustre</i>	29
<i>Carex hostiana</i>	29
<i>Tofieldia calyculata</i>	27
<i>Scorpidium scorpioides</i>	27
<i>Carex lepidocarpa</i>	27
<i>Carex davalliana</i>	25
<i>Menyanthes trifoliata</i>	24
<i>Fissidens adianthoides</i>	24
<i>Epipactis palustris</i>	23
<i>Calliergonella cuspidata</i>	22
<i>Valeriana dioica</i>	21
<i>Eriophorum angustifolium</i>	19
<i>Bryum pseudotriquetrum</i>	19
<i>Mentha aquatica</i>	18
<i>Aneura pinguis</i>	18
<i>Linum catharticum</i>	17
<i>Drosera longifolia</i>	17
<i>Dactylorhiza incarnata</i>	17
<i>Cirsium palustre</i>	17
<i>Carex flacca</i>	15
<i>Carex elata</i>	15

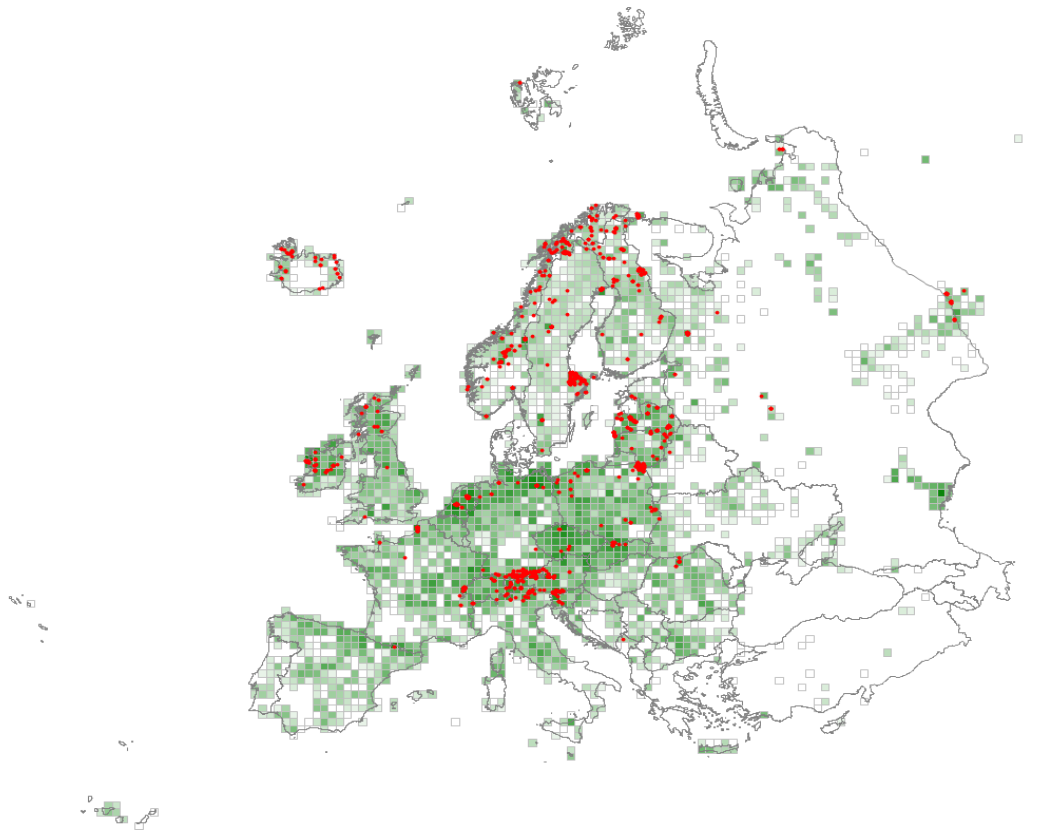
<i>Palustriella commutata</i> aggr.	13
<i>Drosera rotundifolia</i>	13
<i>Ctenidium molluscum</i>	13
<i>Briza media</i>	13
<i>Juncus articulatus</i>	12
<i>Eupatorium cannabinum</i>	12
<i>Cladium mariscus</i>	11
<i>Carex rostrata</i>	11
<i>Carex nigra</i>	11
<i>Carex lasiocarpa</i>	11
<i>Carex flava</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Schoenus ferrugineus</i>	42
<i>Schoenus nigricans</i>	36

Q44 – Calcareous quaking mire

Calcareous quaking mire develops in as a topogenic mire in basins fed by very calcareous, nutrient-poor groundwater, with generally thin peat, less than 2 m thick. It occurs widely throughout Europe but is most widespread in Finland and Sweden. The surface is kept permanently very wet and covered by an extensive moss carpet with only sparse vascular plants, sometimes disposed over irregular patterns of flarks and hollows. Calcium precipitation can occur on the surface, and the carpet is often interrupted by stretches of open water.



Corresponding alliances in EuroVegChecklist 2016

- > LIT-01H Scorpidio-Utricularion minoris Pietsch 1965
- > SCH-02C Stygio-Caricion limosae Nordhagen 1943

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Scorpidium scorpioides</i>	65
<i>Utricularia intermedia</i>	41
<i>Carex limosa</i>	40
<i>Carex chordorrhiza</i>	37
<i>Pseudocalliergon trifarium</i>	36
<i>Utricularia minor</i>	33

<i>Menyanthes trifoliata</i>	32
<i>Carex lasiocarpa</i>	32
<i>Carex livida</i>	25
<i>Calliergon giganteum</i>	24
<i>Drosera longifolia</i>	23
<i>Carex rostrata</i>	20
<i>Cinclidium stygium</i>	20
<i>Carex diandra</i>	19
<i>Scorpidium revolvens</i> aggr.	19
<i>Equisetum fluviatile</i>	19

Constant species (percentage frequencies)

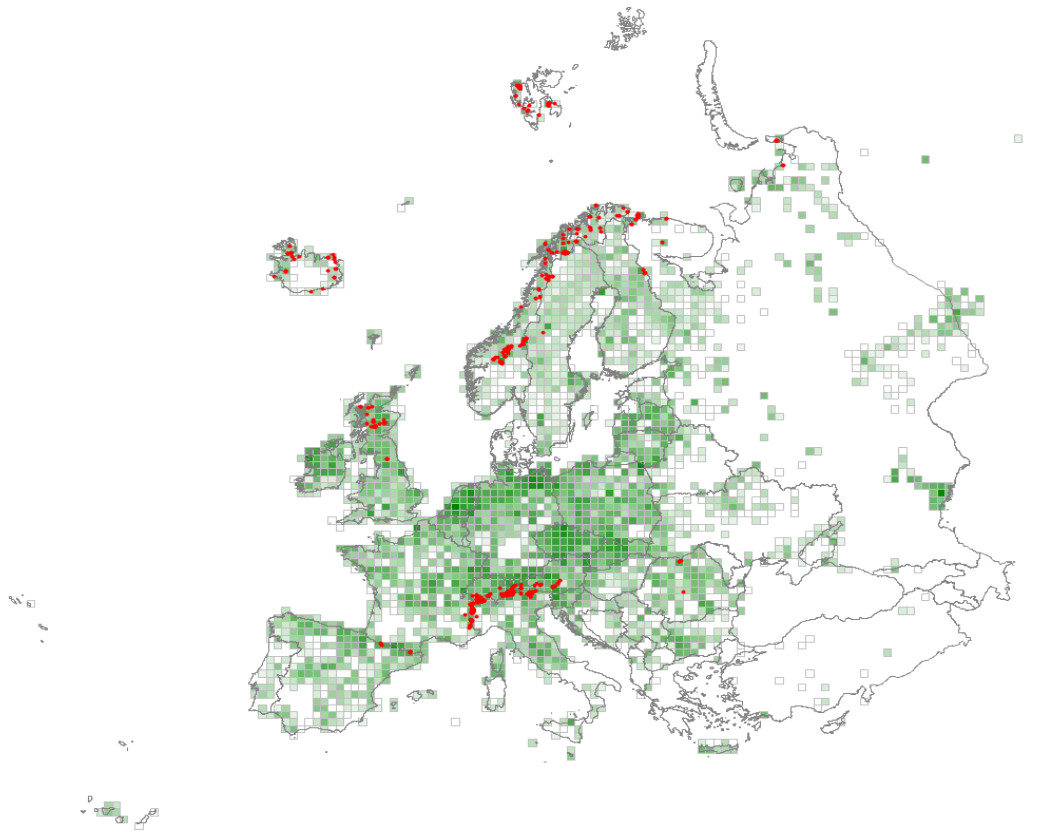
<i>Scorpidium scorpioides</i>	80
<i>Menyanthes trifoliata</i>	58
<i>Carex limosa</i>	48
<i>Carex lasiocarpa</i>	43
<i>Eriophorum angustifolium</i>	41
<i>Carex rostrata</i>	38
<i>Scorpidium revolvens</i> aggr.	32
<i>Equisetum fluviatile</i>	32
<i>Utricularia intermedia</i>	30
<i>Campylium stellatum</i>	30
<i>Carex chordorrhiza</i>	29
<i>Utricularia minor</i>	26
<i>Pseudocalliergon trifarium</i>	23
<i>Drosera longifolia</i>	22
<i>Comarum palustre</i>	22
<i>Phragmites australis</i>	20
<i>Calliergon giganteum</i>	20
<i>Carex panicea</i>	18
<i>Carex elata</i>	18
<i>Carex diandra</i>	15
<i>Vaccinium oxycoccos</i>	14
<i>Rhynchospora alba</i>	14
<i>Cinclidium stygium</i>	14
<i>Aneura pinguis</i>	14
<i>Trichophorum alpinum</i>	13
<i>Pedicularis palustris</i>	13
<i>Bryum pseudotriquetrum</i>	13
<i>Andromeda polifolia</i>	13
<i>Eleocharis quinqueflora</i>	12
<i>Peucedanum palustre</i>	11
<i>Molinia caerulea</i> aggr.	11
<i>Carex lepidocarpa</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Scorpidium scorpioides</i>	56
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Q45 – Arctic-alpine rich fen

Fens developed on open substrates constantly flushed by icy, base-rich water alongside small rivers, springs or glaciers in the alpine belt of European mountains and in the Arctic. Constant disturbance by moving water and freeze-thaw, aeration with turbulent flow and low productivity prevent peat accumulation. Consequently, this fen typically occurs as small unstable patches colonising bare ground. The vegetation consists of small basiphilous sedges, rushes and herbs, brown mosses and liverworts.



Corresponding alliances in EuroVegChecklist 2016

- > SCH-01C Caricion atrofusco-saxatilis Nordhagen 1943
- > SCH-02B Caricion stantis Matveyeva 1994

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Juncus triglumis</i>	60
<i>Carex bicolor</i>	48
<i>Carex microglochin</i>	46
<i>Equisetum variegatum</i>	42
<i>Carex capillaris</i>	42
<i>Kobresia simpliciuscula</i>	39

<i>Saxifraga aizoides</i>	37
<i>Carex atrofusca</i>	36
<i>Tofieldia pusilla</i>	36
<i>Catoscopium nigratum</i>	34
<i>Juncus arcticus</i>	32
<i>Carex maritima</i>	31
<i>Carex frigida</i>	28
<i>Meesia uliginosa</i>	28
<i>Bryum pseudotriquetrum</i>	28
<i>Bistorta vivipara</i>	27
<i>Juncus alpinoarticulatus</i>	27
<i>Salix reticulata</i>	26
<i>Scorpidium revolvens</i> aggr.	25
<i>Palustriella commutata</i> aggr.	25
<i>Salix myrsinites</i>	25
<i>Campylium stellatum</i>	24
<i>Thalictrum alpinum</i>	24
<i>Juncus castaneus</i>	23
<i>Carex saxatilis</i>	23
<i>Salix arbuscula</i>	23
<i>Selaginella selaginoides</i>	23
<i>Oncophorus virens</i>	22
<i>Carex dioica</i>	22
<i>Carex parallela</i>	21
<i>Eleocharis quinqueflora</i>	20
<i>Pedicularis oederi</i>	19
<i>Carex norvegica</i>	19
<i>Primula farinosa</i>	18
<i>Pinguicula alpina</i>	17
<i>Bartsia alpina</i>	17
<i>Fissidens osmundoides</i>	16
<i>Saccobasis polita</i>	16
<i>Pinguicula vulgaris</i>	16
<i>Juncus biglumis</i>	16
<i>Oncophorus wahlenbergii</i>	15

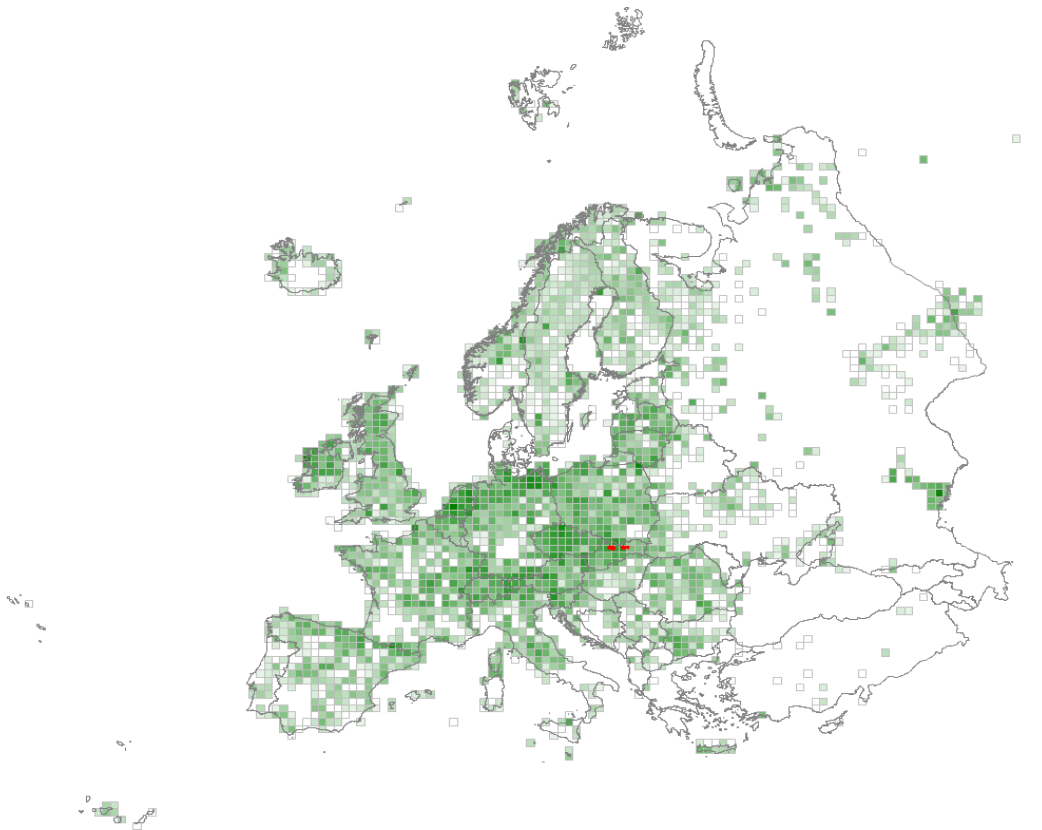
Constant species (percentage frequencies)

<i>Bistorta vivipara</i>	71
<i>Equisetum variegatum</i>	53
<i>Campylium stellatum</i>	51
<i>Juncus triglumis</i>	49
<i>Bryum pseudotriquetrum</i>	48
<i>Scorpidium revolvens</i> aggr.	44
<i>Carex capillaris</i>	43
<i>Saxifraga aizoides</i>	42
<i>Selaginella selaginoides</i>	39
<i>Eriophorum angustifolium</i>	34
<i>Thalictrum alpinum</i>	33
<i>Tofieldia pusilla</i>	31
<i>Palustriella commutata</i> aggr.	29
<i>Juncus alpinoarticulatus</i>	28
<i>Carex nigra</i>	28
<i>Carex bicolor</i>	28
<i>Primula farinosa</i>	26
<i>Parnassia palustris</i>	26

<i>Agrostis stolonifera</i>	26
<i>Salix reticulata</i>	25
<i>Pinguicula vulgaris</i>	25
<i>Carex microglochin</i>	25
<i>Deschampsia cespitosa</i> aggr.	24
<i>Bartsia alpina</i>	24
<i>Trichophorum cespitosum</i>	23
<i>Eleocharis quinqueflora</i>	23
<i>Carex panicea</i>	22
<i>Carex dioica</i>	21
<i>Kobresia simpliciuscula</i>	20
<i>Saussurea alpina</i> aggr.	19
<i>Carex davalliana</i>	18
<i>Salix arbuscula</i>	17
<i>Aneura pinguis</i>	16
<i>Catoscopium nigratum</i>	15
<i>Equisetum palustre</i>	14
<i>Carex frigida</i>	14
<i>Carex atrofusca</i>	14
<i>Tomentypnum nitens</i>	13
<i>Potentilla erecta</i>	13
<i>Pinguicula alpina</i>	13
<i>Juncus arcticus</i>	13
<i>Carex vaginata</i>	13
<i>Carex maritima</i>	13
<i>Betula nana</i>	13
<i>Bellidiastrum michelii</i>	12
<i>Vaccinium uliginosum</i>	11
<i>Trichophorum alpinum</i>	11
<i>Sesleria caerulea</i>	11
<i>Salix myrsinites</i>	11
<i>Poa alpina</i>	11
<i>Meesia uliginosa</i>	11

Q46 – Carpathian travertine fen with halophytes

Short-sedge fens developed on active travertine springs fed by extremely mineral-rich groundwater coming from deep aquifers upwards along Tertiary faults. They have conserved ancient species composition that combines plant and animal (e.g. snails and ostracods) specialists dwelling in short-sedge calcareous fens of temperate Europe, e.g. *Eleocharis quinqueflora*, *Parnassia palustris*, *Pinguicula vulgaris*, *Primula farinosa* and *Schoenus ferrugineus*, with halophytic species, e.g. *Centaurium littorale* subsp. *uliginosum*, *Glaux maritima*, *Plantago maritima* subsp. *salsa*, *Scorzonera parviflora* and *Triglochin maritima*). A characteristic species of this habitat is *Trichophorum pumilum*, a rare glacial relict of low-productive tundra, fen and salt marsh habitats. Many of these species have isolated relict populations in this habitat. Their species composition is similar to halophytic fens of the southern Siberian high-mountain regions which are climatically analogous to the European full glacial period. The habitat is endemic to the Inner Western Carpathian basins. Most of the localities were destroyed in the past.



Corresponding alliances in EuroVegChecklist 2016

<> SCH-01A Caricion davallianae Klika 1934

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Trichophorum pumilum</i>	79
<i>Blysmus compressus</i>	59
<i>Schoenoplectus lacustris</i> subsp. <i>glaucus</i>	59
<i>Primula farinosa</i>	54
<i>Triglochin maritima</i>	48
<i>Triglochin palustris</i>	47
<i>Epipactis palustris</i>	45
<i>Campyliadelphus elodes</i>	43
<i>Pinguicula vulgaris</i>	41
<i>Campylium stellatum</i>	38
<i>Carex davalliana</i>	36
<i>Parnassia palustris</i>	36
<i>Centaurium littorale</i>	33
<i>Equisetum variegatum</i>	30
<i>Valeriana dioica</i>	28
<i>Carex distans</i>	26
<i>Schoenus ferrugineus</i>	25
<i>Pedicularis palustris</i>	24
<i>Taraxacum</i> sect. <i>Palustria</i>	24
<i>Scorpidium revolvens</i> aggr.	23
<i>Juncus articulatus</i>	23
<i>Carex lepidocarpa</i>	23
<i>Bryum pseudotriquetrum</i>	23
<i>Carex hostiana</i>	21
<i>Eleocharis quinqueflora</i>	21
<i>Bryum neodamense</i>	19
<i>Odontites vulgaris</i> aggr.	19
<i>Carex panicea</i>	17
<i>Plantago maritima</i>	16
<i>Polygala amarella</i>	16
<i>Tomentypnum nitens</i>	16
<i>Tofieldia calyculata</i>	15

Constant species (percentage frequencies)

<i>Triglochin maritima</i>	84
<i>Parnassia palustris</i>	78
<i>Campylium stellatum</i>	78
<i>Primula farinosa</i>	76
<i>Schoenoplectus lacustris</i> subsp. <i>glaucus</i>	70
<i>Triglochin palustris</i>	68
<i>Trichophorum pumilum</i>	65
<i>Pinguicula vulgaris</i>	65
<i>Epipactis palustris</i>	59
<i>Blysmus compressus</i>	54
<i>Potentilla erecta</i>	49
<i>Carex davalliana</i>	49
<i>Juncus articulatus</i>	46
<i>Molinia caerulea</i> aggr.	43
<i>Valeriana dioica</i>	41
<i>Scorpidium revolvens</i> aggr.	41
<i>Carex panicea</i>	41
<i>Bryum pseudotriquetrum</i>	41

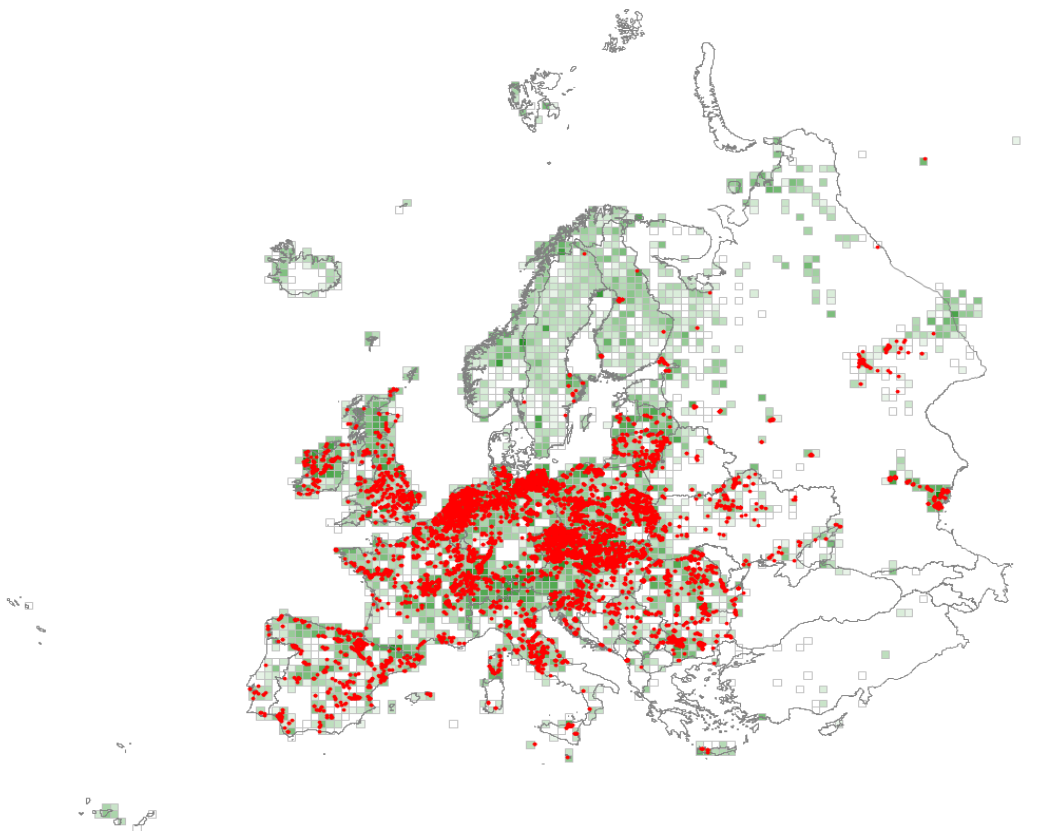
<i>Equisetum variegatum</i>	38
<i>Carex nigra</i>	38
<i>Plantago maritima</i>	35
<i>Carex distans</i>	35
<i>Carex lepidocarpa</i>	30
<i>Pedicularis palustris</i>	27
<i>Festuca rubra</i> aggr.	27
<i>Equisetum palustre</i>	27
<i>Centaurium littorale</i>	27
<i>Schoenus ferrugineus</i>	24
<i>Glaux maritima</i>	24
<i>Eleocharis quinqueflora</i>	24
<i>Campyliadelphus elodes</i>	24
<i>Calliergonella cuspidata</i>	24
<i>Odontites vulgaris</i> aggr.	22
<i>Eriophorum latifolium</i>	22
<i>Eriophorum angustifolium</i>	22
<i>Carex hostiana</i>	22
<i>Briza media</i>	22
<i>Agrostis stolonifera</i>	22
<i>Tofieldia calyculata</i>	19
<i>Tomentypnum nitens</i>	16
<i>Taraxacum</i> sect. <i>Palustria</i>	16
<i>Ranunculus acris</i> aggr.	16
<i>Menyanthes trifoliata</i>	16
<i>Lythrum salicaria</i>	16
<i>Frangula alnus</i>	16
<i>Deschampsia cespitosa</i> aggr.	16
<i>Achillea millefolium</i> aggr.	16
<i>Trifolium pratense</i>	14
<i>Succisa pratensis</i>	14
<i>Cirsium palustre</i>	14
<i>Polygala amarella</i>	11
<i>Lotus tenuis</i>	11
<i>Eupatorium cannabinum</i>	11
<i>Carex flava</i>	11
<i>Carex flacca</i>	11
<i>Aneura pinguis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Campylium stellatum</i>	59
<i>Scorpidium revolvens</i> aggr.	32
<i>Trichophorum pumilum</i>	27

Q51 – Tall-helophyte bed

This habitat of tall graminoid helophytes characteristically occupies a zone from shallow to moderately deep mesotrophic to eutrophic fresh or slightly brackish water along the banks of rivers and lakes, in artificial water bodies and at nutrient-rich terrestrial sites on waterlogged ground. It is a very widespread, but naturally fragmented habitat, throughout the European lowlands. The occurrence of different dominant species depends on water depth, duration of flooding, substratum, trophic level, disturbance by waves or current, herbivory and human influence, some of the plants being cut for fodder or thatching. Because of the competitive ability and clonal growth of tall helophytes, the stands are usually species-poor and often dominated by one or a few co-dominants. The habitat is vulnerable to drainage and pollution, land reclamation for agricultural and urban development, and the decline of marshland exploitation for renewable crops.



Corresponding alliances in EuroVegChecklist 2016

- <> PHR-01A *Phragmition communis* Koch 1926
- > PHR-05B *Phalaridion arundinaceae* Kopecký 1961
- <> PHR-05D *Deschampsion argenteae* Capelo et al. 2000

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Glyceria maxima</i>	31
<i>Sparganium erectum</i> aggr.	22
<i>Typha latifolia</i>	20
<i>Acorus calamus</i>	20
<i>Schoenoplectus lacustris</i>	19
<i>Phalaroides arundinacea</i>	16
<i>Lemna minor</i>	16
<i>Rumex hydrolapathum</i>	16

Constant species (percentage frequencies)

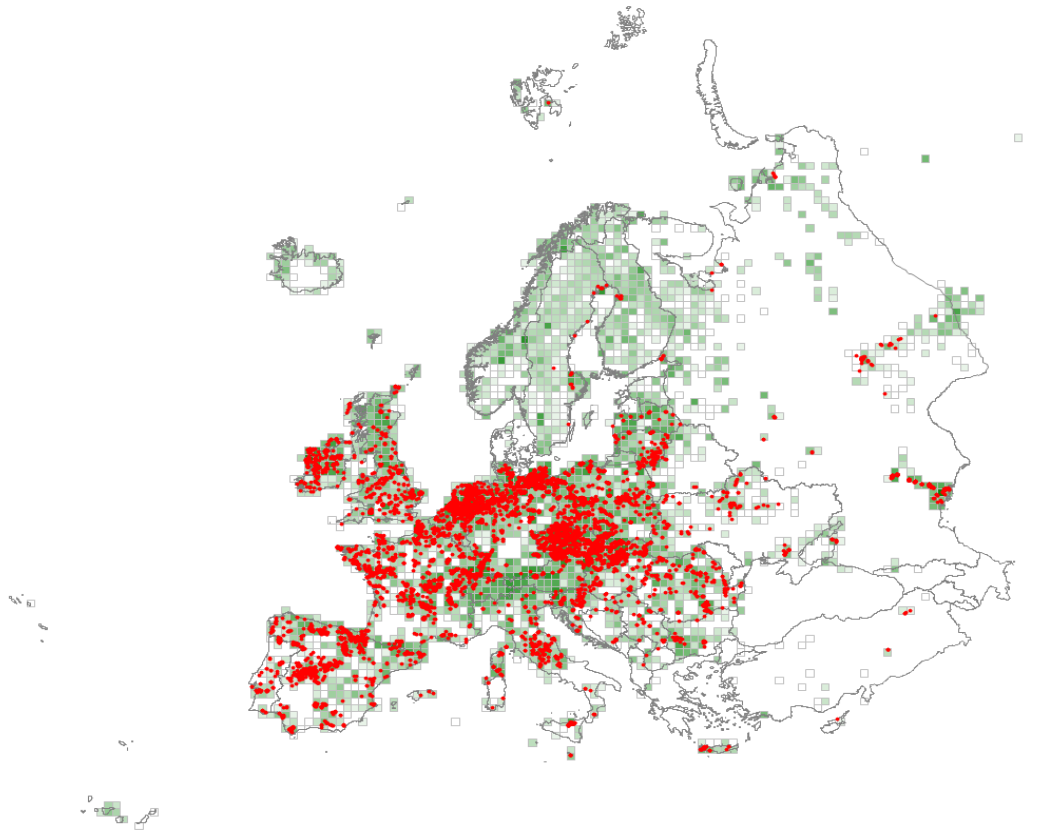
<i>Phragmites australis</i>	46
<i>Glyceria maxima</i>	31
<i>Lythrum salicaria</i>	30
<i>Galium palustre</i> aggr.	30
<i>Phalaroides arundinacea</i>	27
<i>Lysimachia vulgaris</i>	23
<i>Lycopus europaeus</i>	22
<i>Iris pseudacorus</i>	22
<i>Typha latifolia</i>	20
<i>Mentha aquatica</i>	20
<i>Lemna minor</i>	18
<i>Equisetum fluviatile</i>	18
<i>Typha angustifolia</i>	16
<i>Sparganium erectum</i> aggr.	16
<i>Persicaria amphibia</i>	14
<i>Alisma plantago-aquatica</i>	14
<i>Schoenoplectus lacustris</i>	13
<i>Myosotis scorpioides</i> aggr.	13
<i>Carex acuta</i>	13
<i>Agrostis stolonifera</i>	13
<i>Solanum dulcamara</i>	12
<i>Rumex hydrolapathum</i>	12
<i>Calystegia sepium</i>	11
<i>Calamagrostis canescens</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Phragmites australis</i>	26
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Q52 – Small-helophyte bed

Small and amphibious helophyte-dominated freshwater vegetation is a widespread, very common but fragmented habitat throughout the European lowlands, occurring in the shallow littoral zones of lakes, ponds and rivers subject to periodic and repeated variation in water levels. It is characterised by amphibious plants and provides an important habitat for benthic invertebrates, fish, amphibians and several species of birds, by offering shelter and food. Like other wetland types, this habitat has suffered much from the intensification of agricultural land use, including drainage, modification of flooding and reclamation, and expansion of urban areas.



Corresponding alliances in EuroVegChecklist 2016

- > PHR-05A *Glycerio-Sparganion* Br.-Bl. et Sissingh in Boer 1942
- <> PHR-05D *Deschampsion argenteae* Capelo et al. 2000
- > PHR-06A *Eleocharito palustris-Sagittarion sagittifoliae* Passarge 1964
- > PHR-06B *Alopecuro-Glycerion spicatae* S. Brullo et al. 1994
- > PHR-07A *Arctophilion fulvae* Pstryakov et Gogoleva in Kholod 2007

Characteristic species combination

Diagnostic species (phi coefficient * 100)

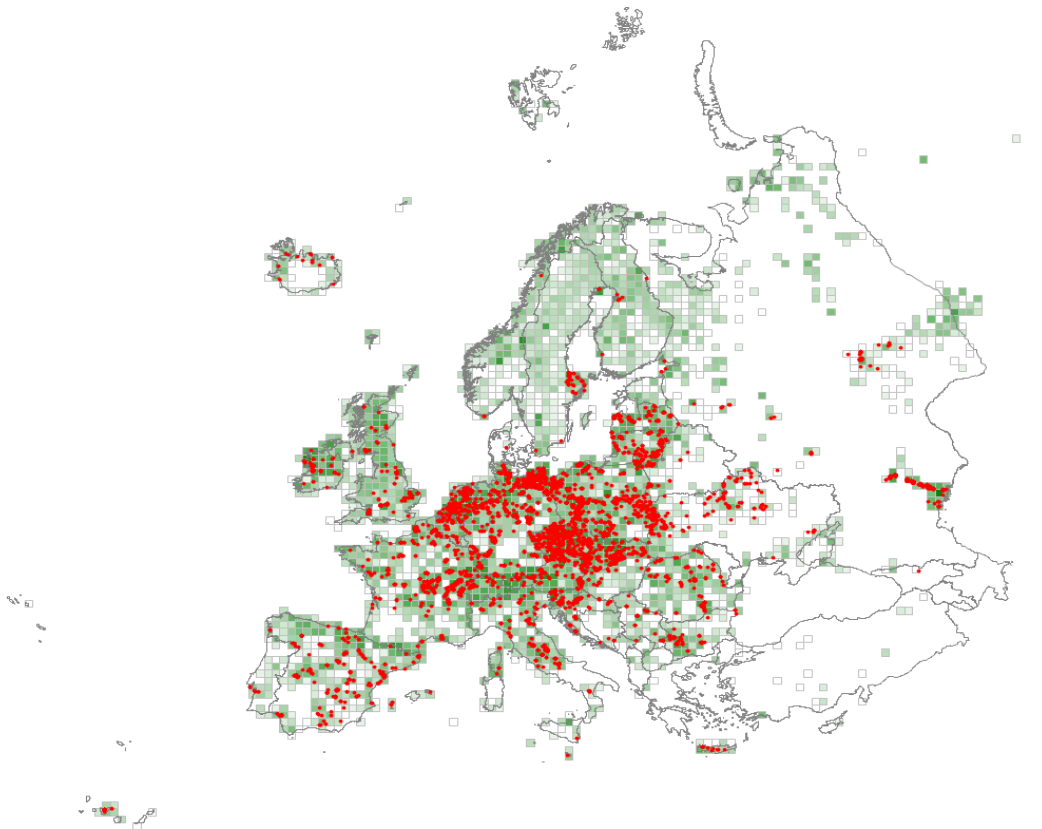
<i>Oenanthe aquatica</i>	25
<i>Glyceria fluitans</i> aggr.	25
<i>Alisma plantago-aquatica</i>	23
<i>Eleocharis palustris</i>	21
<i>Rorippa amphibia</i>	20
<i>Persicaria amphibia</i>	18
<i>Alopecurus aequalis</i>	18
<i>Sagittaria sagittifolia</i>	18
<i>Sparganium emersum</i>	17
<i>Glyceria declinata</i>	16
<i>Berula erecta</i>	15

Constant species (percentage frequencies)

<i>Eleocharis palustris</i>	33
<i>Galium palustre</i> aggr.	31
<i>Alisma plantago-aquatica</i>	28
<i>Glyceria fluitans</i> aggr.	27
<i>Agrostis stolonifera</i>	26
<i>Persicaria amphibia</i>	23
<i>Myosotis scorpioides</i> aggr.	22
<i>Mentha aquatica</i>	21
<i>Ranunculus repens</i>	18
<i>Oenanthe aquatica</i>	18
<i>Ranunculus flammula</i>	17
<i>Lycopus europaeus</i>	17
<i>Rorippa amphibia</i>	16
<i>Lythrum salicaria</i>	16
<i>Lemna minor</i>	16
<i>Phalaroides arundinacea</i>	15
<i>Lysimachia vulgaris</i>	14
<i>Glyceria maxima</i>	13
<i>Phragmites australis</i>	11
<i>Equisetum fluviatile</i>	11

Q53 – Tall-sedge bed

This habitat develops throughout the European lowlands, though less commonly to the warmer south, on the margins of standing and slow-moving fresh waters just above the mean water level, but subject to periodic flooding, and on year-round water-saturated soils. Tall-sedge communities are usually species-poor, dominated by one productive plant, often of densely tussock habit, and accompanied by few characteristic species growing in mosaics on and between the tussocks. The particular dominant depends on climate, substrate, hydrology and trophic level of the habitat and, now usually in the past, on management by grazing or cutting. The main threats are the expansion of agricultural, industrial and urban areas and changes in the level of groundwater and its pollution. In many places, the habitat is totally transformed without the possibility of natural recovery, and strong intervention is usually needed for recovery.



Corresponding alliances in EuroVegChecklist 2016

- <> PHR-04A *Magnocaricion elatae* Koch 1926
- > PHR-04B *Magnocaricion gracilis* Géhu 1961
- > PHR-04C *Carici-Rumicion hydrolapathi* Passarge 1964
- > PHR-05C *Caricion broterianae* (Rivas-Mart. et al. 1986) J.A. Molina 1996

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Carex acuta</i>	36
<i>Carex vesicaria</i>	28
<i>Carex riparia</i>	24
<i>Carex disticha</i>	17
<i>Lythrum salicaria</i>	16
<i>Cladium mariscus</i>	15

Constant species (percentage frequencies)

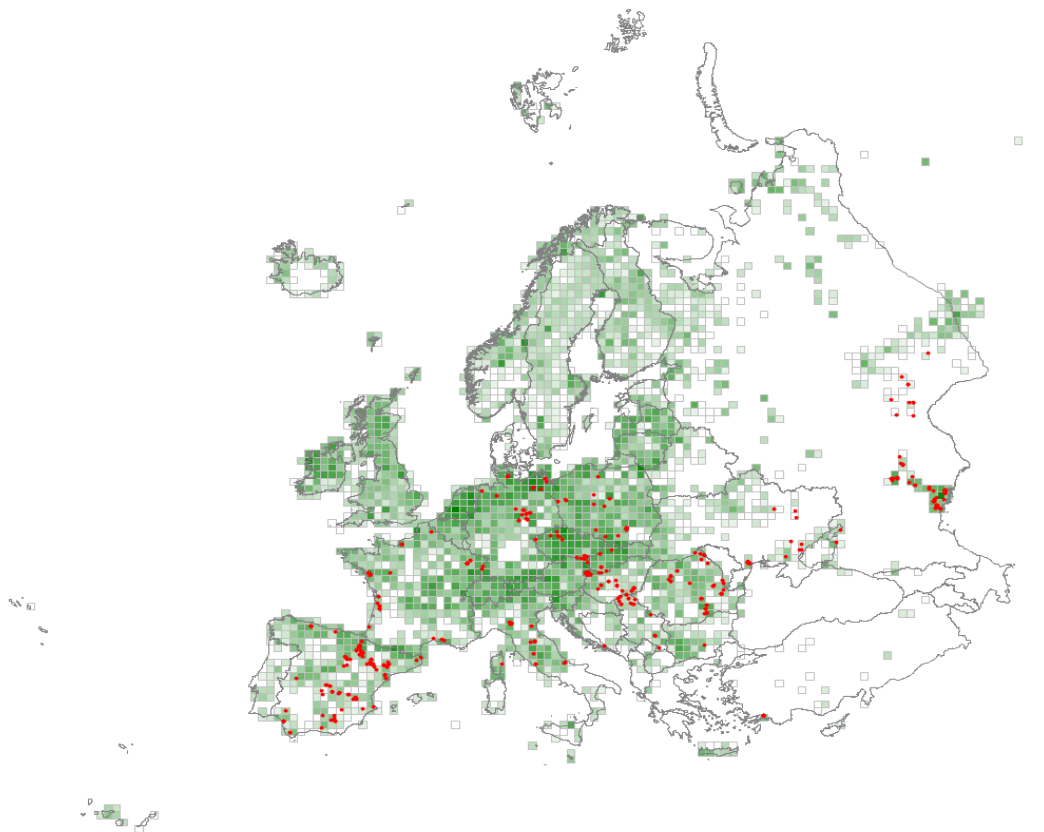
<i>Carex acuta</i>	42
<i>Galium palustre</i> aggr.	37
<i>Lythrum salicaria</i>	33
<i>Lysimachia vulgaris</i>	27
<i>Phragmites australis</i>	24
<i>Carex vesicaria</i>	23
<i>Carex riparia</i>	22
<i>Iris pseudacorus</i>	20
<i>Carex acutiformis</i>	20
<i>Phalaroides arundinacea</i>	18
<i>Equisetum fluviatile</i>	17
<i>Persicaria amphibia</i>	16
<i>Ranunculus repens</i>	15
<i>Lycopus europaeus</i>	14
<i>Carex disticha</i>	14
<i>Caltha palustris</i>	14
<i>Equisetum palustre</i>	12
<i>Cladium mariscus</i>	12
<i>Mentha aquatica</i>	11
<i>Glyceria maxima</i>	11
<i>Filipendula ulmaria</i>	11
<i>Carex rostrata</i>	11
<i>Carex paniculata</i>	11
<i>Carex elata</i>	11
<i>Agrostis stolonifera</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Carex acuta</i>	31
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Q54 – Inland saline or brackish helophyte bed

This habitat includes helophyte beds developing in and around inland saline or brackish lakes, ponds and other standing or slowly flowing waters such as saline Mediterranean rivers that are subject to summer drying. The habitat may include, depending on the particular hydrological regime, emergent communities dominated by a variety of tall or tussocky species tolerant of brackish or saline conditions. It is distributed in both the continental part of Europe and the arid Mediterranean region, where it can dry out completely in the summer and become hyper-saline. Threats include land reclamation for agricultural and urban expansion, anthropogenic changes in hydrology, and the input of freshwater to serve waterfowl hunting or ecotourism in dry areas. Safeguarding the distinctive hydrology and controlling the spread of helophytes by grazing are the main conservation actions.



Corresponding alliances in EuroVegChecklist 2016

- > PHR-01B *Typhion laxmannii* Nedelcu 1968
- <> PHR-02A *Scirpion maritimi* Dahl et Hadač 1941
- > PHR-02B *Meliloto dentati-Bolboschoenion maritimi* Hroudová et al. 2009

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Puccinellia peisonis</i>	33
<i>Schoenoplectus lacustris</i> subsp. <i>glaucus</i>	25
<i>Phragmites australis</i>	24
<i>Bolboschoenus maritimus</i>	24
<i>Cirsium brachycephalum</i>	24
<i>Typha domingensis</i>	23
<i>Tripolium pannonicum</i>	17

Constant species (percentage frequencies)

<i>Phragmites australis</i>	78
<i>Bolboschoenus maritimus</i>	43
<i>Tripolium pannonicum</i>	35
<i>Schoenoplectus lacustris</i> subsp. <i>glaucus</i>	31
<i>Atriplex prostrata</i>	24
<i>Agrostis stolonifera</i>	23
<i>Juncus gerardi</i>	17
<i>Puccinellia peisonis</i>	13
<i>Puccinellia distans</i>	13
<i>Eleocharis palustris</i>	11

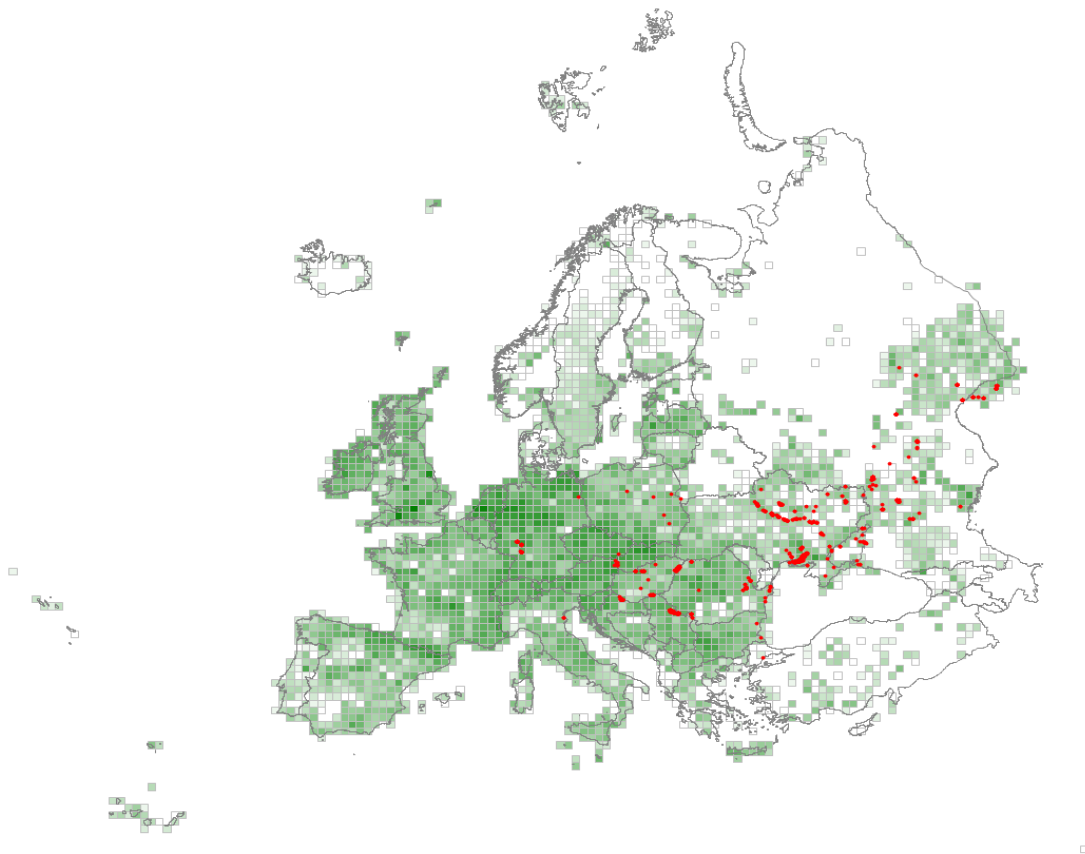
Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Phragmites australis</i>	35
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R11 – Pannonian and Pontic sandy steppe

Rather open steppe grassland dominated by perennial tussock grasses and herbs, with frequent spring annuals and cryptogams, typical of nutrient-poor, sandy soils on plains and dunes through the Pannonian, Pontic and southern Baltic regions. The climate is continental with cold winters, often with long frosts and shallow snow, and hot, droughty summers. Traditionally used for extensive grazing by stock, particularly sheep, but now widely abandoned.

Remark: This habitat also occurs at some sites in the southern Baltic area (north of the Carpathians); therefore, an addition of the Sarmatic region in the habitat name can be considered.



Corresponding alliances in EuroVegChecklist 2016

- <> COR-01B *Koelerion glaucae* Volk 1931
- > COR-02A *Festucion vaginatae* de Soó 1929
- > COR-02B *Festucion beckeri* Vicherek 1972
- <> SED-04H *Bassio laniflorae*-*Bromion tectorum* Borhidi 1996 nom. conserv. propos.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Festuca beckeri</i>	55
<i>Koeleria glauca</i>	50

<i>Festuca vaginata</i>	40
<i>Helichrysum arenarium</i>	40
<i>Jurinea cyanooides</i>	39
<i>Bassia laniflora</i>	37
<i>Thymus pallasianus</i>	37
<i>Silene borysthenica</i>	34
<i>Achillea micrantha</i>	32
<i>Gypsophila paniculata</i>	31
<i>Asperula graveolens</i>	30
<i>Astragalus varius</i>	29
<i>Euphorbia seguieriana</i>	29
<i>Scorzonera ensifolia</i>	29
<i>Dianthus platyodon</i>	28
<i>Artemisia campestris</i>	28
<i>Agropyron dasyanthum</i>	28
<i>Stipa borysthenica</i> aggr.	27
<i>Carex colchica</i>	27
<i>Tragopogon borystenicus</i>	26
<i>Secale sylvestre</i>	26
<i>Tragopogon ucrainicus</i>	26
<i>Centaurea arenaria</i> aggr.	25
<i>Erysimum canum</i>	25
<i>Jacobaea borysthenica</i>	24
<i>Erysimum montanum</i>	24
<i>Anchusa gmelinii</i>	23
<i>Jurinea longifolia</i>	22
<i>Thymus borysthenicus</i>	21
<i>Pilosella echioides</i>	21
<i>Tragopogon floccosus</i>	20
<i>Tragopogon tanaiticus</i>	20
<i>Cytisus borysthenicus</i>	20
<i>Linaria odora</i>	20
<i>Jurinea polyclonos</i>	19
<i>Festuca wagneri</i>	19
<i>Cladonia polycarpoides</i>	19
<i>Herniaria polygama</i>	18
<i>Veronica dillenii</i>	18
<i>Dianthus borbasii</i>	17
<i>Polygonum arenarium</i>	17
<i>Plantago arenaria</i>	17
<i>Minuartia viscosa</i>	16
<i>Minuartia glomerata</i>	16
<i>Corispermum nitidum</i>	16
<i>Syntrichia ruralis</i> aggr.	16
<i>Chondrilla graminea</i>	15
<i>Centaurea breviceps</i>	15
<i>Myosotis sicula</i>	15

Constant species (percentage frequencies)

<i>Euphorbia seguieriana</i>	60
<i>Artemisia campestris</i>	54
<i>Koeleria glauca</i>	52
<i>Festuca beckeri</i>	49
<i>Helichrysum arenarium</i>	48
<i>Poa bulbosa</i>	39

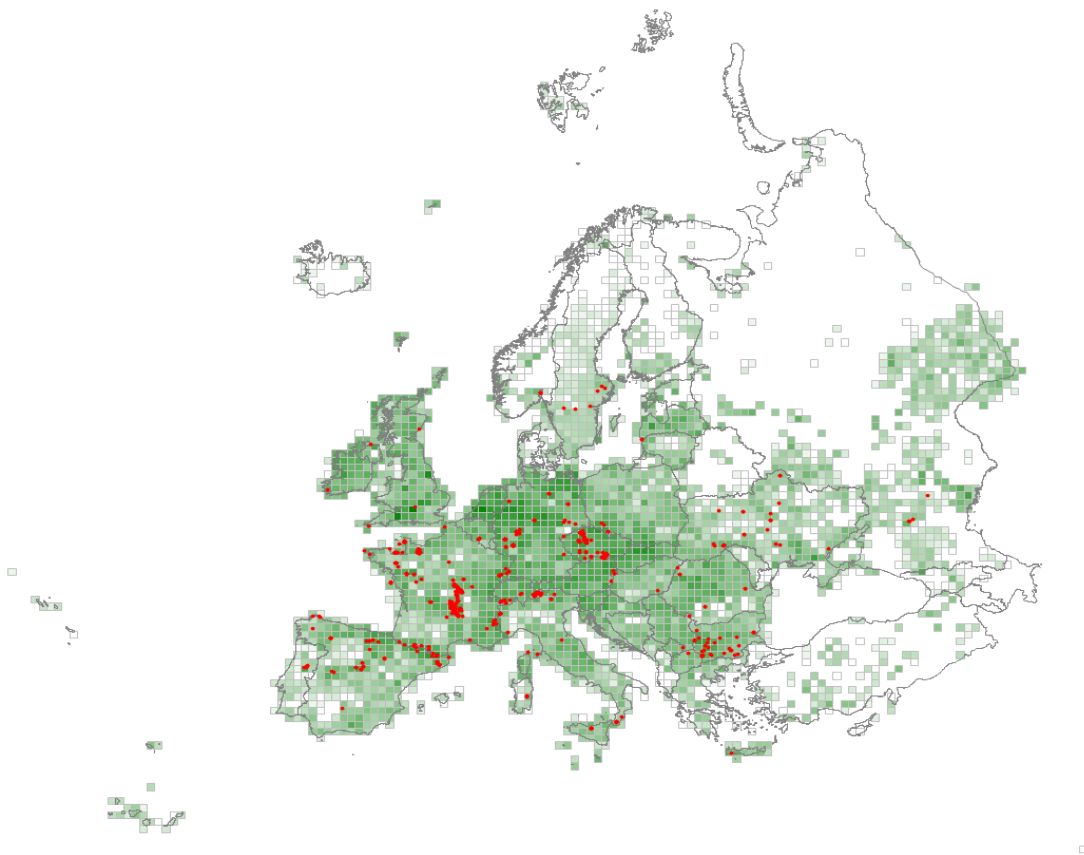
<i>Bassia laniflora</i>	28
<i>Carex colchica</i>	26
<i>Secale sylvestre</i>	24
<i>Syntrichia ruralis</i> aggr.	23
<i>Festuca vaginata</i>	22
<i>Centaurea arenaria</i> aggr.	22
<i>Achillea micrantha</i>	22
<i>Jurinea cyanoides</i>	20
<i>Gypsophila paniculata</i>	20
<i>Astragalus varius</i>	19
<i>Silene borysthenica</i>	18
<i>Polygonum arenarium</i>	18
<i>Thymus pallasianus</i>	17
<i>Rumex acetosella</i>	17
<i>Stipa borysthenica</i> aggr.	16
<i>Silene otites</i> aggr.	15
<i>Potentilla cinerea</i>	15
<i>Linaria genistifolia</i>	15
<i>Chondrilla juncea</i>	15
<i>Anisantha tectorum</i>	15
<i>Pilosella echioides</i>	14
<i>Eryngium campestre</i>	14
<i>Cynodon dactylon</i>	14
<i>Cladonia rangiformis</i>	14
<i>Calamagrostis epigejos</i>	14
<i>Veronica dillenii</i>	13
<i>Odontarrhena tortuosa</i>	13
<i>Erysimum montanum</i>	13
<i>Draba verna</i> aggr.	13
<i>Cerastium semidecandrum</i>	13
<i>Asperula graveolens</i>	13
<i>Alyssum turkestanicum</i>	13
<i>Stipa pennata</i>	12
<i>Scorzonera ensifolia</i>	12
<i>Plantago arenaria</i>	12
<i>Cladonia foliacea</i>	12
<i>Lomelosia argentea</i>	11
<i>Galium verum</i>	11
<i>Dianthus platyodon</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Festuca beckeri</i>	31
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R12 – Cryptogam- and annual-dominated vegetation on siliceous rock outcrops

Open pioneer grassland dominated by perennial succulents and annuals, with subordinate small tussock grasses, sometimes geophytes and often a prominent contingent of cryptogams. Typically forming small stands on very shallow and skeletal, impoverished, acid soils on siliceous rock outcrops, eroded slopes and disturbed or artificial habitats like soil heaps and wall tops, the habitat occurs throughout temperate and boreal Europe up to the subalpine belt, in situations where the permeable soils dry quickly in summer, but where spring rains can permit a quick flush of growth by the annuals.



Corresponding alliances in EuroVegChecklist 2016

- > SED-01B Rumici acetosellae-Agrostion borealis Knapp 1964
- > SED-02A Sedo albi-Veronicion dillenii Korneck 1974
- > SED-02B Sedo-Scleranthion Br.-Bl. et Richard 1950
- > SED-02C Sedion anglici Br.-Bl. in Br.-Bl. et Tx. 1952
- > SED-02D Sedion pyrenaici Tx. in Rivas-Mart. et al. 2011
- > SED-02E Hyperico perforati-Scleranthion perennis Moravec 1967
- > SED-02F Scabioso-Trifolion dalmatici Horvatić et N. Randelović in N. Randelović 1977
- > SED-02G Poo bulbosae-Stipion graniticolae Vynokurov 2014
- <> SED-03A Thero-Airion Tx. ex Oberd. 1957

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Scleranthus perennis</i>	25
<i>Gagea bohemica</i>	21
<i>Sedum rupestre</i>	21
<i>Sedum album</i>	20
<i>Draba verna</i> aggr.	20
<i>Trifolium arvense</i>	17
<i>Potentilla tabernaemontani</i>	17
<i>Oxalis dillenii</i>	16
<i>Aira caryophyllea</i>	16
<i>Myosotis stricta</i>	16
<i>Aphanes microcarpa</i>	16
<i>Veronica verna</i>	15

Constant species (percentage frequencies)

<i>Sedum album</i>	43
<i>Poa bulbosa</i>	38
<i>Trifolium arvense</i>	35
<i>Scleranthus perennis</i>	35
<i>Sedum rupestre</i>	32
<i>Draba verna</i> aggr.	32
<i>Rumex acetosella</i>	30
<i>Arenaria serpyllifolia</i>	26
<i>Veronica arvensis</i>	25
<i>Sedum acre</i>	24
<i>Potentilla tabernaemontani</i>	24
<i>Aira caryophyllea</i>	23
<i>Ceratodon purpureus</i>	22
<i>Potentilla argentea</i>	21
<i>Cerastium pumilum</i>	21
<i>Plantago lanceolata</i>	20
<i>Erodium cicutarium</i>	19
<i>Sanguisorba minor</i> aggr.	18
<i>Polytrichum piliferum</i>	18
<i>Hypnum cupressiforme</i> aggr.	18
<i>Veronica verna</i>	17
<i>Vulpia bromoides</i>	16
<i>Myosotis stricta</i>	16
<i>Festuca ovina</i>	16
<i>Euphorbia cyparissias</i>	16
<i>Arabidopsis thaliana</i>	15
<i>Sedum sexangulare</i>	14
<i>Jasione montana</i>	14
<i>Echium vulgare</i>	14
<i>Bromus hordeaceus</i>	14
<i>Trifolium campestre</i>	13
<i>Thymus praecox</i>	12
<i>Racomitrium canescens</i>	12
<i>Pilosella officinarum</i>	12
<i>Petrorhagia prolifera</i>	12
<i>Myosotis ramosissima</i>	12
<i>Hypericum perforatum</i>	12
<i>Eryngium campestre</i>	12

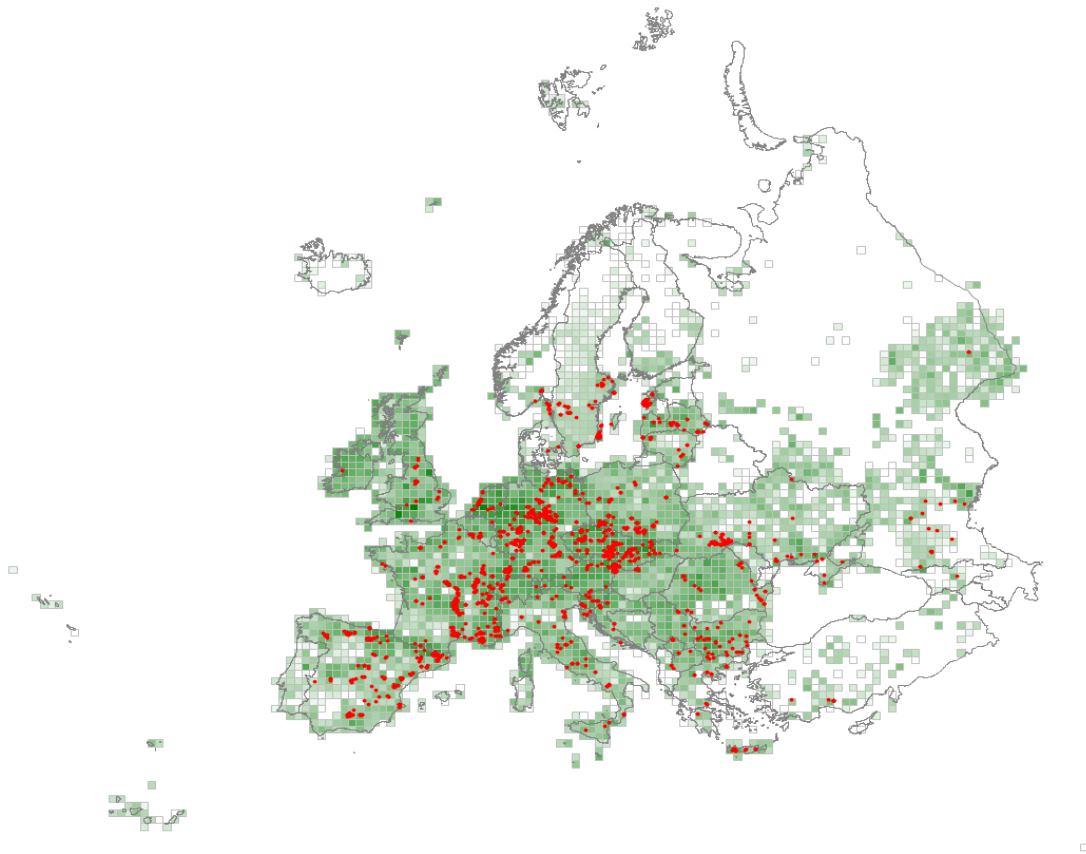
<i>Syntrichia ruralis</i> aggr.	11
<i>Sedum anglicum</i>	11
<i>Hypochaeris radicata</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Sedum album</i>	25
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R13 – Cryptogam- and annual-dominated vegetation on calcareous and ultramafic rock outcrops

Open pioneer grassland with perennial succulents and spring annuals, subordinate small tussock grasses and herbs, and often with a very prominent and rich contingent of cryptogams. Typically found in small patches on very shallow and skeletal, impoverished, base-rich soils on a wide variety of base-rich and sometimes ultramafic bedrocks, and similar artificial habitats like quarry spoil and wall-tops. It is found from the hemiboreal to the submediterranean zone, occurring mainly at higher altitudes further south.



Corresponding alliances in EuroVegChecklist 2016

- > SED-01A *Veronico-Poion glaucae* Nordhagen 1943
- > SED-04A *Alyso alyssoidis-Sedion* Oberd. et T. Müller in T. Müller 1961
- > SED-04B *Tortello tortuosae-Sedion albi* Hallberg ex Dengler et Löbel 2006
- > SED-04C *Sedion micrantho-sediformis* Rivas-Mart., P. Sánchez et Alcaraz ex P. Sánchez et Alcaraz 1993
- <> SED-04D *Armerion junceae* Br.-Bl. ex Br.-Bl. et al. 1952
- > SED-04E *Valerianion tuberosae* Guinochet 1975
- > SED-04F *Aethionemion saxatilis* Bergmeier et al. 2009
- <> SED-04G *Sileno conicae-Cerastion semidecandri* Korneck 1974
- <> SED-04H *Bassio laniflorae-Bromion tectorum* Borhidi 1996 nom. conserv. propos.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Saxifraga tridactylites</i>	32
<i>Clinopodium acinos</i>	27
<i>Draba verna</i> aggr.	26
<i>Sedum acre</i>	24
<i>Arenaria serpyllifolia</i>	24
<i>Abietinella abietina</i>	22
<i>Tortella inclinata</i>	21
<i>Barbula convoluta</i>	20
<i>Encalypta vulgaris</i>	19
<i>Cladonia symphylicarpa</i>	19
<i>Sedum album</i>	19
<i>Fulgensia bracteata</i>	19
<i>Alyssum alyssoides</i>	18
<i>Hornungia petraea</i>	18
<i>Toninia sedifolia</i>	17
<i>Didymodon fallax</i>	17
<i>Ditrichum flexicaule</i>	17
<i>Potentilla tabernaemontani</i>	17
<i>Weissia brachycarpa</i>	16
<i>Syntrichia ruralis</i> aggr.	16
<i>Leptogium lichenoides</i>	16
<i>Encalypta streptocarpa</i>	15
<i>Peltigera rufescens</i>	15

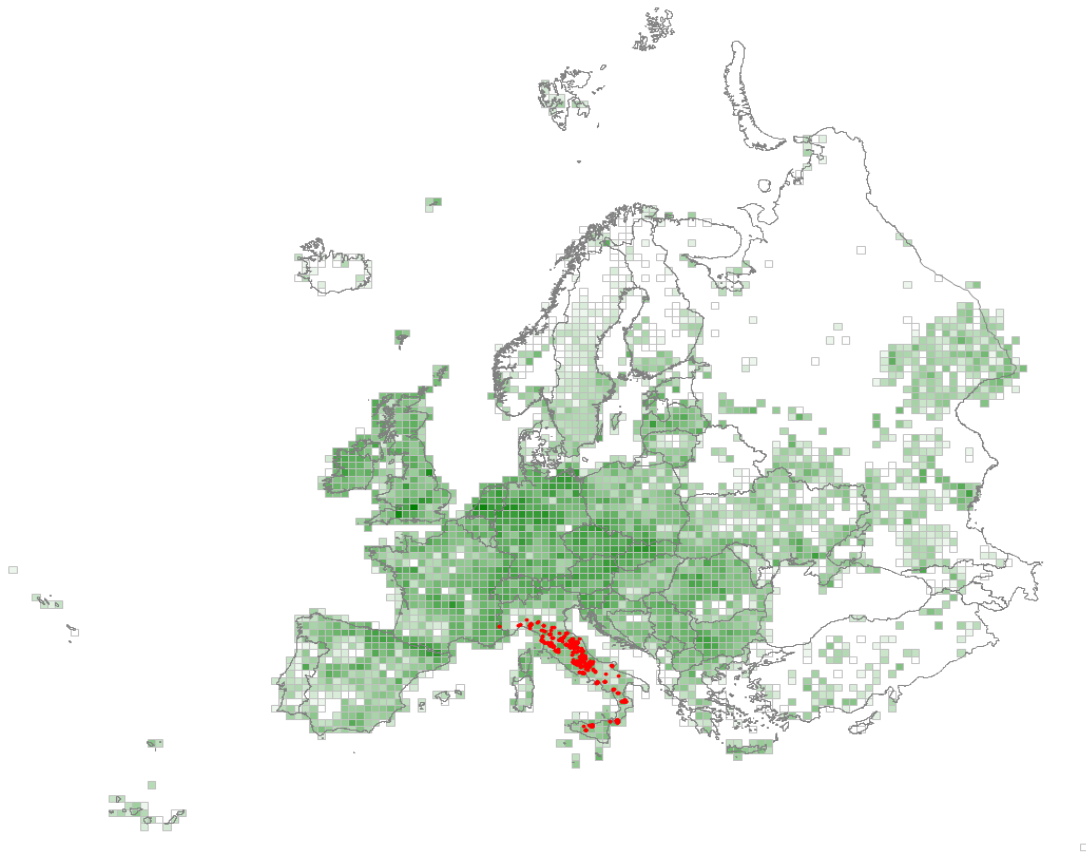
Constant species (percentage frequencies)

<i>Arenaria serpyllifolia</i>	48
<i>Sedum acre</i>	42
<i>Draba verna</i> aggr.	42
<i>Sedum album</i>	40
<i>Clinopodium acinos</i>	35
<i>Saxifraga tridactylites</i>	26
<i>Syntrichia ruralis</i> aggr.	23
<i>Potentilla tabernaemontani</i>	23
<i>Poa bulbosa</i>	22
<i>Medicago minima</i>	22
<i>Cerastium pumilum</i>	22
<i>Abietinella abietina</i>	21
<i>Sanguisorba minor</i> aggr.	20
<i>Euphorbia cyparissias</i>	20
<i>Hypnum cupressiforme</i> aggr.	19
<i>Alyssum alyssoides</i>	19
<i>Poa compressa</i>	18
<i>Festuca ovina</i>	18
<i>Cerastium semidecandrum</i>	18
<i>Artemisia campestris</i>	18
<i>Tortella tortuosa</i>	17
<i>Sedum sexangulare</i>	16
<i>Ceratodon purpureus</i>	16
<i>Veronica arvensis</i>	15
<i>Erodium cicutarium</i>	15
<i>Echium vulgare</i>	15
<i>Hornungia petraea</i>	14

<i>Ditrichum flexicaule</i>	14
<i>Thymus pulegioides</i>	13
<i>Galium verum</i>	13
<i>Teucrium chamaedrys</i>	12
<i>Plantago lanceolata</i>	12
<i>Pilosella officinarum</i>	12
<i>Medicago lupulina</i>	12
<i>Holosteum umbellatum</i>	12
<i>Centaurea stoebe</i>	12
<i>Tortella inclinata</i>	11
<i>Taraxacum</i> sect. <i>Erythrosperma</i>	11
<i>Cladonia pyxidata</i> aggr.	11

R14 – Perennial rocky grassland of the Italian Peninsula

Unique to base-rich bedrocks in the Italian Peninsula and Sicily, best developed within the submediterranean bioclimatic zone, this grassland is variously dominated by perennial grasses and herbs, or mat formers and sub-shrubs on steeper, rockier ground. Generally species-rich, and sometimes with contingents of annuals and, in disturbed places, geophytes, the habitat sometimes hosts endemic plants. Developed through clearance of broadleaved and mixed forest it is maintained by traditional grazing in a distinctive cultural landscape.



Corresponding alliances in EuroVegChecklist 2016

- > ONO-03A Alysson bertolonii E. Pignatti et Pignatti 1977
- > ONO-03B Cytiso spinescentis-Saturejion montanae Pirone et Tammaro 1997
- > ONO-03C Cytiso spinescentis-Bromion erecti Bonin 1978
- > ONO-03D Seslerio nitidae-Caricion macrolepidis Ubaldi 1997

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Phleum ambiguum</i>	43
<i>Koeleria lobata</i>	38
<i>Festuca circummediterranea</i>	34
<i>Festuca inops</i>	32

<i>Erysimum pseudorhaeticum</i>	32
<i>Potentilla rigoana</i>	30
<i>Crepis lacera</i>	30
<i>Armeria denticulata</i>	29
<i>Festuca robustifolia</i>	27
<i>Thymus striatus</i>	25
<i>Thymus longicaulis</i>	24
<i>Centaurea ambigua</i>	24
<i>Bromopsis erecta</i>	24
<i>Armeria canescens</i>	24
<i>Eryngium amethystinum</i>	23
<i>Genista januensis</i>	23
<i>Valeriana tuberosa</i>	21
<i>Sedum rupestre</i>	21
<i>Potentilla hirta</i>	21
<i>Petrorhagia saxifraga</i>	21
<i>Scorzoneroides cichoriacea</i>	20
<i>Brachypodium genuense</i>	20
<i>Dianthus sylvestris</i>	20
<i>Knautia purpurea</i>	20
<i>Herniaria glabra</i>	20
<i>Polycarpon polycarpoides</i>	19
<i>Knautia calycina</i>	19
<i>Odontarrhena nebrodensis</i>	19
<i>Stipa etrusca</i>	19
<i>Galium corrudifolium</i>	19
<i>Prangos ferulacea</i>	19
<i>Armeria aspromontana</i>	19
<i>Sideritis italica</i>	19
<i>Centaurea poeltiana</i>	19
<i>Odontarrhena bertolonii</i>	18
<i>Centaurea paniculata</i> aggr.	18
<i>Minuartia laricifolia</i> subsp. <i>ophiolitica</i>	18
<i>Inula montana</i>	18
<i>Trinia glauca</i>	17
<i>Cerastium tomentosum</i>	17
<i>Astracantha nebrodensis</i>	17
<i>Artemisia alba</i>	16
<i>Allium sphaerocephalon</i>	16
<i>Erysimum bonannianum</i>	16
<i>Muscari neglectum</i>	16
<i>Anthyllis vulneraria</i>	16
<i>Cytisus spinescens</i>	15
<i>Carlina nebrodensis</i>	15
<i>Polygala flavescens</i>	15

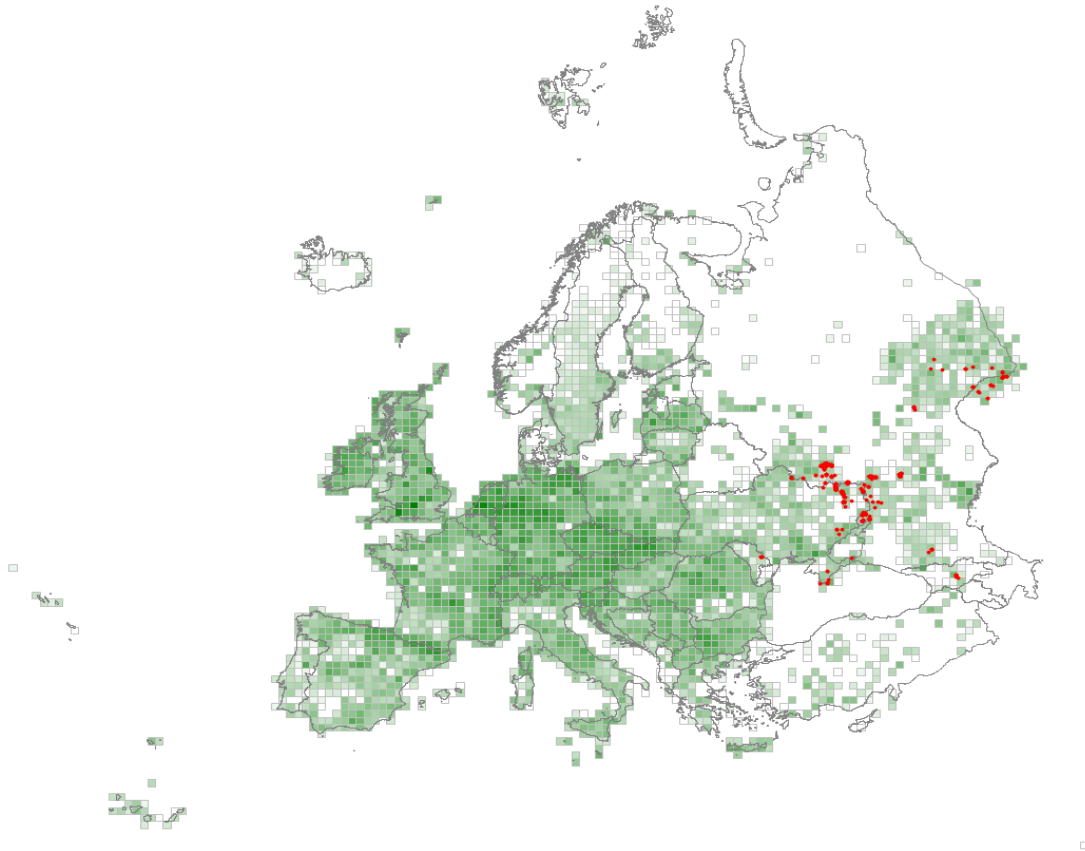
Constant species (percentage frequencies)

<i>Bromopsis erecta</i>	58
<i>Festuca circummediterranea</i>	49
<i>Anthyllis vulneraria</i>	43
<i>Thymus longicaulis</i>	39
<i>Phleum ambiguum</i>	39
<i>Koeleria lobata</i>	38
<i>Sanguisorba minor</i> aggr.	36
<i>Sedum rupestre</i>	33

<i>Dianthus sylvestris</i>	33
<i>Pilosella officinarum</i>	32
<i>Petrorhagia saxifraga</i>	30
<i>Eryngium amethystinum</i>	28
<i>Galium corrudifolium</i>	27
<i>Lotus corniculatus</i>	26
<i>Festuca inops</i>	26
<i>Helichrysum italicum</i>	25
<i>Galium lucidum</i>	25
<i>Clinopodium alpinum</i>	24
<i>Cerastium arvense</i>	24
<i>Thymus striatus</i>	23
<i>Helianthemum nummularium</i>	23
<i>Plantago holosteum</i>	22
<i>Allium sphaerocephalon</i>	22
<i>Trinia glauca</i>	20
<i>Teucrium chamaedrys</i>	20
<i>Asperula cynanchica</i>	20
<i>Armeria canescens</i>	20
<i>Teucrium montanum</i>	19
<i>Silene italica</i> aggr.	18
<i>Festuca robustifolia</i>	18
<i>Valeriana tuberosa</i>	17
<i>Plantago lanceolata</i>	17
<i>Hippocrepis comosa</i>	17
<i>Herniaria glabra</i>	17
<i>Dactylis glomerata</i>	17
<i>Asperula purpurea</i>	17
<i>Sedum album</i>	16
<i>Poa bulbosa</i>	16
<i>Helictochloa versicolor</i>	16
<i>Helianthemum canum</i>	16
<i>Centaurea paniculata</i> aggr.	16
<i>Brachypodium genuense</i>	16
<i>Asperula aristata</i>	16
<i>Artemisia alba</i>	16
<i>Odontarrhena bertolonii</i>	15
<i>Muscari neglectum</i>	15
<i>Minuartia verna</i> aggr.	15
<i>Knautia purpurea</i>	15
<i>Inula montana</i>	15
<i>Genista januensis</i>	15
<i>Erysimum pseudorhaeticum</i>	15
<i>Cerastium tomentosum</i>	15
<i>Anthoxanthum odoratum</i> aggr.	15
<i>Potentilla rigoana</i>	14
<i>Carex humilis</i>	14
<i>Sedum amplexicaule</i>	13
<i>Potentilla hirta</i>	13
<i>Crepis lacera</i>	13
<i>Medicago lupulina</i>	12
<i>Carex caryophyllea</i>	12
<i>Bunium alpinum</i>	12
<i>Trifolium campestre</i>	11
<i>Globularia meridionalis</i>	11

R15 – Continental dry rocky steppic grassland and dwarf scrub on chalk outcrops

Usually open vegetation dominated by dwarf shrubs and perennial mat-forming continental steppe plants on free-draining base-rich soils on rocky chalk outcrops in the Don and (possibly also) Volga basins.



Corresponding alliances in EuroVegChecklist 2016

- > FES-06A Artemisio hololeucae-Hyssopion cretacei Romashchenko et al. 1996
- > FES-06B Euphorbio cretophilae-Thymion cretacei Didukh 1989

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Thymus calcareus</i>	74
<i>Gypsophila altissima</i>	60
<i>Onosma simplicissima</i>	52
<i>Polygala cretacea</i>	51
<i>Asperula tephrocarpa</i>	51
<i>Astragalus albicaulis</i>	50
<i>Cephalaria uralensis</i>	49
<i>Linum ucranicum</i>	47
<i>Salvia nutans</i>	45

<i>Jurinea arachnoidea</i>	44
<i>Euphorbia petrophila</i>	41
<i>Artemisia salsoloides</i>	40
<i>Viola ambigua</i>	39
<i>Polygala sibirica</i>	38
<i>Linum pallasianum</i>	38
<i>Potentilla humifusa</i>	37
<i>Koeleria talievii</i>	36
<i>Hyssopus officinalis</i>	35
<i>Gypsophila oligosperma</i>	33
<i>Psephellus carbonatus</i>	33
<i>Pimpinella tragium</i>	33
<i>Artemisia hololeuca</i>	33
<i>Silene supina</i>	32
<i>Hedysarum grandiflorum</i>	31
<i>Stipa capillata</i>	30
<i>Psephellus sumensis</i>	30
<i>Scrophularia cretacea</i>	30
<i>Galium octonarium</i>	30
<i>Jurinea stoechadifolia</i>	29
<i>Campanula sibirica</i>	29
<i>Erysimum diffusum</i>	28
<i>Genista scythica</i>	28
<i>Bromopsis riparia</i>	28
<i>Astragalus subuliformis</i>	28
<i>Brassica elongata</i> subsp. <i>pinnatifida</i>	28
<i>Matthiola fragrans</i>	27
<i>Hyacinthella pallasiana</i>	27
<i>Astragalus austriacus</i>	26
<i>Reseda lutea</i>	26
<i>Thesium ramosum</i>	25
<i>Euphorbia seguieriana</i>	24
<i>Stipa pennata</i>	23
<i>Rhaponticoides ruthenica</i>	23
<i>Bupleurum falcatum</i>	21
<i>Medicago falcata</i>	21
<i>Onobrychis arenaria</i>	21
<i>Trinia multicaulis</i>	20
<i>Stipa lessingiana</i>	20
<i>Linum hirsutum</i>	20
<i>Nonea pulla</i>	19
<i>Psephellus marschallianus</i>	19
<i>Centaurea orientalis</i>	19
<i>Festuca valesiaca</i> aggr.	19
<i>Scabiosa ochroleuca</i>	19
<i>Festuca cretacea</i>	19
<i>Linum perenne</i>	18
<i>Asperula tinctoria</i>	18
<i>Lomelosia isetensis</i>	17
<i>Crambe tataria</i>	17
<i>Salvia verticillata</i>	17
<i>Hieracium viosum</i>	17
<i>Helichrysum tanaiticum</i>	17
<i>Dianthus pseudarmeria</i>	17
<i>Taraxacum serotinum</i>	17

<i>Diplotaxis cretacea</i>	17
<i>Euphorbia nicaeensis</i>	17
<i>Teucrium polium</i> aggr.	16
<i>Melampyrum arvense</i>	16
<i>Elytrigia lolioides</i>	16
<i>Adonis vernalis</i>	16
<i>Securigera varia</i>	16
<i>Galatella villosa</i>	15
<i>Achillea stepposa</i>	15
<i>Hypericum elegans</i>	15
<i>Caragana frutex</i>	15
<i>Thalictrum minus</i>	15

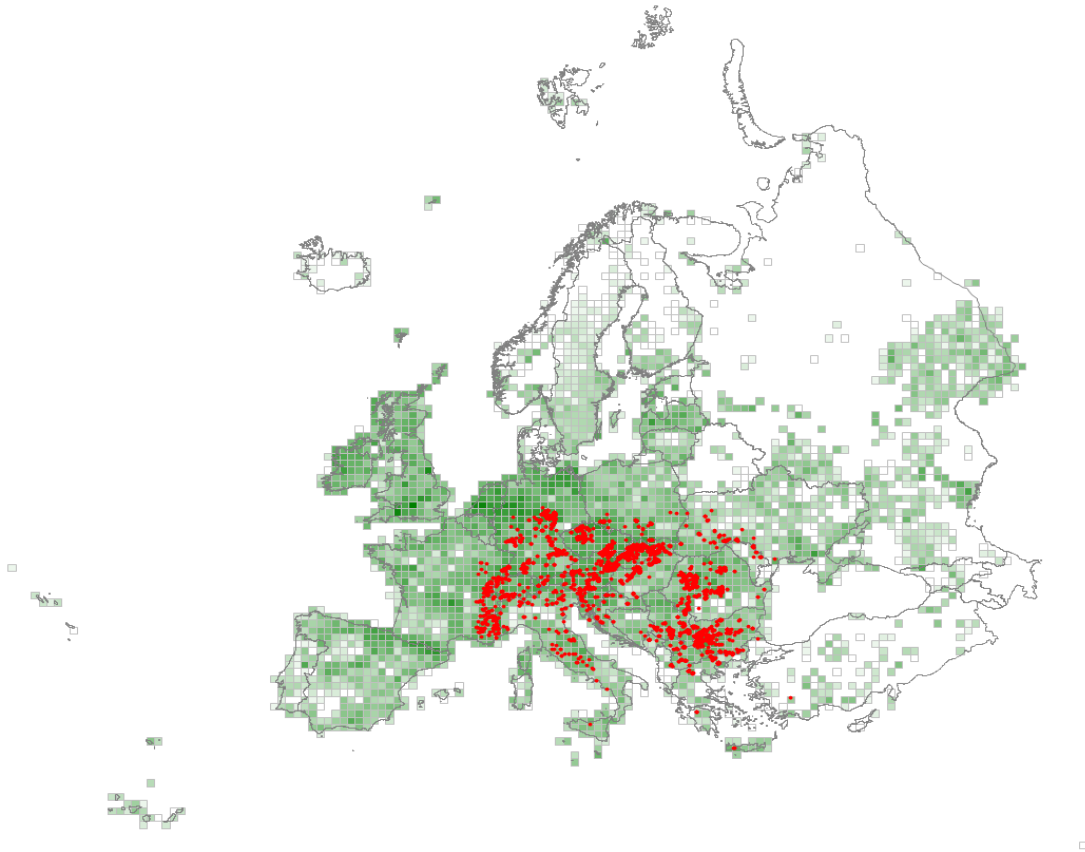
Constant species (percentage frequencies)

<i>Thymus calcareus</i>	58
<i>Pimpinella tragium</i>	52
<i>Euphorbia seguieriana</i>	50
<i>Gypsophila altissima</i>	46
<i>Festuca valesiaca</i> aggr.	44
<i>Stipa capillata</i>	41
<i>Teucrium polium</i> aggr.	40
<i>Salvia nutans</i>	40
<i>Cephalaria uralensis</i>	40
<i>Onosma simplicissima</i>	38
<i>Medicago falcata</i>	35
<i>Erysimum diffusum</i>	32
<i>Campanula sibirica</i>	32
<i>Bromopsis riparia</i>	32
<i>Asperula tephrocarpa</i>	31
<i>Jurinea arachnoidea</i>	29
<i>Artemisia salsoloides</i>	28
<i>Stipa pennata</i>	27
<i>Stachys recta</i>	27
<i>Polygala cretacea</i>	27
<i>Thesium ramosum</i>	26
<i>Bupleurum falcatum</i>	26
<i>Viola ambigua</i>	25
<i>Reseda lutea</i>	25
<i>Carex humilis</i>	25
<i>Astragalus albicaulis</i>	25
<i>Thalictrum minus</i>	24
<i>Linum ucranicum</i>	24
<i>Securigera varia</i>	23
<i>Potentilla humifusa</i>	22
<i>Stipa lessingiana</i>	21
<i>Scabiosa ochroleuca</i>	21
<i>Galium octonarium</i>	21
<i>Asperula cynanchica</i>	20
<i>Odontarrhena tortuosa</i>	19
<i>Koeleria pyramidata</i>	19
<i>Euphorbia petrophila</i>	19
<i>Vincetoxicum hirundinaria</i>	18
<i>Hyssopus officinalis</i>	18
<i>Genista tinctoria</i>	18
<i>Euphorbia nicaeensis</i>	18

<i>Polygala sibirica</i>	17
<i>Poa bulbosa</i>	17
<i>Linum pallasianum</i>	17
<i>Echinops ritro</i>	16
<i>Silene supina</i>	15
<i>Helianthemum nummularium</i>	15
<i>Astragalus austriacus</i>	15
<i>Salvia verticillata</i>	14
<i>Psephellus carbonatus</i>	14
<i>Onobrychis arenaria</i>	14
<i>Hedysarum grandiflorum</i>	14
<i>Galatella villosa</i>	14
<i>Anthericum ramosum</i>	14
<i>Stipa pulcherrima</i>	13
<i>Psephellus sumensis</i>	13
<i>Plantago media</i>	13
<i>Meniocus linifolius</i>	13
<i>Matthiola fragrans</i>	13
<i>Koeleria talievii</i>	13
<i>Jurinea stoechadifolia</i>	13
<i>Galium verum</i>	13
<i>Astragalus subuliformis</i>	13
<i>Veronica spicata</i>	12
<i>Helichrysum arenarium</i>	12
<i>Agrimonia eupatoria</i>	12
<i>Poa compressa</i>	11
<i>Plantago lanceolata</i>	11
<i>Nonea pulla</i>	11
<i>Linum hirsutum</i>	11
<i>Linum austriacum</i>	11
<i>Gypsophila oligosperma</i>	11
<i>Filipendula vulgaris</i>	11
<i>Eryngium campestre</i>	11
<i>Elytrigia intermedia</i>	11
<i>Asperula tinctoria</i>	11
<i>Artemisia hololeuca</i>	11
<i>Artemisia campestris</i>	11
<i>Adonis vernalis</i>	11
<i>Achillea setacea</i>	11

R16 – Perennial rocky grassland of Central and South-Eastern Europe

Open grassland generally dominated by perennial grasses with rich mixtures of associated rosette herbs, mat-formers and geophytes, and especially towards Southern Europe, annuals. It occurs on shallow, impoverished soils over both calcareous and siliceous bedrocks, through the lowlands and submontane zone of Central and Southern Europe, best developed on steeper ground unsuited for agriculture, but extended where forest clearance and grazing, particularly by goats, have been part of traditional farming.



Corresponding alliances in EuroVegChecklist 2016

- > FES-05A *Alyso-Festucion pallentis* Moravec in Holub et al. 1967
- > FES-05B *Asplenio-Festucion pallentis* Zólyomi 1936 corr. 1966
- > FES-05C *Bromo pannonici-Festucion csikhegyensis* Zólyomi 1966 corr. Mucina in Di Pietro et al. 2015
- > FES-05D *Chrysopogono-Festucion dalmaticae* Borhidi 1996
- > FES-05E *Saturejion montanae* Horvat in Horvat et al. 1974
- > FES-05F *Pimpinello-Thymion zygoidei* Dihoru et Donița 1970
- > FES-05G *Potentillo arenariae-Linion czerniaevii* Krasova et Smetana 1999
- > FES-05H *Androsaco tauricae-Caricion humilis* Didukh in Mucina et Didukh 2014
- > FES-05I *Diantho lumnitzeri-Seslerion* (Soó 1971) Chytrý et Mucina in Mucina et Kolbek 1993
- > FES-05J *Seslerion rigidae* Zólyomi 1936
- > FES-10A *Saturejo-Thymion* Micevski 1971

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Festuca pallens</i>	38
<i>Seseli osseum</i>	34
<i>Potentilla incana</i>	33
<i>Jovibarba globifera</i>	30
<i>Euphorbia cyparissias</i>	23
<i>Anthericum ramosum</i>	21
<i>Teucrium montanum</i>	20
<i>Carex humilis</i>	20
<i>Erysimum odoratum</i>	20
<i>Asperula cynanchica</i>	20
<i>Allium senescens</i> aggr.	20
<i>Inula ensifolia</i>	18
<i>Seseli hippomarathrum</i>	17
<i>Helictotrichon decorum</i>	17
<i>Centaurea stoebe</i>	17
<i>Thymus comosus</i>	16
<i>Scabiosa ochroleuca</i>	16
<i>Melica ciliata</i> aggr.	16
<i>Stachys recta</i>	15
<i>Leontodon incanus</i> aggr.	15

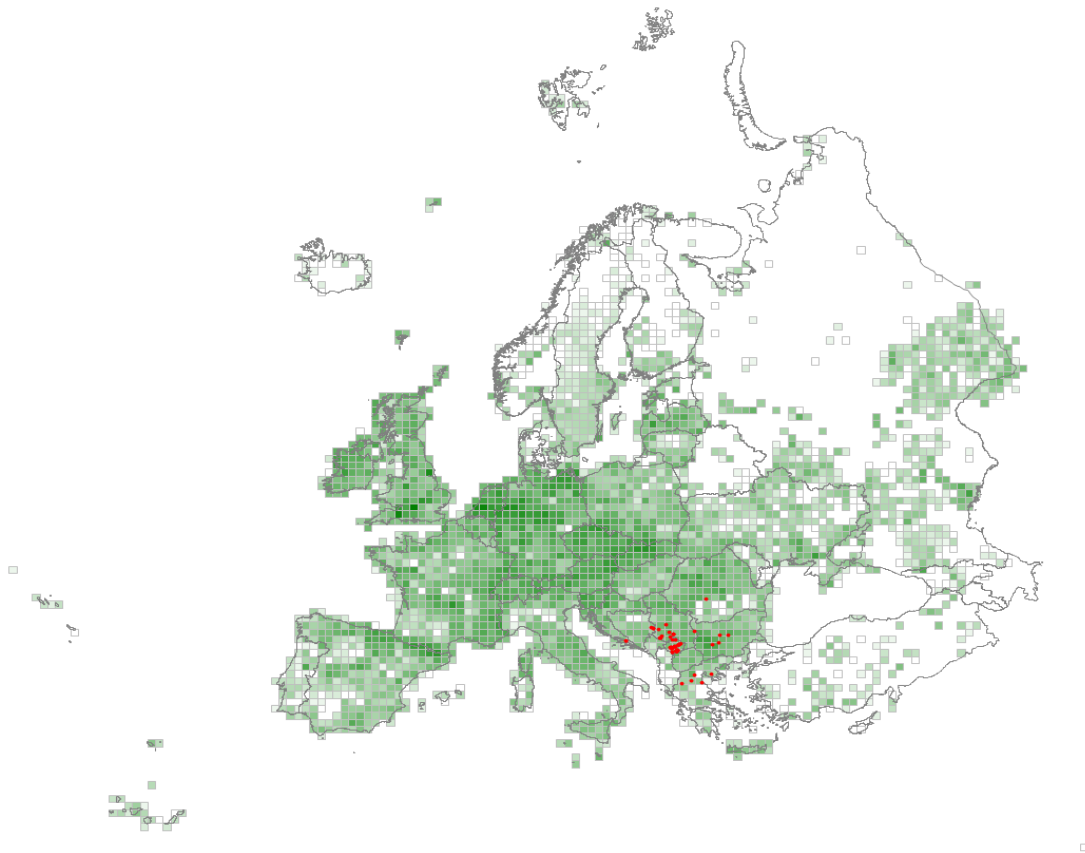
Constant species (percentage frequencies)

<i>Euphorbia cyparissias</i>	58
<i>Carex humilis</i>	47
<i>Teucrium chamaedrys</i>	44
<i>Teucrium montanum</i>	42
<i>Asperula cynanchica</i>	42
<i>Festuca pallens</i>	41
<i>Potentilla incana</i>	36
<i>Sanguisorba minor</i> aggr.	35
<i>Helianthemum nummularium</i>	34
<i>Stachys recta</i>	32
<i>Vincetoxicum hirundinaria</i>	29
<i>Anthericum ramosum</i>	29
<i>Thymus praecox</i>	28
<i>Melica ciliata</i> aggr.	28
<i>Sedum album</i>	27
<i>Centaurea stoebe</i>	25
<i>Anthyllis vulneraria</i>	25
<i>Seseli osseum</i>	24
<i>Sesleria caerulea</i>	23
<i>Jovibarba globifera</i>	22
<i>Clinopodium acinos</i>	19
<i>Allium senescens</i> aggr.	19
<i>Scabiosa ochroleuca</i>	18
<i>Koeleria macrantha</i>	18
<i>Asplenium ruta-muraria</i>	17
<i>Alyssum montanum</i> aggr.	16
<i>Allium flavum</i>	16
<i>Helianthemum canum</i>	15
<i>Galium mollugo</i> aggr.	15
<i>Fumana procumbens</i>	15

<i>Dianthus carthusianorum</i> aggr.	15
<i>Artemisia campestris</i>	15
<i>Pilosella officinarum</i>	14
<i>Inula ensifolia</i>	14
<i>Hypericum perforatum</i>	14
<i>Campanula sibirica</i>	14
<i>Arenaria serpyllifolia</i>	14
<i>Globularia bisnagarica</i>	13
<i>Echium vulgare</i>	13
<i>Poa badensis</i> aggr.	12
<i>Centaurea scabiosa</i>	12
<i>Campanula rotundifolia</i>	12
<i>Bupleurum falcatum</i>	12
<i>Sedum sexangulare</i>	11
<i>Sedum acre</i>	11
<i>Galium glaucum</i>	11
<i>Festuca valesiaca</i> aggr.	11
<i>Festuca stricta</i> subsp. <i>sulcata</i>	11
<i>Dorycnium pentaphyllum</i>	11
<i>Bothriochloa ischaemum</i>	11

R17 – Heavy-metal dry grassland of the Balkans

Grassland confined to dry, nutrient-poor soils rich in heavy metals derived from ultramafic bedrock in the mountains of the Balkans, Euboea and Cyprus with an open cover of grasses and forbs, including many endemics.



Corresponding alliances in EuroVegChecklist 2016

- > FES-11A Polygonion albanicae Ritter-Studnička 1970
- > FES-11B Centaureo-Bromion fibrosi Blečić et al. 1969
- > FES-11C Alysson heldreichii Bergmeier et al. 2009

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Euphorbia glabriflora</i>	76
<i>Odontarrhena markgrafii</i>	68
<i>Centaurea kosaninii</i>	61
<i>Stachys scardica</i>	58
<i>Festuca panciciana</i>	47
<i>Potentilla visianii</i>	46
<i>Halacsysa sendtneri</i>	43
<i>Astragalus onobrychis</i>	40

<i>Silene bupleuroides</i>	39
<i>Saponaria intermedia</i>	38
<i>Plantago holosteum</i>	38
<i>Poa badensis</i> aggr.	35
<i>Bromopsis riparia</i>	35
<i>Alyssum montanum</i> aggr.	35
<i>Iris reichenbachii</i>	34
<i>Polygala doerfleri</i>	32
<i>Linum tauricum</i>	32
<i>Hypericum barbatum</i>	31
<i>Stachys recta</i> aggr.	31
<i>Minuartia verna</i> aggr.	30
<i>Pontechium maculatum</i>	30
<i>Euphorbia barrelieri</i>	30
<i>Thesium ramosum</i>	30
<i>Scabiosa fumarioides</i>	28
<i>Orobanche gracilis</i>	28
<i>Cytisus procumbens</i>	27
<i>Odontarrhena muralis</i>	26
<i>Alyssum repens</i>	26
<i>Plantago argentea</i>	26
<i>Artemisia alba</i>	26
<i>Leontodon crispus</i> aggr.	26
<i>Erysimum diffusum</i>	25
<i>Potentilla heptaphylla</i>	24
<i>Paragymnopteris marantae</i>	23
<i>Centaurea stereophylla</i>	23
<i>Melica ciliata</i> aggr.	23
<i>Galium lucidum</i>	23
<i>Stachys recta</i>	23
<i>Fumana bonapartei</i>	23
<i>Allium flavum</i>	22
<i>Dorycnium pentaphyllum</i>	22
<i>Poa perconcinna</i>	22
<i>Scabiosa taygetea</i>	21
<i>Cytisus decumbens</i>	21
<i>Potentilla astracantha</i>	21
<i>Stipa pennata</i>	21
<i>Centaurea ipecensis</i>	21
<i>Silene paradoxa</i>	20
<i>Potentilla pedata</i>	20
<i>Podospermum laciniatum</i>	20
<i>Verbascum glabratum</i>	20
<i>Teucrium montanum</i>	20
<i>Potentilla tommasiniana</i>	20
<i>Danthonia alpina</i>	19
<i>Senecio squalidus</i> subsp. <i>rupestris</i>	19
<i>Silene armeria</i>	19
<i>Traunsteinera globosa</i>	18
<i>Thymus longicaulis</i>	18
<i>Sedum hispanicum</i>	18
<i>Linum perenne</i>	18
<i>Pilosella cymosa</i>	18
<i>Stipa pulcherrima</i>	18
<i>Euphrasia pectinata</i>	18

<i>Veronica austriaca</i>	18
<i>Sedum ochroleucum</i>	18
<i>Cytisus pseudoprocumbens</i>	18
<i>Convolvulus cantabrica</i>	18
<i>Sanguisorba minor</i> aggr.	17
<i>Genista hassertiana</i>	17
<i>Galatella linosyris</i>	17
<i>Stipa mayeri</i>	17
<i>Vincetoxicum huteri</i>	17
<i>Linaria concolor</i>	17
<i>Aethionema saxatile</i>	16
<i>Onobrychis alba</i>	16
<i>Convolvulus boissieri</i>	16
<i>Centaurea alba</i> aggr.	16
<i>Linum hologynum</i>	15

Constant species (percentage frequencies)

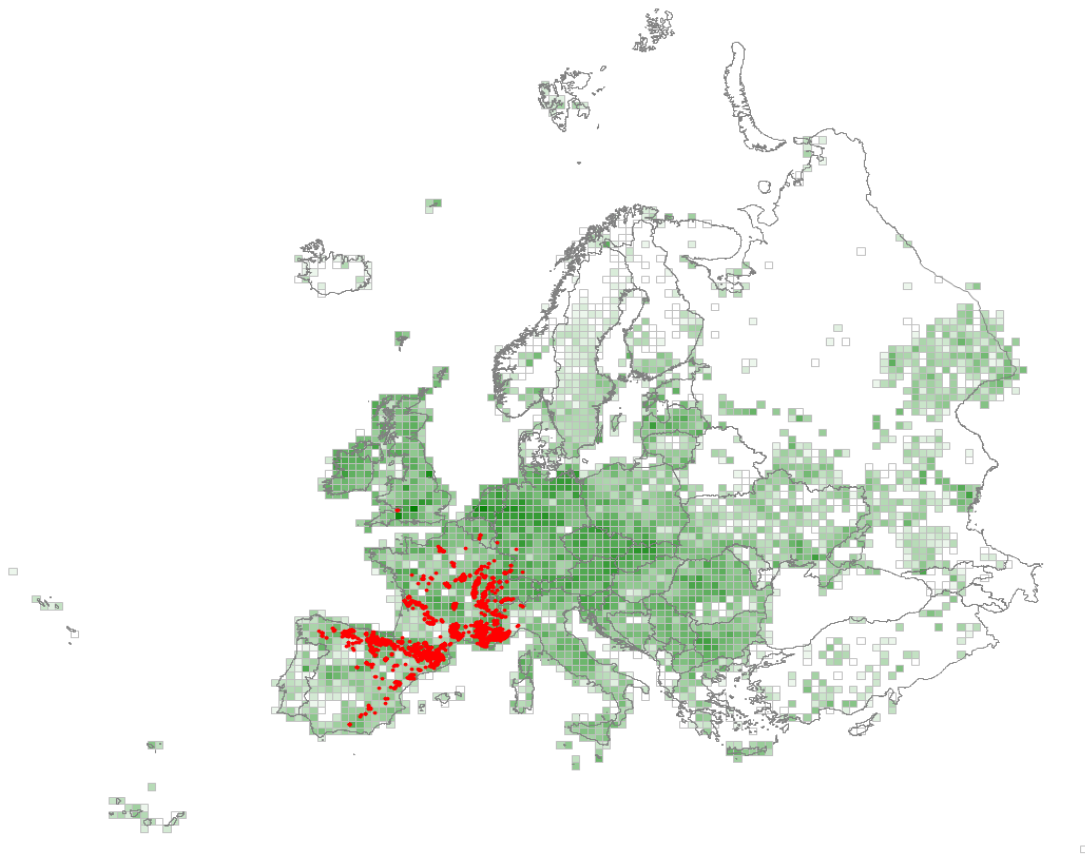
<i>Euphorbia glabriiflora</i>	70
<i>Plantago holosteum</i>	55
<i>Odontarrhena markgrafii</i>	54
<i>Sanguisorba minor</i> aggr.	52
<i>Minuartia verna</i> aggr.	49
<i>Astragalus onobrychis</i>	49
<i>Stachys scardica</i>	46
<i>Stachys recta</i>	46
<i>Dorycnium pentaphyllum</i>	45
<i>Teucrium montanum</i>	41
<i>Melica ciliata</i> aggr.	41
<i>Galium lucidum</i>	41
<i>Bromopsis riparia</i>	39
<i>Leontodon crispus</i> aggr.	38
<i>Centaurea kosaninii</i>	38
<i>Alyssum montanum</i> aggr.	38
<i>Poa badensis</i> aggr.	37
<i>Festuca panciciana</i>	32
<i>Thesium ramosum</i>	31
<i>Sedum album</i>	31
<i>Thymus longicaulis</i>	30
<i>Erysimum diffusum</i>	28
<i>Silene bupleuroides</i>	27
<i>Clinopodium alpinum</i>	25
<i>Artemisia alba</i>	25
<i>Allium flavum</i>	25
<i>Stipa pennata</i>	24
<i>Scabiosa columbaria</i> aggr.	24
<i>Hypericum barbatum</i>	24
<i>Silene vulgaris</i>	23
<i>Paragymnopteris marantae</i>	23
<i>Convolvulus cantabrica</i>	23
<i>Vincetoxicum hirundinaria</i>	21
<i>Rumex acetosella</i>	21
<i>Potentilla visianii</i>	21
<i>Odontarrhena muralis</i>	21
<i>Hippocrepis comosa</i>	21
<i>Halacsya sendtneri</i>	21

<i>Veronica austriaca</i>	20
<i>Potentilla heptaphylla</i>	20
<i>Orobanche gracilis</i>	20
<i>Sedum ochroleucum</i>	18
<i>Saponaria intermedia</i>	18
<i>Filipendula vulgaris</i>	18
<i>Trinia glauca</i>	17
<i>Stipa pulcherrima</i>	17
<i>Plantago argentea</i>	17
<i>Linum tauricum</i>	17
<i>Leontodon hispidus</i>	17
<i>Cerastium arvense</i>	17
<i>Scleranthus perennis</i>	15
<i>Podospermum laciniatum</i>	15
<i>Poa bulbosa</i>	15
<i>Iris reichenbachii</i>	15
<i>Euphorbia cyparissias</i>	15
<i>Asplenium adiantum-nigrum</i> subsp. <i>serpentini</i>	15
<i>Aethionema saxatile</i>	15
<i>Thymus praecox</i>	14
<i>Silene paradoxa</i>	14
<i>Potentilla pedata</i>	14
<i>Pontechium maculatum</i>	14
<i>Pilosella cymosa</i>	14
<i>Lotus corniculatus</i>	14
<i>Linaria genistifolia</i>	14
<i>Hypericum perforatum</i>	14
<i>Galatella linosyris</i>	14
<i>Euphorbia barrelieri</i>	14
<i>Anthyllis vulneraria</i>	14
<i>Sedum hispanicum</i>	13
<i>Potentilla astracantha</i>	13
<i>Petrorhagia saxifraga</i>	13
<i>Euphrasia pectinata</i>	13
<i>Asperula cynanchica</i>	13
<i>Scorzonera austriaca</i>	11
<i>Polygala doerfleri</i>	11
<i>Plantago subulata</i>	11
<i>Plantago lanceolata</i>	11
<i>Phleum montanum</i>	11
<i>Paronychia kapela</i>	11
<i>Eryngium campestre</i>	11
<i>Cytisus procumbens</i>	11
<i>Cephalaria leucantha</i>	11
<i>Centaurea stoebe</i>	11
<i>Centaurea alba</i> aggr.	11
<i>Carex praecox</i>	11
<i>Carex caryophyllea</i>	11
<i>Alyssum repens</i>	11
<i>Agropyron cristatum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Euphorbia glabriflora 45

R18 – Perennial rocky calcareous grassland of subatlantic-submediterranean Europe

Open grassland dominated by perennials and especially rich in mat-formers, typical of rudimentary, shallow, nutrient-poor, base-rich soils over sloping, rubbly limestone terrain. It occurs in the lowland to submontane belts in subatlantic and submediterranean Western Europe, including some areas at higher altitudes in the Western Mediterranean mountains, which were traditionally maintained by extensive grazing.



Corresponding alliances in EuroVegChecklist 2016

- > FES-07B *Artemisio albae-Dichanthion ischaemi* X. Font ex Rivas-Mart. et M.L. López in Rivas-Mart. et al. 2002
- > FES-08A *Xerobromion erecti* Zoller 1954
- > FES-08B *Festuco-Bromion* Barbero et Loisel 1971

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Coronilla minima</i>	33
<i>Koeleria vallesiana</i>	31
<i>Seseli montanum</i>	27
<i>Ononis striata</i>	25
<i>Potentilla tabernaemontani</i>	24

<i>Helianthemum apenninum</i>	24
<i>Fumana procumbens</i>	23
<i>Inula montana</i>	23
<i>Bromopsis erecta</i>	21
<i>Aphyllanthes monspeliensis</i>	21
<i>Globularia bisnagarica</i>	20
<i>Linum suffruticosum</i> aggr.	19
<i>Trinia glauca</i>	18
<i>Helianthemum italicum</i>	18
<i>Carex humilis</i>	18
<i>Anthyllis montana</i>	18
<i>Hippocrepis comosa</i>	18
<i>Teucrium montanum</i>	18
<i>Asperula cynanchica</i>	17
<i>Thymus serpyllum</i>	17
<i>Thesium divaricatum</i>	17
<i>Carex halleriana</i>	17
<i>Onobrychis supina</i>	17
<i>Lavandula angustifolia</i>	17
<i>Thymus vulgaris</i>	16
<i>Teucrium chamaedrys</i>	16
<i>Helianthemum canum</i>	16
<i>Festuca glauca</i>	16
<i>Astragalus monspessulanus</i>	16
<i>Festuca marginata</i> subsp. <i>gallica</i>	15

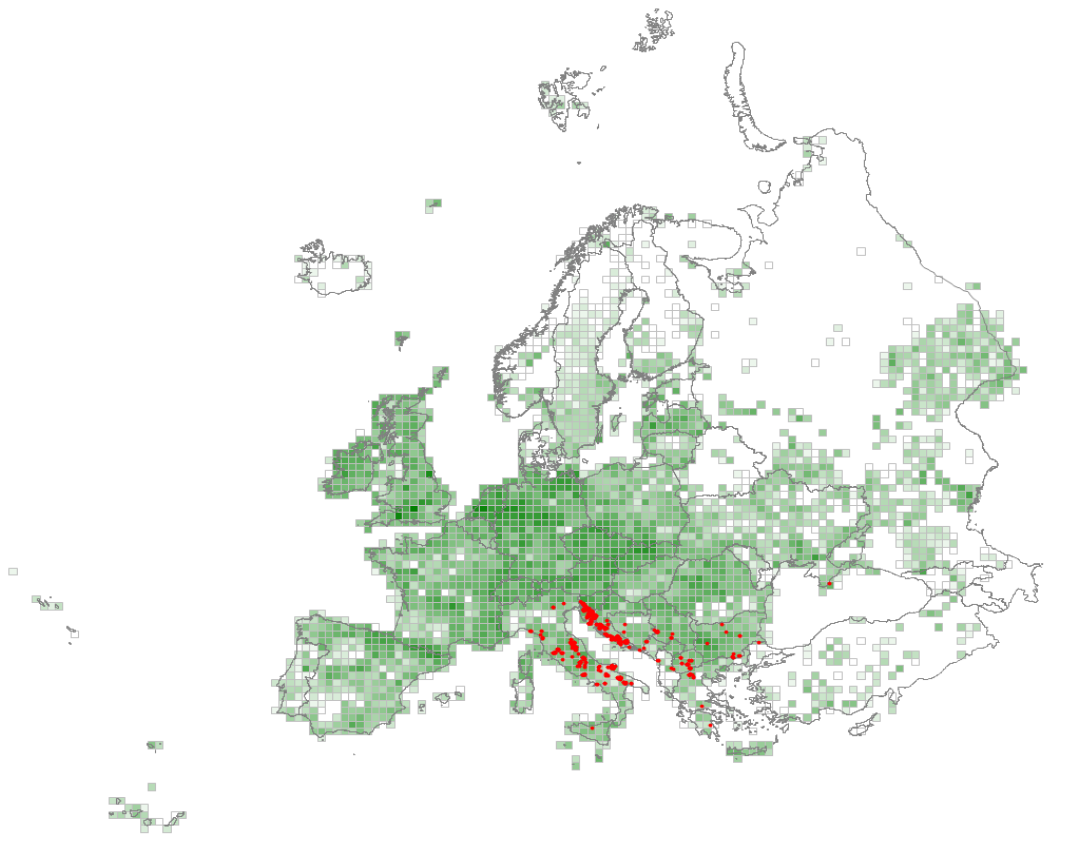
Constant species (percentage frequencies)

<i>Koeleria vallesiana</i>	60
<i>Bromopsis erecta</i>	52
<i>Teucrium chamaedrys</i>	51
<i>Coronilla minima</i>	48
<i>Carex humilis</i>	43
<i>Asperula cynanchica</i>	37
<i>Thymus vulgaris</i>	36
<i>Teucrium montanum</i>	36
<i>Anthyllis vulneraria</i>	34
<i>Potentilla tabernaemontani</i>	33
<i>Eryngium campestre</i>	33
<i>Seseli montanum</i>	32
<i>Fumana procumbens</i>	32
<i>Pilosella officinarum</i>	31
<i>Hippocrepis comosa</i>	31
<i>Aphyllanthes monspeliensis</i>	30
<i>Thymus serpyllum</i>	29
<i>Helianthemum apenninum</i>	29
<i>Sanguisorba minor</i> aggr.	28
<i>Helianthemum canum</i>	27
<i>Carex halleriana</i>	26
<i>Festuca ovina</i>	25
<i>Scabiosa columbaria</i> aggr.	24
<i>Linum suffruticosum</i> aggr.	23
<i>Festuca rubra</i> aggr.	23
<i>Trinia glauca</i>	21
<i>Galium corrudifolium</i>	21
<i>Anthyllis montana</i>	21

<i>Inula montana</i>	20
<i>Lavandula angustifolia</i>	19
<i>Helictochloa pratensis</i>	19
<i>Globularia bisnagarica</i>	19
<i>Teucrium polium</i> aggr.	18
<i>Lotus corniculatus</i>	18
<i>Helianthemum nummularium</i>	18
<i>Helianthemum italicum</i>	18
<i>Potentilla pusilla</i>	16
<i>Ononis striata</i>	16
<i>Helictochloa bromoides</i>	16
<i>Dorycnium pentaphyllum</i>	16
<i>Astragalus monspessulanus</i>	16
<i>Allium sphaerocephalon</i>	16
<i>Thesium divaricatum</i>	15
<i>Sedum sediforme</i>	15
<i>Argyrolobium zanonii</i>	15
<i>Stachys recta</i>	14
<i>Ononis pusilla</i>	14
<i>Helichrysum stoechas</i>	14
<i>Genista scorpius</i>	14
<i>Buxus sempervirens</i>	14
<i>Brachypodium phoenicoides</i>	14
<i>Sesleria caerulea</i>	13
<i>Juniperus communis</i> subsp. <i>communis</i>	13
<i>Euphorbia cyparissias</i>	13
<i>Dianthus sylvestris</i>	13
<i>Linum tenuifolium</i>	12
<i>Globularia vulgaris</i>	12
<i>Echinops ritro</i>	12
<i>Thymus praecox</i>	11
<i>Sedum album</i>	11
<i>Onobrychis supina</i>	11
<i>Lavandula latifolia</i>	11
<i>Galium pumilum</i>	11
<i>Catananche caerulea</i>	11
<i>Carex flacca</i>	11
<i>Brachypodium pinnatum</i>	11

R19 – Dry steppic submediterranean pasture of the Amphi-Adriatic region

Dry steppic pasture typical of sharply-draining, base-rich soils developed over valley sides, dolines and sink-holes around the Adriatic seaboard where the submediterranean climate is characterised by late autumn and spring rains and summer drought. Dominated by often rich mixtures of graminoids, forbs and mat-formers, the habitat is dependent on extensive grazing and now often survives patchily among mosaics of scrub and forest.



Corresponding alliances in EuroVegChecklist 2016

- > FES-09A *Chrysopogono grylli-Koelerion splendidis* Horvatić 1973
- > FES-09B *Saturejion subspicatae* Tomić-Stanković 1970
- > FES-09C *Centaureion dichroanthae* Pignatti 1952
- > FES-09E *Hippocrepido glaucae-Stipion austroitalicae* Forte et Terzi in Forte et al. 2005

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Centaurea rupestris</i> aggr.	44
<i>Satureja montana</i> aggr.	41
<i>Genista sylvestris</i>	39
<i>Eryngium amethystinum</i>	36

<i>Stipa austroitalica</i>	33
<i>Koeleria splendens</i>	33
<i>Sesleria juncifolia</i>	33
<i>Edraianthus tenuifolius</i>	32
<i>Genista sericea</i>	32
<i>Scorzonera villosa</i>	30
<i>Medicago prostrata</i>	28
<i>Fumana procumbens</i>	27
<i>Galium corrudifolium</i>	25
<i>Teucrium montanum</i>	25
<i>Festuca illyrica</i>	24
<i>Rhamnus intermedia</i>	24
<i>Bromopsis erecta</i>	24
<i>Centaurea cristata</i>	23
<i>Hippocrepis glauca</i>	23
<i>Inula verbascifolia</i>	23
<i>Crepis chondrilloides</i>	22
<i>Leontodon apulus</i>	22
<i>Dianthus sylvestris</i>	21
<i>Bupleurum baldense</i> aggr.	21
<i>Euphorbia fragifera</i>	20
<i>Polygala nicaeensis</i> aggr.	20
<i>Thesium divaricatum</i>	20
<i>Salvia officinalis</i>	20
<i>Leucanthemum platylepis</i>	20
<i>Ruta graveolens</i>	19
<i>Koeleria lobata</i>	19
<i>Knautia illyrica</i>	19
<i>Thesium humifusum</i>	18
<i>Globularia cordifolia</i>	18
<i>Stipa eriocalis</i>	18
<i>Plantago holosteum</i>	18
<i>Onosma echioides</i>	18
<i>Centaurea spinosociliata</i>	18
<i>Asperula aristata</i>	18
<i>Astragalus muelleri</i>	17
<i>Muscari botryoides</i>	16
<i>Euphorbia spinosa</i>	16
<i>Carex humilis</i>	16
<i>Linum tenuifolium</i>	16
<i>Chrysopogon gryllus</i>	16
<i>Anthyllis montana</i>	16
<i>Marrubium incanum</i>	16
<i>Santolina etrusca</i>	16
<i>Centaurea tommasinii</i>	16
<i>Centaurea subtilis</i>	16

Constant species (percentage frequencies)

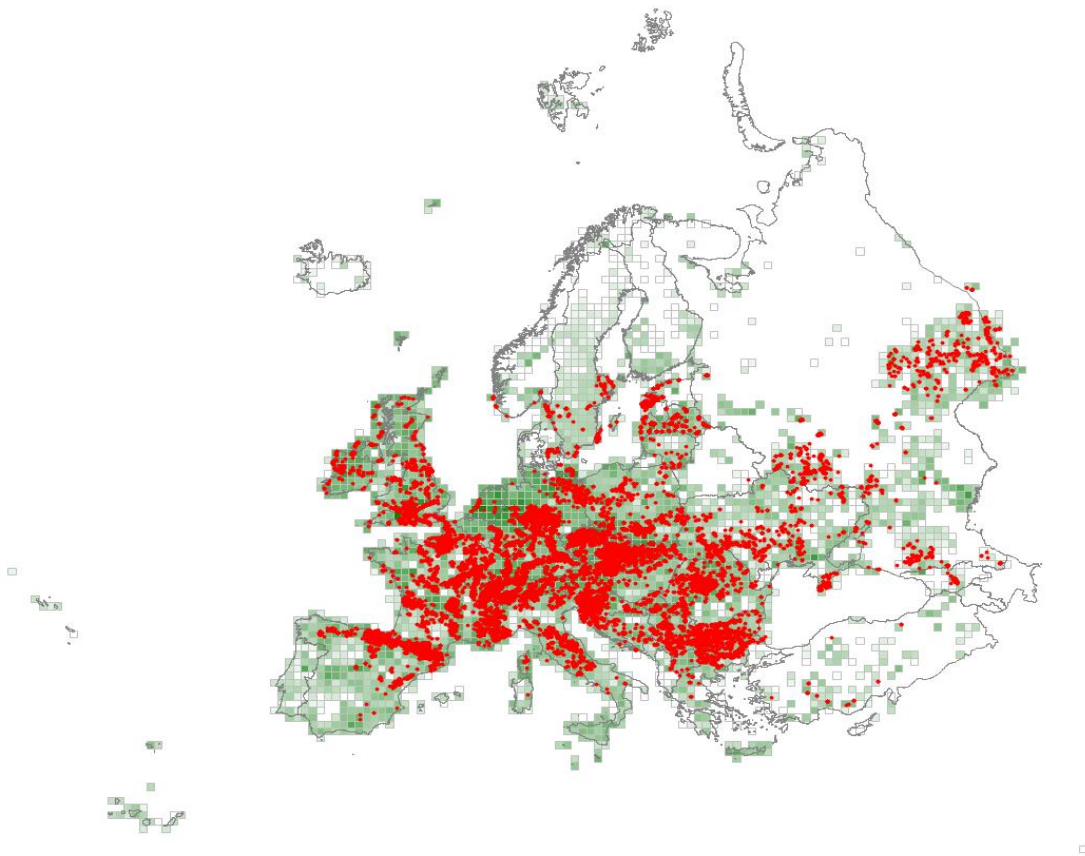
<i>Bromopsis erecta</i>	58
<i>Satureja montana</i> aggr.	54
<i>Teucrium montanum</i>	50
<i>Eryngium amethystinum</i>	42
<i>Sanguisorba minor</i> aggr.	41
<i>Anthyllis vulneraria</i>	40
<i>Koeleria splendens</i>	38

<i>Carex humilis</i>	38
<i>Fumana procumbens</i>	37
<i>Galium corrudifolium</i>	36
<i>Sesleria juncifolia</i>	35
<i>Dianthus sylvestris</i>	35
<i>Teucrium chamaedrys</i>	29
<i>Teucrium polium</i> aggr.	28
<i>Plantago holosteum</i>	27
<i>Centaurea rupestris</i> aggr.	27
<i>Asperula aristata</i>	27
<i>Globularia cordifolia</i>	23
<i>Thymus longicaulis</i>	22
<i>Genista sylvestris</i>	22
<i>Lotus corniculatus</i>	21
<i>Leontodon crispus</i> aggr.	21
<i>Helichrysum italicum</i>	21
<i>Festuca valesiaca</i> aggr.	21
<i>Chrysopogon gryllus</i>	20
<i>Koeleria lobata</i>	19
<i>Dorycnium pentaphyllum</i>	19
<i>Anthyllis montana</i>	19
<i>Stachys recta</i>	18
<i>Scorzonera villosa</i>	18
<i>Linum tenuifolium</i>	18
<i>Galium lucidum</i>	18
<i>Euphorbia spinosa</i>	18
<i>Bupleurum baldense</i> aggr.	18
<i>Thesium divaricatum</i>	17
<i>Polygala nicaeensis</i> aggr.	17
<i>Carlina corymbosa</i> aggr.	17
<i>Sedum sexangulare</i>	16
<i>Reichardia picroides</i>	16
<i>Medicago prostrata</i>	16
<i>Helianthemum nummularium</i>	16
<i>Genista sericea</i>	16
<i>Edraianthus tenuifolius</i>	16
<i>Hippocrepis comosa</i>	15
<i>Convolvulus cantabrica</i>	15
<i>Pilosella officinarum</i>	14
<i>Thesium humifusum</i>	13
<i>Stipa eriocalis</i>	13
<i>Stipa austroitalica</i>	13
<i>Salvia officinalis</i>	13
<i>Petrorhagia saxifraga</i>	13
<i>Juniperus oxycedrus</i> aggr.	13
<i>Fraxinus ornus</i>	13
<i>Festuca circummediterranea</i>	13
<i>Echinops ritro</i>	13
<i>Dactylis glomerata</i>	13
<i>Carex caryophyllea</i>	13
<i>Aethionema saxatile</i>	13
<i>Melica ciliata</i> aggr.	12
<i>Linum strictum</i> aggr.	12
<i>Cephalaria leucantha</i>	12
<i>Artemisia alba</i>	12

<i>Scorzonera austriaca</i>	11
<i>Salvia pratensis</i>	11
<i>Onosma echioides</i>	11
<i>Linum austriacum</i>	11
<i>Hypericum perforatum</i>	11
<i>Euphorbia myrsinites</i>	11
<i>Eryngium campestre</i>	11
<i>Convolvulus althaeoides</i>	11
<i>Anthericum ramosum</i>	11

R1A – Semi-dry perennial calcareous grassland (meadow steppe)

Semi-natural grassland on deeper and not so drought-prone, nutrient-poor, base-rich soils over limestone throughout the lowlands and submontane belts of submediterranean to hemiboreal Europe. Generally closed and dominated by mixtures of graminoids and forbs, often extremely species-rich, with many rare plants and sometimes striking contingents of orchids and varying much across the large range with different sets of continental or submediterranean companions. Dependent on extensive grazing, usually with sheep, or on an annual mowing, and often developed over centuries of traditional pastoralism, contributing to some striking cultural landscapes.



Corresponding alliances in EuroVegChecklist 2016

- > FES-01A *Bromion erecti* Koch 1926
- > FES-01B *Cirsio-Brachypodion pinnati* Hadač et Klika in Klika et Hadač 1944
- > FES-01C *Filipendulo vulgaris-Helictotrichion pratensis* Dengler et Löbel in Dengler et al. 2003
- > FES-01D *Gentianello amarellae-Helictotrichion pratensis* Royer ex Dengler in Mucina et al. 2009
- > FES-01E *Potentillo-Brachypodion pinnati* Br.-Bl. 1967
- > FES-01F *Polygalo mediterraneae-Bromion erecti* (Biondi et al. 2005) Di Pietro in Di Pietro et al. 2015
- > FES-01G *Chrysopogono-Danthonion calycinae* Kojić 1959
- <> FES-02B *Koelerio-Phleion phleoidis* Korneck 1974

- > FES-07A *Brachypodium phoenicoidis* Br.-Bl. ex Molinier 1934
- > FES-07C *Diplachnion serotinae* Br.-Bl. 1961
- > FES-09D *Scorzonerion villosae* Horvatić ex Kovačević 1959

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Plantago media</i>	25
<i>Cirsium acaulon</i>	24
<i>Linum catharticum</i>	22
<i>Pimpinella saxifraga</i>	22
<i>Brachypodium pinnatum</i>	21
<i>Briza media</i>	20
<i>Centaurea scabiosa</i>	20
<i>Salvia pratensis</i>	20
<i>Trifolium montanum</i>	19
<i>Koeleria pyramidata</i>	18
<i>Polygala comosa</i>	17
<i>Sanguisorba minor</i> aggr.	17
<i>Scabiosa columbaria</i> aggr.	16
<i>Helictochloa pratensis</i>	16
<i>Knautia arvensis</i>	16
<i>Galium verum</i>	16
<i>Thymus pulegioides</i>	15
<i>Viola hirta</i>	15
<i>Leontodon hispidus</i>	15
<i>Fragaria viridis</i>	15
<i>Euphorbia cyparissias</i>	15

Constant species (percentage frequencies)

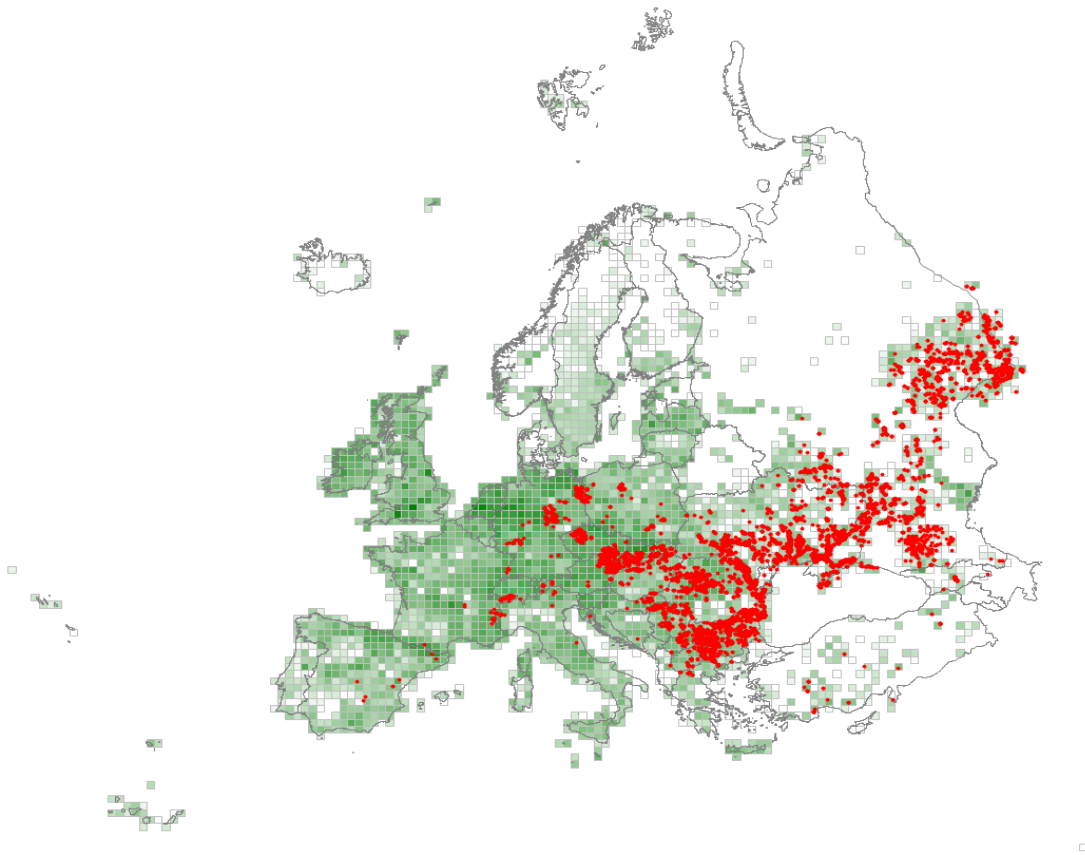
<i>Lotus corniculatus</i>	53
<i>Sanguisorba minor</i> aggr.	50
<i>Briza media</i>	45
<i>Brachypodium pinnatum</i>	45
<i>Galium verum</i>	44
<i>Plantago lanceolata</i>	41
<i>Pimpinella saxifraga</i>	41
<i>Achillea millefolium</i> aggr.	41
<i>Plantago media</i>	40
<i>Euphorbia cyparissias</i>	39
<i>Linum catharticum</i>	37
<i>Bromopsis erecta</i>	36
<i>Pilosella officinarum</i>	33
<i>Carex flacca</i>	32
<i>Poa pratensis</i> aggr.	31
<i>Leontodon hispidus</i>	31
<i>Dactylis glomerata</i>	31
<i>Thymus pulegioides</i>	30
<i>Helianthemum nummularium</i>	30
<i>Festuca ovina</i>	30
<i>Centaurea scabiosa</i>	28
<i>Carex caryophylla</i>	28
<i>Scabiosa columbaria</i> aggr.	27
<i>Asperula cynanchica</i>	27

<i>Koeleria pyramidata</i>	26
<i>Hypericum perforatum</i>	25
<i>Cirsium acaulon</i>	25
<i>Anthyllis vulneraria</i>	25
<i>Teucrium chamaedrys</i>	24
<i>Salvia pratensis</i>	24
<i>Knautia arvensis</i>	24
<i>Medicago lupulina</i>	23
<i>Leucanthemum vulgare</i> aggr.	22
<i>Helictochloa pratensis</i>	22
<i>Centaurea jacea</i>	22
<i>Campanula rotundifolia</i>	22
<i>Viola hirta</i>	21
<i>Trifolium pratense</i>	21
<i>Trifolium montanum</i>	21
<i>Hippocrepis comosa</i>	21
<i>Ranunculus bulbosus</i>	20
<i>Ononis spinosa</i>	20
<i>Festuca stricta</i> subsp. <i>sulcata</i>	20
<i>Galium mollugo</i> aggr.	19
<i>Filipendula vulgaris</i>	19
<i>Carlina vulgaris</i> aggr.	19
<i>Agrimonia eupatoria</i>	19
<i>Potentilla tabernaemontani</i>	18
<i>Medicago falcata</i>	18
<i>Fragaria viridis</i>	18
<i>Festuca rubra</i> aggr.	18
<i>Securigera varia</i>	16
<i>Primula veris</i>	16
<i>Daucus carota</i>	16
<i>Thymus praecox</i>	15
<i>Prunella grandiflora</i>	15
<i>Koeleria macrantha</i>	15
<i>Eryngium campestre</i>	15
<i>Arrhenatherum elatius</i>	15
<i>Dianthus carthusianorum</i> aggr.	14
<i>Origanum vulgare</i>	13
<i>Carex humilis</i>	13
<i>Anthoxanthum odoratum</i> aggr.	13
<i>Agrostis capillaris</i>	13
<i>Stachys recta</i>	12
<i>Sesleria caerulea</i>	12
<i>Stachys officinalis</i>	11
<i>Prunella vulgaris</i>	11
<i>Polygala comosa</i>	11
<i>Phleum phleoides</i>	11
<i>Galium pumilum</i>	11
<i>Carlina acaulis</i>	11
<i>Avenula pubescens</i>	11

R1B – Continental dry grassland (true steppe)

Steppe and steppe-like grassland on mostly base-rich soils over limestones, of varying depth and stoniness, occurring through the lowland to submontane belts of continental Europe. Dominated by plants adapted to long periods of summer drought, mostly tall tussock grasses and perennial forbs, it shows wide variation in species composition and particular topographic location across the substantial range. In more extreme situations, the grasslands are natural, but they often sustain extensive grazing.

Remark: This habitat also includes many dry grasslands that are not “true steppe”. Therefore the name should be changed, e.g. Continental steppic grassland (including the true steppe). For the steppe zone, this habitat is probably too broad. It includes specific types on rock outcrops (petrophytic steppe) and on solonetz soil (solonetz steppe), each of them with a distinct group of specialist species. These types need to be considered as a potential addition to the EUNIS classification system in the future.



Corresponding alliances in EuroVegChecklist 2016

- <> ART-02A *Bassio-Artemision austriacae* Solomeshch in A. Ishbirdin et al. 1988
- <> ART-03C *Artemisio marschallianae-Elytrigion intermedii* Korotchenko et Didukh 1997
- > FES-02A *Festucion valesiacae* Klika 1931 nom. conserv. propos.
- <> FES-02B *Koelerio-Phleion phleoidis* Korneck 1974
- > FES-02C *Stipion lessingianae* Soó 1947
- > FES-02D *Centaureo carbonatae-Koelerion talievii* Romashchenko et al. 1996
- > FES-02E *Adonido vernalis-Stipion tirsae* Didukh in Didukh et Mucina 2014

- > FES-02F Veronico multifidae-Stipion ponticae Didukh in Didukh et Mucina 2014
- > FES-02G Artemisio tauricae-Festucion Korzhenevsky et Klyukin 1991
- > FES-02H Agropyron pectinati Golub et Uzhamskaya 1991
- > FES-02I Artemisio-Kochion Soó 1964
- > FES-02J Stipo-Poion xerophilae Br.-Bl. et Richard 1950
- > FES-03A Helictotricho desertorum-Stipion rubentis Toman 1969
- > FES-03B Scorzonero austriacae-Koelerion sclerophyllae Solomeshch et al. 1994
- > FES-03C Lathyro pallescentis-Helictotrichion schelliani Solomeshch et al. 1994
- > FES-03D Aconopogonion alpini Yamalov et al. 2009 nom. inval.
- > FES-03E Centaureion sumensis Golub et al. 1995

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Festuca valesiaca</i> aggr.	32
<i>Stipa capillata</i>	32
<i>Medicago falcata</i>	24
<i>Salvia nemorosa</i>	23
<i>Galatella villosa</i>	23
<i>Verbascum phoeniceum</i>	21
<i>Stipa ucrainica</i>	20
<i>Falcaria vulgaris</i>	20
<i>Artemisia austriaca</i>	20
<i>Bothriochloa ischaemum</i>	19
<i>Phlomis herba-venti</i>	19
<i>Galium ruthenicum</i>	18
<i>Tanacetum millefolium</i>	18
<i>Stipa lessingiana</i>	18
<i>Eryngium campestre</i>	17
<i>Taraxacum serotinum</i>	17
<i>Sisymbrium polymorphum</i>	17
<i>Goniolimon tataricum</i>	17
<i>Salvia nutans</i>	16
<i>Iris pumila</i>	16
<i>Potentilla incana</i>	15

Constant species (percentage frequencies)

<i>Festuca valesiaca</i> aggr.	73
<i>Eryngium campestre</i>	46
<i>Stipa capillata</i>	44
<i>Medicago falcata</i>	41
<i>Artemisia austriaca</i>	31
<i>Teucrium chamaedrys</i>	26
<i>Bothriochloa ischaemum</i>	26
<i>Poa pratensis</i> aggr.	25
<i>Poa bulbosa</i>	24
<i>Galium verum</i>	24
<i>Falcaria vulgaris</i>	24
<i>Euphorbia cyparissias</i>	23
<i>Euphorbia seguieriana</i>	22
<i>Thymus pulegioides</i>	21
<i>Plantago lanceolata</i>	21
<i>Galatella villosa</i>	21
<i>Centaurea stoebe</i>	21

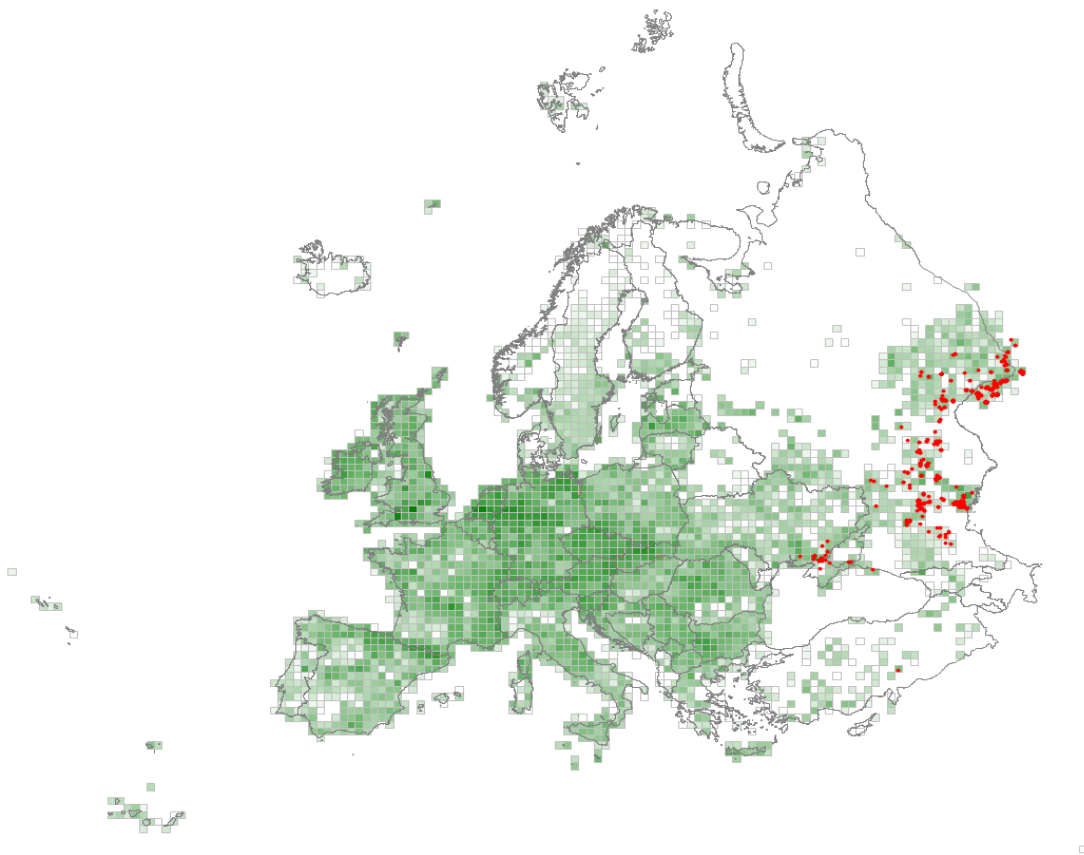
<i>Stachys recta</i>	20
<i>Koeleria macrantha</i>	20
<i>Salvia nemorosa</i>	19
<i>Potentilla argentea</i>	19
<i>Koeleria pyramidata</i>	19
<i>Asperula cynanchica</i>	19
<i>Artemisia campestris</i>	19
<i>Achillea millefolium</i> aggr.	19
<i>Stipa lessingiana</i>	18
<i>Securigera varia</i>	18
<i>Convolvulus arvensis</i>	18
<i>Potentilla incana</i>	17
<i>Festuca stricta</i> subsp. <i>sulcata</i>	17
<i>Teucrium polium</i> aggr.	16
<i>Plantago media</i>	16
<i>Elytrigia repens</i> aggr.	16
<i>Agropyron cristatum</i>	16
<i>Verbascum phoeniceum</i>	15
<i>Sanguisorba minor</i> aggr.	15
<i>Potentilla cinerea</i>	15
<i>Veronica spicata</i>	14
<i>Salvia nutans</i>	14
<i>Phlomis herba-venti</i>	14
<i>Hypericum perforatum</i>	14
<i>Elytrigia intermedia</i>	14
<i>Scabiosa ochroleuca</i>	13
<i>Euphorbia nicaeensis</i>	13
<i>Astragalus onobrychis</i>	13
<i>Achillea nobilis</i>	13
<i>Trifolium arvense</i>	12
<i>Thymus odoratissimus</i> aggr.	12
<i>Phleum phleoides</i>	12
<i>Galium ruthenicum</i>	12
<i>Fragaria viridis</i>	12
<i>Filipendula vulgaris</i>	12
<i>Carex humilis</i>	12
<i>Campanula sibirica</i>	12
<i>Bromopsis riparia</i>	12
<i>Thalictrum minus</i>	11
<i>Silene otites</i> aggr.	11
<i>Potentilla recta</i>	11
<i>Linum austriacum</i>	11
<i>Bromus squarrosus</i>	11
<i>Achillea setacea</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Festuca valesiaca</i> aggr.	34
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R1C – Desert steppe

Continental, temperate very dry zonal steppe, occurring in a transition belt between the true steppe region and the semi-desert region of southern Ukraine, the south-east of European Russia and ranging further into Kazakhstan. Dry steppe is dominated by a combination of xerophytic tall and low grasses, e.g. *Agropyron* and *Stipa*, and xerophytic semi-shrubs, e.g. *Artemisia* and *Tanacetum*. Vegetation cover is relatively low, with most biomass belowground. Typically found on southern black soil (chernozems) and light chestnut soils (kastanozems).



Corresponding alliances in EuroVegChecklist 2016

- > FES-04A *Tanaceto achilleifolii-Stipion lessingiana* Royer ex Lysenko et Mucina in Mucina et al. 2016
- > FES-04B *Stipion korshinskyi* Toman 1969
- > FES-04C *Caricion stenophyllae* Golub et Saveleva 1991

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Tanacetum achilleifolium</i>	58
<i>Agropyron desertorum</i>	54
<i>Bassia prostrata</i>	52

<i>Artemisia lerchiana</i>	50
<i>Galatella tatarica</i>	49
<i>Stipa lessingiana</i>	46
<i>Ferula caspica</i>	44
<i>Stipa sareptana</i>	42
<i>Tulipa biebersteiniana</i>	42
<i>Palimbia defoliata</i>	35
<i>Leymus ramosus</i>	33
<i>Galatella villosa</i>	32
<i>Astragalus macropus</i>	32
<i>Artemisia pauciflora</i>	31
<i>Tulipa gesneriana</i>	31
<i>Klasea cardunculus</i>	30
<i>Jurinea multiflora</i>	29
<i>Astragalus rupifragus</i>	29
<i>Psathyrostachys juncea</i>	28
<i>Anabasis cretacea</i>	28
<i>Astragalus tenuifolius</i>	28
<i>Galatella divaricata</i>	28
<i>Astragalus testiculatus</i>	27
<i>Meniocus linifolius</i>	27
<i>Androsace maxima</i>	26
<i>Ferula tatarica</i>	26
<i>Allium flavescens</i>	25
<i>Allium tulipifolium</i>	25
<i>Arenaria procera</i>	25
<i>Artemisia austriaca</i>	25
<i>Atraphaxis frutescens</i>	24
<i>Alyssum turkestanicum</i>	24
<i>Seseli glabratum</i>	24
<i>Ephedra distachya</i>	24
<i>Klasea erucifolia</i>	23
<i>Ornithogalum fischerianum</i>	23
<i>Artemisia lessingiana</i>	22
<i>Scorzonera hispanica</i>	22
<i>Trinia hispida</i>	21
<i>Archanthemis trotzkiana</i>	20
<i>Lappula patula</i>	20
<i>Lepidium coronopifolium</i>	20
<i>Krascheninnikovia ceratoides</i>	20
<i>Poa bulbosa</i>	20
<i>Leymus akmolinensis</i>	20
<i>Artemisia salsoloides</i>	20
<i>Prangos odontalgica</i>	20
<i>Iris glaucescens</i>	20
<i>Lomelosia isetensis</i>	19
<i>Sterigmostemum caspicum</i>	19
<i>Carex stenophylla</i>	19
<i>Crambe aspera</i>	18
<i>Palimbia turgaica</i>	18
<i>Erysimum leucanthemum</i>	18
<i>Nanophyton erinaceum</i>	17
<i>Koeleria pyramidata</i>	17
<i>Allium lineare</i>	17
<i>Artemisia nitrosa</i>	17

<i>Festuca valesiaca</i> aggr.	17
<i>Lappula microcarpa</i>	17
<i>Psephellus turgaicus</i>	17
<i>Allium saxatile</i>	17
<i>Zygophyllum pinnatum</i>	16
<i>Jurinea kirghisorum</i>	16
<i>Atraphaxis decipiens</i>	16
<i>Tulipa biflora</i>	16
<i>Eriosynaphe longifolia</i>	16
<i>Astragalus temirensis</i>	16
<i>Astragalus reduncus</i>	15
<i>Sisymbrium polymorphum</i>	15
<i>Nepeta ucranica</i>	15
<i>Rhaponticoides kasakorum</i>	15
<i>Hedysarum tscherkassovae</i>	15

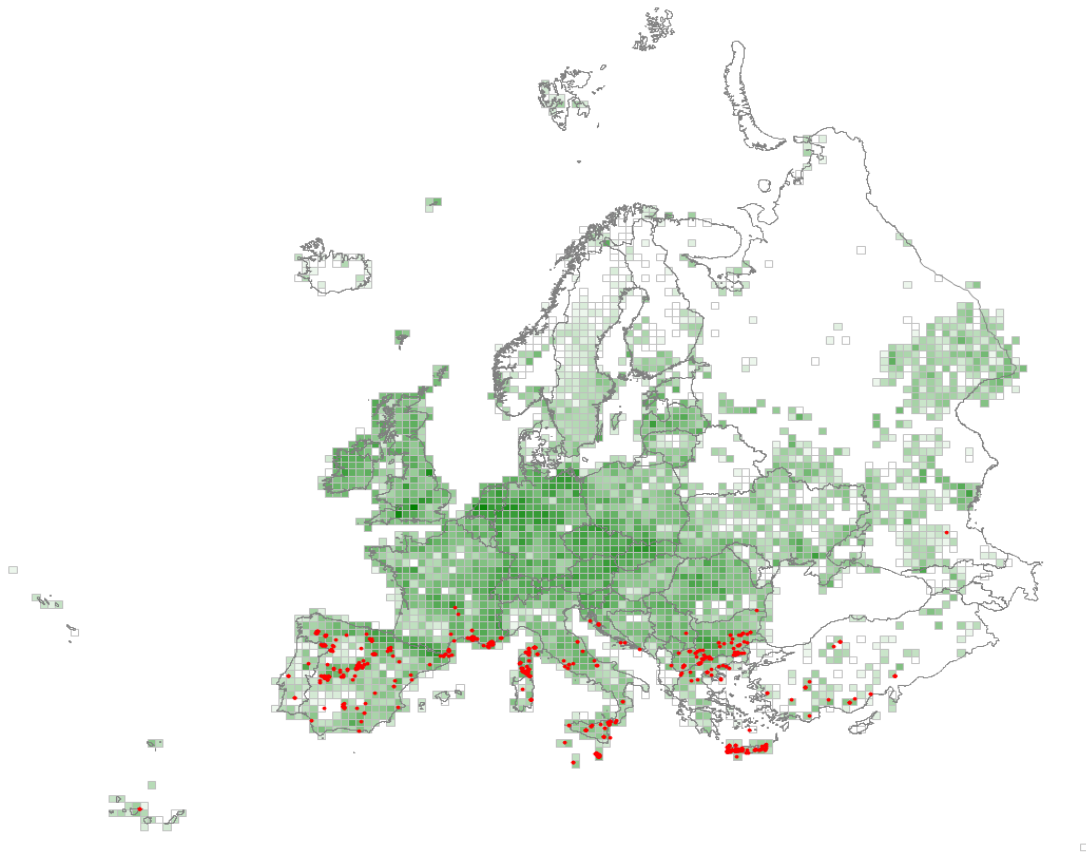
Constant species (percentage frequencies)

<i>Poa bulbosa</i>	66
<i>Artemisia lerchiana</i>	66
<i>Bassia prostrata</i>	58
<i>Tanacetum achilleifolium</i>	45
<i>Stipa lessingiana</i>	45
<i>Agropyron desertorum</i>	40
<i>Festuca valesiaca</i> aggr.	39
<i>Artemisia austriaca</i>	39
<i>Alyssum turkestanicum</i>	39
<i>Galatella villosa</i>	30
<i>Tulipa biebersteiniana</i>	27
<i>Galatella tatarica</i>	27
<i>Ferula caspica</i>	27
<i>Meniocus linifolius</i>	26
<i>Koeleria pyramidata</i>	25
<i>Stipa sareptana</i>	24
<i>Ephedra distachya</i>	22
<i>Bromus squarrosus</i>	22
<i>Androsace maxima</i>	22
<i>Stipa capillata</i>	21
<i>Festuca stricta</i> subsp. <i>sulcata</i>	20
<i>Leymus ramosus</i>	19
<i>Echinops ritro</i>	17
<i>Astragalus testiculatus</i>	16
<i>Arenaria procera</i>	15
<i>Odontarrhena tortuosa</i>	14
<i>Carex stenophylla</i>	14
<i>Camphorosma monspeliaca</i>	14
<i>Astragalus macropus</i>	14
<i>Artemisia salsoloides</i>	14
<i>Tulipa gesneriana</i>	13
<i>Scorzonera hispanica</i>	13
<i>Palimbia defoliata</i>	13
<i>Jurinea multiflora</i>	13
<i>Ceratocarpus arenarius</i>	13
<i>Astragalus tenuifolius</i>	13
<i>Veronica verna</i>	12
<i>Psathyrostachys juncea</i>	12

<i>Euphorbia seguieriana</i>	12
<i>Eremopyrum orientale</i>	12
<i>Descurainia sophia</i>	12
<i>Ceratocephala falcata</i>	12
<i>Artemisia pauciflora</i>	12
<i>Agropyron cristatum</i>	12
<i>Klasea erucifolia</i>	11
<i>Ferula tatarica</i>	11
<i>Astragalus rupifragus</i>	11
<i>Allium flavescens</i>	11

R1D – Mediterranean closely grazed dry grassland

Heavily-grazed pasture of the Mediterranean Basin, mostly on silt and clay soils in the lowlands, dominated by rosette plants, various *Fabaceae* species and small grasses tolerant of intensive herbivory and trampling. The soils are dry in summer which helps exclude nitrophilous plants that might be encouraged by manuring but, refreshed by autumn rains, the herbage remains green and productive through the winter, providing valuable forage. Companion plants vary widely across the large range.



Corresponding alliances in EuroVegChecklist 2016

- > BUL-01A *Trifolio subterranei-Periballion minutae* Rivas Goday 1964
- > BUL-01B *Plantaginion serrariae* Galán de Mera et al. 2000
- > BUL-01C *Poo bulbosae-Astragalion sesamei* Rivas Goday et Ladero 1970
- > BUL-01D *Ornithogalo corsici-Trifolion subterranei* (Farris et al. 2013) Farris et Mucina in Mucina et al. 2016
- > BUL-01E *Plantaginion cupanii* S. Brullo et Grillo 1978
- > BUL-01F *Romuleion* Oberd. 1954

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Trifolium subterraneum</i>	40
<i>Trifolium suffocatum</i>	35
<i>Parentucellia latifolia</i>	29
<i>Bellis annua</i>	24
<i>Trifolium nigrescens</i>	23
<i>Ranunculus paludosus</i>	21
<i>Erodium cicutarium</i>	21
<i>Poa bulbosa</i>	20
<i>Trifolium tomentosum</i>	19
<i>Sagina apetala</i>	18
<i>Plantago coronopus</i> aggr.	17
<i>Trifolium micranthum</i>	17
<i>Trifolium scabrum</i>	17
<i>Trifolium glomeratum</i>	16
<i>Trifolium cherleri</i>	15
<i>Plantago lagopus</i>	15
<i>Crepis pusilla</i>	15

Constant species (percentage frequencies)

<i>Poa bulbosa</i>	67
<i>Plantago coronopus</i> aggr.	39
<i>Trifolium subterraneum</i>	37
<i>Erodium cicutarium</i>	37
<i>Trifolium scabrum</i>	26
<i>Trifolium campestre</i>	25
<i>Parentucellia latifolia</i>	25
<i>Plantago lanceolata</i>	24
<i>Trifolium suffocatum</i>	21
<i>Sherardia arvensis</i>	21
<i>Eryngium campestre</i>	21
<i>Trifolium nigrescens</i>	20
<i>Anthemis arvensis</i>	20
<i>Ranunculus paludosus</i>	19
<i>Cynodon dactylon</i>	18
<i>Plantago lagopus</i>	17
<i>Hypochaeris glabra</i>	17
<i>Dactylis glomerata</i>	17
<i>Vulpia myuros</i>	16
<i>Trifolium glomeratum</i>	15
<i>Sagina apetala</i>	15
<i>Bellis annua</i>	15
<i>Bromus hordeaceus</i>	14
<i>Vulpia ciliata</i>	13
<i>Veronica arvensis</i>	13
<i>Trifolium arvense</i>	13
<i>Galium murale</i>	13
<i>Cerastium glomeratum</i>	13
<i>Tuberaria guttata</i>	12
<i>Trifolium tomentosum</i>	12
<i>Plantago bellardii</i>	12
<i>Hedypnois rhagadioloides</i>	12
<i>Anagallis arvensis</i>	12

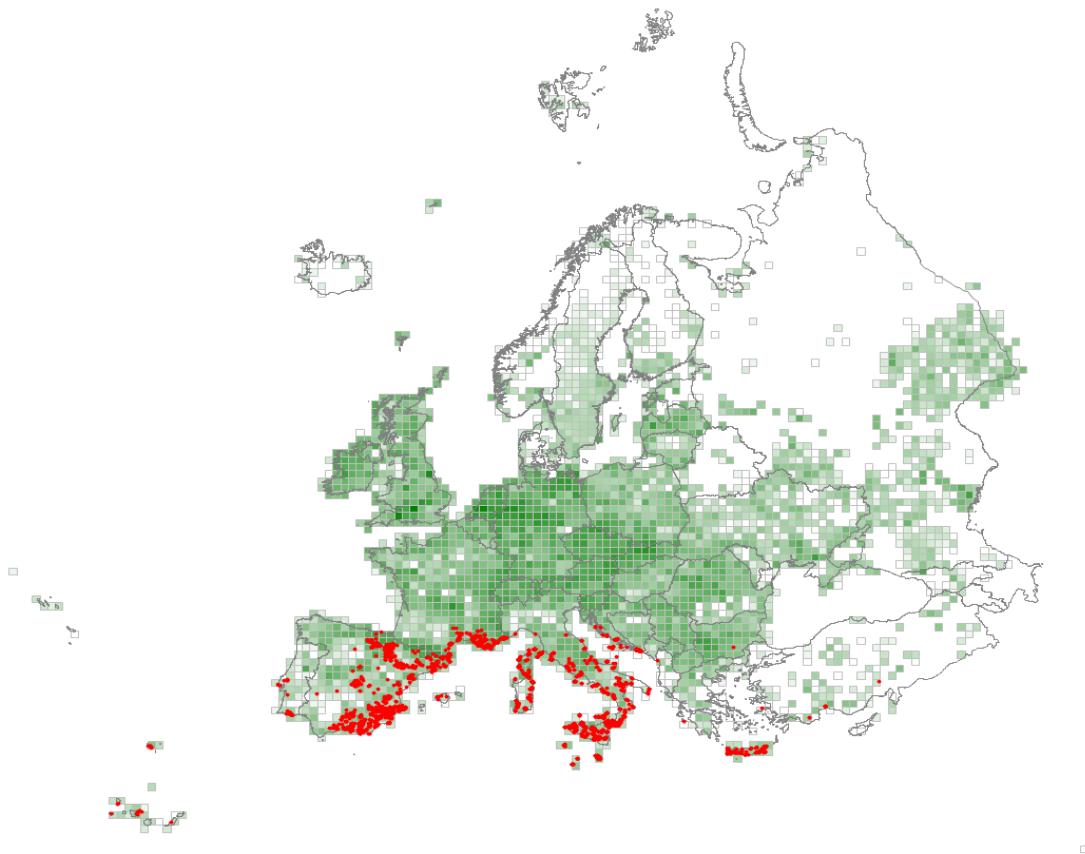
<i>Trifolium cherleri</i>	11
<i>Rostraria cristata</i>	11
<i>Ornithopus compressus</i>	11
<i>Bellis perennis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Poa bulbosa</i>	36
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R1E – Mediterranean tall perennial dry grassland

Grassland on base-rich soils over various types of calcareous bedrock through the Mediterranean region, where grazing and trampling sustain open or closed swards, generally dominated by tall, dense tussock grasses that lend a steppe-like character. Summer drought and disturbance by grazing and burning help prevent reversion to a forest but can encourage the invasion of aliens.



Corresponding alliances in EuroVegChecklist 2016

- > LYG-01A *Phlomidio lychnitis-Brachypodium retusi* Mateo ex Theurillat et Mucina in Mucina et al. 2016
- > LYG-01B *Trisetum velutini-Brachypodium boissieri* Rivas-Mart. et al. 2002
- > LYG-01C *Festucion scariosae* Martínez-Parras et al. 1984
- > LYG-01D *Stipion parviflorae* De la Torre et al. 1996
- > LYG-01E *Leontodonto tuberosi-Bellion sylvestris* Biondi et al. 2001
- > LYG-01F *Reichardio maritimae-Dactylidion hispanicae* Biondi et al. 2001
- > LYG-01G *Cymbopogono-Brachypodium ramosi* Horvatić 1963
- > LYG-01H *Hyparrhenion hirtae* Br.-Bl. et al. 1956
- > LYG-02A *Agropyro pectinati-Lygeion sparti* Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart. et al. 1999
- > LYG-02B *Stipion tenacissimae* Rivas-Mart. 1984
- > LYG-02C *Moricandio-Lygeion sparti* S. Brullo et al. 1990
- > LYG-02D *Scorzonero creticae-Lygeion sparti* S. Brullo et al. 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

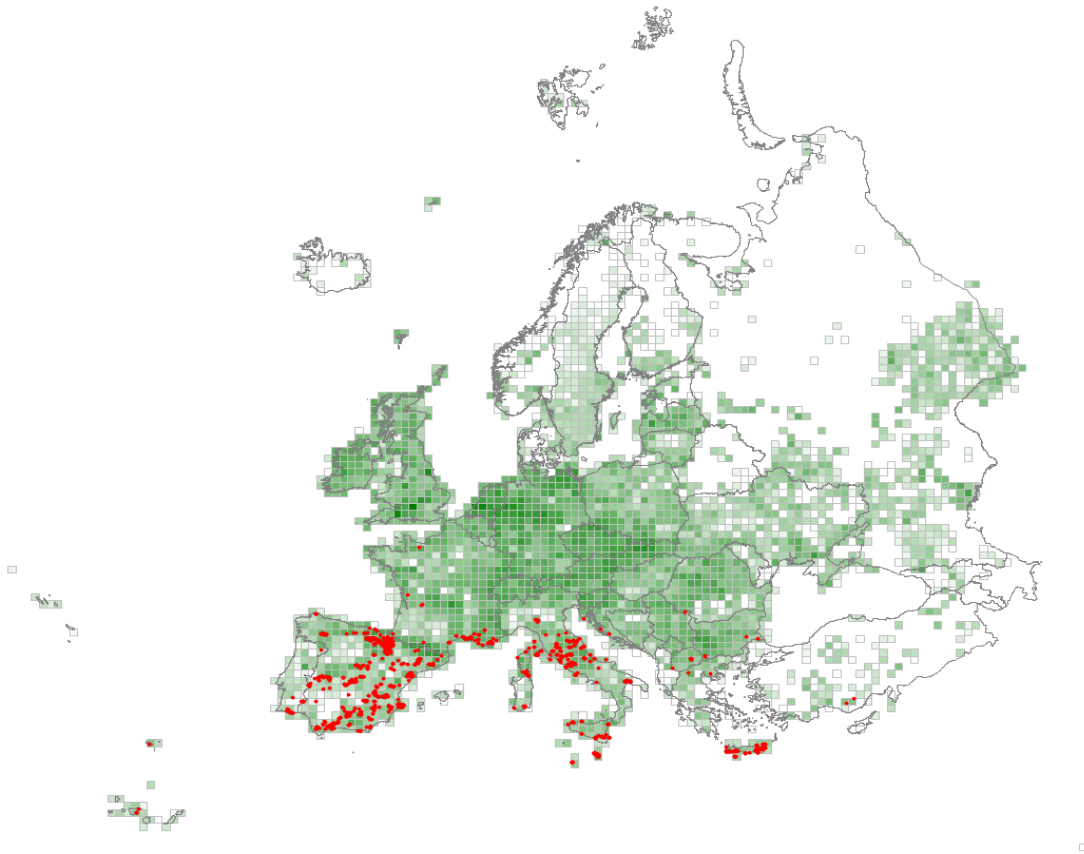
<i>Lygeum spartum</i>	20
<i>Reichardia picroides</i>	19
<i>Macrochloa tenacissima</i>	16
<i>Brachypodium retusum</i>	16

Constant species (percentage frequencies)

<i>Dactylis glomerata</i>	57
<i>Brachypodium retusum</i>	42
<i>Reichardia picroides</i>	35
<i>Daucus carota</i>	24
<i>Hyparrhenia hirta</i>	23
<i>Carlina corymbosa</i> aggr.	23
<i>Asphodelus ramosus</i>	22
<i>Lygeum spartum</i>	21
<i>Bituminaria bituminosa</i>	21
<i>Sedum sediforme</i>	17
<i>Pallenis spinosa</i>	16
<i>Eryngium campestre</i>	16
<i>Linum strictum</i> aggr.	15
<i>Micromeria graeca</i>	14
<i>Drimia maritima</i> aggr.	14
<i>Convolvulus althaeoides</i>	14
<i>Thymus vulgaris</i>	13
<i>Foeniculum vulgare</i>	13
<i>Helictochloa bromoides</i>	12
<i>Asparagus acutifolius</i>	12
<i>Phagnalon saxatile</i>	11
<i>Lobularia maritima</i>	11
<i>Avena barbata</i>	11

R1F – Mediterranean annual-rich dry grassland

Usually ephemeral vegetation related to the yearly cycle of spring rains and summer drought through the Mediterranean where a high diversity of small annual plants make a brief colourful appearance on bare patches of mainly base-rich soils. The species composition varies greatly, according to the particular regional terrain and climate and the impact of traditional pastoralism.



Corresponding alliances in EuroVegChecklist 2016

- > TRA-01A *Trachynion distachyae* Rivas-Mart. 1978
- > TRA-01B *Stipion retortae* O. de Bolòs 1957
- > TRA-01C *Sedo-Ctenopsion gypsophilae* Rivas Goday et Rivas-Mart. ex Izco 1974
- > TRA-01D *Omphalodion commutatae* Rivas-Mart., Izco et M. Costa ex Izco 1976 corr. Pérez Raya et al. 1991
- > TRA-02A *Vulpio ciliatae-Crepidion neglectae* Poldini 1989
- > TRA-02B *Vulpion ligusticae* Aubert et Loisel 1971
- > TRA-02C *Onobrychido-Ptilostemonion stellati* S. Brullo et al. 2001
- > TRA-02D *Xeranthemion annui* Oberd. 1954
- > TRA-02E *Diantho humilis-Velezion rigidae* Korzhenevskii et Kliukin ex Didukh et Mucina 2014
- > TRA-03A *Plantagini-Catapodion marini* S. Brullo 1985
- > TRA-03B *Dauco-Catananchion luteae* S. Brullo 1985

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Euphorbia exigua</i>	31
<i>Minuartia hybrida</i> aggr.	29
<i>Trachynia distachya</i>	26
<i>Asterolinon linum-stellatum</i>	26
<i>Catapodium rigidum</i>	24
<i>Hornungia petraea</i>	24
<i>Hippocrepis ciliata</i>	23
<i>Filago pyramidata</i>	23
<i>Linum strictum</i> aggr.	22
<i>Medicago minima</i>	22
<i>Asteriscus aquaticus</i>	22
<i>Neatostema apulum</i>	22
<i>Campanula erinus</i>	22
<i>Trifolium scabrum</i>	21
<i>Galium parisiense</i>	21
<i>Vulpia unilateralis</i>	20
<i>Helianthemum salicifolium</i>	20
<i>Bombycilaena erecta</i>	20
<i>Cleonia lusitanica</i>	18
<i>Stipa capensis</i>	18
<i>Polygala monspeliaca</i>	18
<i>Campanula fastigiata</i>	17
<i>Arenaria leptoclados</i>	17
<i>Ononis reclinata</i>	17
<i>Plantago afra</i>	16
<i>Clypeola jonthlaspi</i>	16
<i>Arenaria obtusiflora</i>	16
<i>Hypochaeris achyrophorus</i>	16
<i>Aegilops geniculata</i>	16

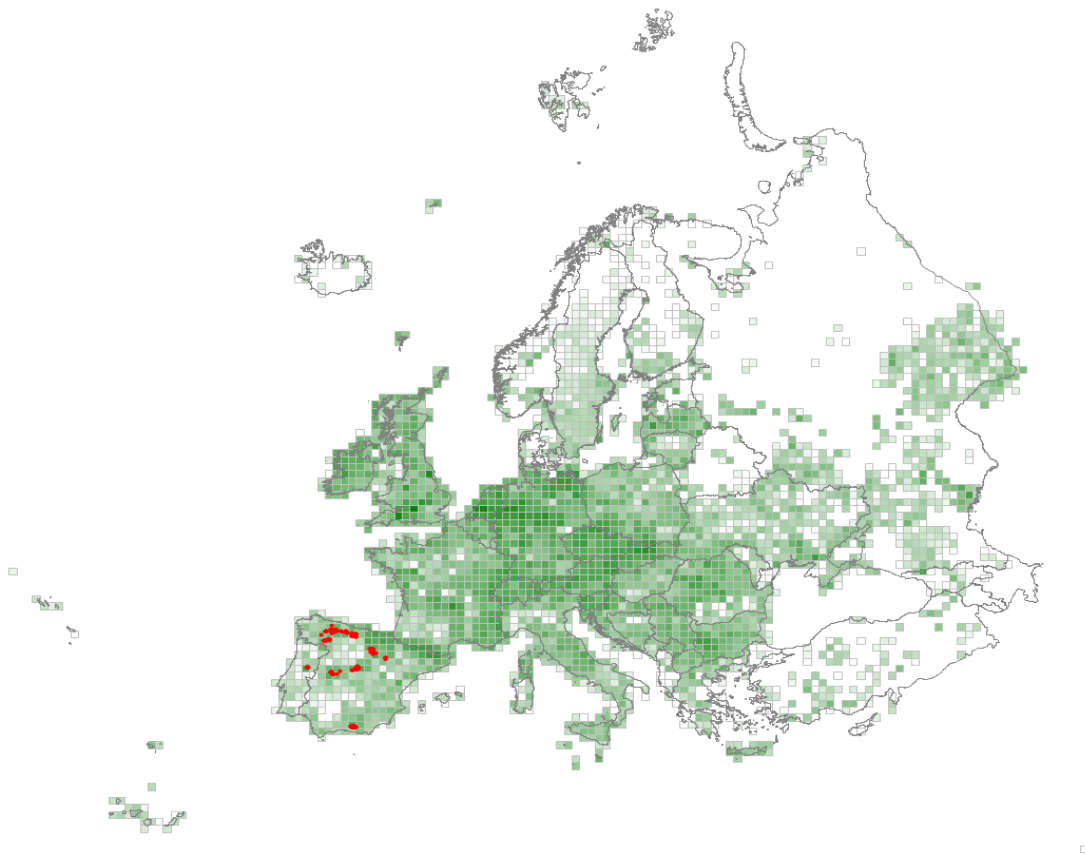
Constant species (percentage frequencies)

<i>Trachynia distachya</i>	41
<i>Catapodium rigidum</i>	40
<i>Linum strictum</i> aggr.	34
<i>Euphorbia exigua</i>	34
<i>Asterolinon linum-stellatum</i>	33
<i>Trifolium scabrum</i>	32
<i>Medicago minima</i>	32
<i>Minuartia hybrida</i> aggr.	24
<i>Hypochaeris achyrophorus</i>	23
<i>Filago pyramidata</i>	23
<i>Sherardia arvensis</i>	22
<i>Hornungia petraea</i>	19
<i>Arenaria leptoclados</i>	19
<i>Anagallis arvensis</i>	19
<i>Helianthemum salicifolium</i>	18
<i>Vulpia ciliata</i>	17
<i>Leontodon saxatilis</i>	17
<i>Erodium cicutarium</i>	17
<i>Campanula erinus</i>	17
<i>Trifolium campestre</i>	16
<i>Galium parisiense</i>	16

<i>Bombycilaena erecta</i>	16
<i>Trifolium stellatum</i>	15
<i>Stipa capensis</i>	14
<i>Hippocrepis ciliata</i>	14
<i>Cerastium pumilum</i>	14
<i>Plantago afra</i>	13
<i>Ononis reclinata</i>	13
<i>Neotostema apulum</i>	13
<i>Draba verna</i> aggr.	13
<i>Arenaria serpyllifolia</i>	13
<i>Aegilops geniculata</i>	13
<i>Scorpiurus muricatus</i>	12
<i>Hedypnois rhagadioloides</i>	12
<i>Avena barbata</i>	12
<i>Sideritis romana</i>	11

R1G – Iberian oromediterranean siliceous dry grassland

Grassland of base-poor soils over siliceous bedrock on the slopes and crests of high mountains in the Iberian Peninsula with a short growing season and harsh winters with strong winds which blow the ground free of snow and leave the surface subject to deep cold and the development of freeze-thaw features. The vegetation cover, moderately open to closed, is dominated by prostrate or dwarf grasses and forbs and includes many endemics.



Corresponding alliances in EuroVegChecklist 2016

- > IND-01A Teesdaliopsio confertae-Luzulion caespitosae Rivas-Mart. 1987
- > IND-01B Jasionion carpetanae González-Albo 1941
- > IND-01C Ptilotrichion purpurei Quézel 1953

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Jasione crispa</i> aggr.	52
<i>Luzula caespitosa</i>	51
<i>Silene ciliata</i>	51
<i>Festuca indigesta</i>	51
<i>Pilosella vahlii</i>	47
<i>Sedum brevifolium</i>	41

<i>Armeria caespitosa</i>	39
<i>Dianthus langeanus</i>	38
<i>Neoschischkinia truncatula</i>	32
<i>Scorzoneroides cantabrica</i>	31
<i>Agrostis tileni</i>	28
<i>Sedum candolleanum</i>	26
<i>Minuartia recurva</i>	26
<i>Teesdalia conferta</i>	22
<i>Festuca clementei</i>	21
<i>Phalacrocarpum oppositifolium</i>	20
<i>Erigeron frigidus</i>	20
<i>Trisetum glaciale</i>	20
<i>Eryngium glaciale</i>	19
<i>Sempervivum vicentei</i>	19
<i>Luzula spicata</i>	19
<i>Armeria bigerrensis</i>	18
<i>Plantago alpina</i>	18
<i>Arenaria tetraquetra</i>	16
<i>Phyteuma hemisphaericum</i>	15
<i>Hormathophylla purpurea</i>	15
<i>Senecio carpetanus</i>	15
<i>Rumex suffruticosus</i>	15

Constant species (percentage frequencies)

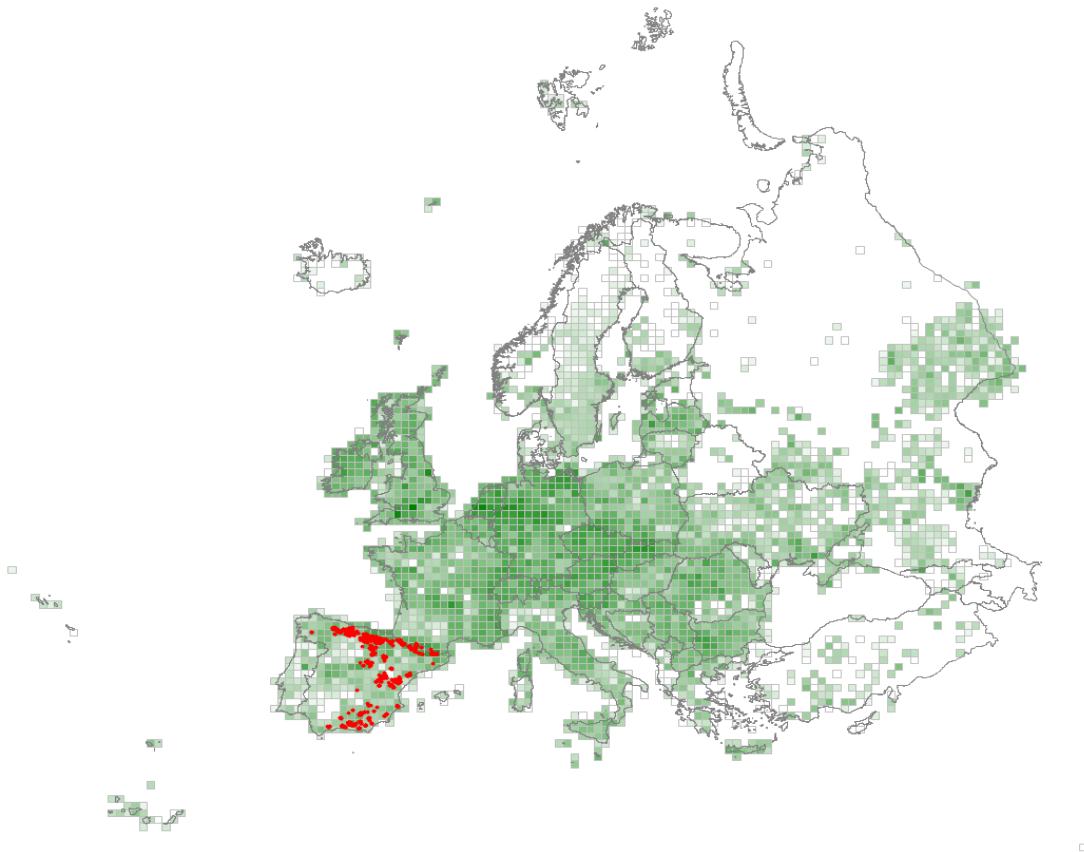
<i>Jasione crispa</i> aggr.	68
<i>Sedum brevifolium</i>	61
<i>Avenella flexuosa</i>	60
<i>Festuca indigesta</i>	50
<i>Silene ciliata</i>	46
<i>Luzula caespitosa</i>	32
<i>Neoschischkinia truncatula</i>	29
<i>Luzula spicata</i>	29
<i>Pilosella vahlia</i>	26
<i>Minuartia recurva</i>	23
<i>Armeria caespitosa</i>	19
<i>Solidago virgaurea</i>	17
<i>Plantago alpina</i>	17
<i>Dianthus langeanus</i>	17
<i>Scorzoneroides cantabrica</i>	16
<i>Phyteuma hemisphaericum</i>	15
<i>Juniperus communis</i> subsp. <i>nana</i>	15
<i>Nardus stricta</i>	14
<i>Sedum candolleanum</i>	13
<i>Antennaria dioica</i>	13
<i>Phalacrocarpum oppositifolium</i>	11
<i>Festuca clementei</i>	11
<i>Calluna vulgaris</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Festuca indigesta</i>	39
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R1H – Iberian oromediterranean basiphilous dry grassland

Grassland of base-rich soils over calcareous bedrocks on the slopes and crests of high mountains in the Iberian Peninsula and France, with a short growing season and harsh winters when strong winds blow the ground free of snow and leave the surface subject to deep cold which encourages the development of freeze-thaw features. The vegetation cover, moderately open to closed, is dominated by prostrate or dwarf grasses and forbs and includes many endemics.



Corresponding alliances in EuroVegChecklist 2016

- > ONO-01A *Festucion burnatii* Rivas Goday et Rivas-Mart. ex Mayor et al. 1973
- > ONO-01B *Sideritido fontquerianae-Arenarion microphyllae* Rivas Goday et Borja 1961
corr. Rivas-Mart. et al. 2002
- > ONO-02A *Ononidion striatae* Br.-Bl. et Susplugas 1937
- > ONO-02B *Ononidion cristatae* Royer 1991
- > ONO-02C *Festucion scopariae* Br.-Bl. 1948
- > ONO-02D *Avenion sempervirentis* Barbero 1968

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Festuca hystrix</i>	69
<i>Poa ligulata</i>	42
<i>Teucrium expassum</i>	38
<i>Koeleria vallesiana</i>	36
<i>Arenaria grandiflora</i>	33
<i>Helianthemum canum</i>	31
<i>Jurinea humilis</i>	30
<i>Saxifraga conifera</i>	29
<i>Dianthus pungens</i>	27
<i>Festuca burnatii</i>	27
<i>Oreochloa confusa</i>	25
<i>Arenaria aggregata</i> aggr.	25
<i>Seseli montanum</i>	24
<i>Thymus munbyanus</i>	24
<i>Sideritis hyssopifolia</i> aggr.	22
<i>Anemone pavoniana</i>	21
<i>Festuca nevadensis</i>	19
<i>Matthiola perennis</i>	19
<i>Helianthemum apenninum</i>	18
<i>Coronilla minima</i>	18
<i>Hieracium bombycinum</i>	18
<i>Crepis albida</i>	18
<i>Achillea odorata</i>	18
<i>Thymus mastigophorus</i>	18
<i>Potentilla pusilla</i>	18
<i>Thymus leptophyllus</i>	18
<i>Draba dedeana</i>	17
<i>Carthamus mitissimus</i>	16
<i>Thymus willdenowii</i>	16
<i>Ononis striata</i>	16
<i>Festuca liviensis</i>	15
<i>Armeria cantabrica</i>	15
<i>Saxifraga canaliculata</i>	15

Constant species (percentage frequencies)

<i>Festuca hystrix</i>	73
<i>Koeleria vallesiana</i>	70
<i>Helianthemum canum</i>	49
<i>Anthyllis vulneraria</i>	34
<i>Poa ligulata</i>	31
<i>Arenaria grandiflora</i>	31
<i>Seseli montanum</i>	29
<i>Coronilla minima</i>	27
<i>Carex humilis</i>	27
<i>Thymus praecox</i>	26
<i>Teucrium expassum</i>	25
<i>Helianthemum apenninum</i>	23
<i>Jurinea humilis</i>	22
<i>Potentilla pusilla</i>	19
<i>Sedum album</i>	17
<i>Helictochloa pratensis</i>	17
<i>Dianthus pungens</i>	17

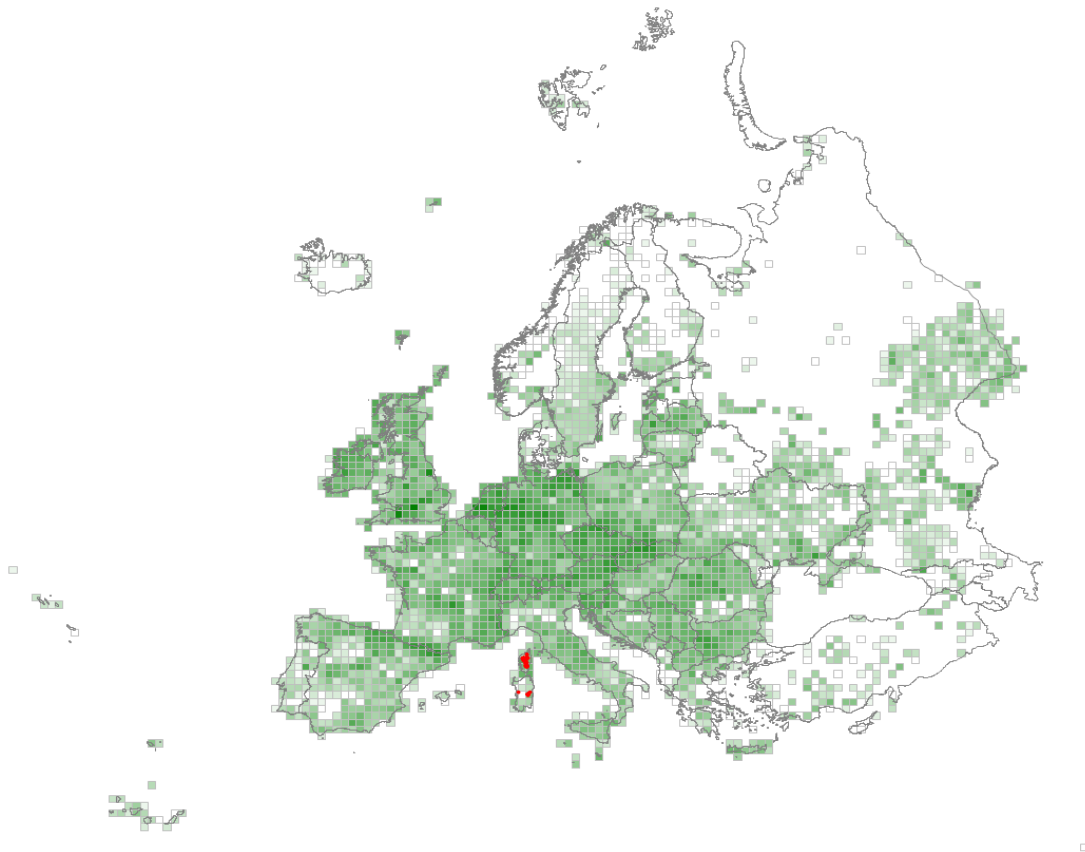
<i>Arenaria aggregata</i> aggr.	17
<i>Teucrium chamaedrys</i>	16
<i>Paronychia kapela</i>	14
<i>Crepis albida</i>	14
<i>Sideritis hyssopifolia</i> aggr.	13
<i>Fumana procumbens</i>	12
<i>Eryngium campestre</i>	12
<i>Saxifraga conifera</i>	11
<i>Pilosella officinarum</i>	11
<i>Bromopsis erecta</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Festuca hystrix</i>	50
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R1J – Cyrno-Sardean oromediterranean siliceous dry grassland

Grassland of base-poor soils over siliceous bedrock on the slopes and crests of high mountains in Corsica and Sardinia, with a short growing season and harsh winters when strong winds blow the ground free of snow and leave the surface subject to deep cold which encourages the development of freeze-thaw features. The cover of vegetation is intermediate to complete, dominated by prostrate herbs, cushion plants and dwarf shrubs, and includes many endemics.



Corresponding alliances in EuroVegChecklist 2016

- > PIL-01A Sesamoido pygmaeae-Poion violaceae Gamisans 1975

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sagina pilifera</i>	73
<i>Pilosella soleiroliana</i>	63
<i>Cerastium soleirolii</i>	54
<i>Ligusticum corsicum</i>	51
<i>Festuca morisiana</i>	50
<i>Hypochaeris robertia</i>	50
<i>Armeria multiceps</i>	50

<i>Trisetum gracile</i>	46
<i>Plantago subulata</i>	46
<i>Armeria sardoa</i>	42
<i>Poa balbisii</i>	40
<i>Noccaea brevistyla</i>	33
<i>Genista lobelii</i>	31
<i>Carlina macrocephala</i>	31
<i>Bellardiochloa variegata</i>	31
<i>Galium corsicum</i>	31
<i>Carex caryophyllea</i>	30
<i>Bellium bellidioides</i>	30
<i>Cerastium gibraltarium</i>	29
<i>Bromus grossus</i>	29
<i>Thymus herba-barona</i>	29
<i>Thymus catharinae</i>	28
<i>Berberis aetnensis</i>	26
<i>Pilosella lactucella</i>	25
<i>Euphrasia nemorosa</i>	24
<i>Hypochaeris cretensis</i>	23
<i>Scleranthus perennis</i> subsp. <i>burnatii</i>	23
<i>Sedum brevifolium</i>	22
<i>Stachys corsica</i>	22
<i>Odontites corsica</i>	20
<i>Luzula spicata</i>	19
<i>Viola corsica</i>	19
<i>Juniperus communis</i> subsp. <i>nana</i>	19
<i>Bunium alpinum</i>	19
<i>Gagea soleirolii</i>	18
<i>Sesamoides minor</i>	18
<i>Brimeura fastigiata</i>	17
<i>Anthyllis hermanniae</i>	17
<i>Crocus corsicus</i>	16
<i>Paronychia polygonifolia</i>	16
<i>Astragalus sirinicus</i>	15
<i>Trisetum conradiae</i>	15

Constant species (percentage frequencies)

<i>Hypochaeris robertia</i>	73
<i>Sagina pilifera</i>	69
<i>Plantago subulata</i>	66
<i>Carex caryophyllea</i>	56
<i>Cerastium soleirolii</i>	51
<i>Pilosella soleiroliana</i>	48
<i>Juniperus communis</i> subsp. <i>nana</i>	43
<i>Bellardiochloa variegata</i>	35
<i>Sedum brevifolium</i>	33
<i>Ligusticum corsicum</i>	32
<i>Nardus stricta</i>	31
<i>Luzula spicata</i>	31
<i>Armeria multiceps</i>	31
<i>Rumex acetosella</i>	28
<i>Poa balbisii</i>	28
<i>Festuca morisiana</i>	28
<i>Poa bulbosa</i>	26
<i>Bellium bellidioides</i>	25

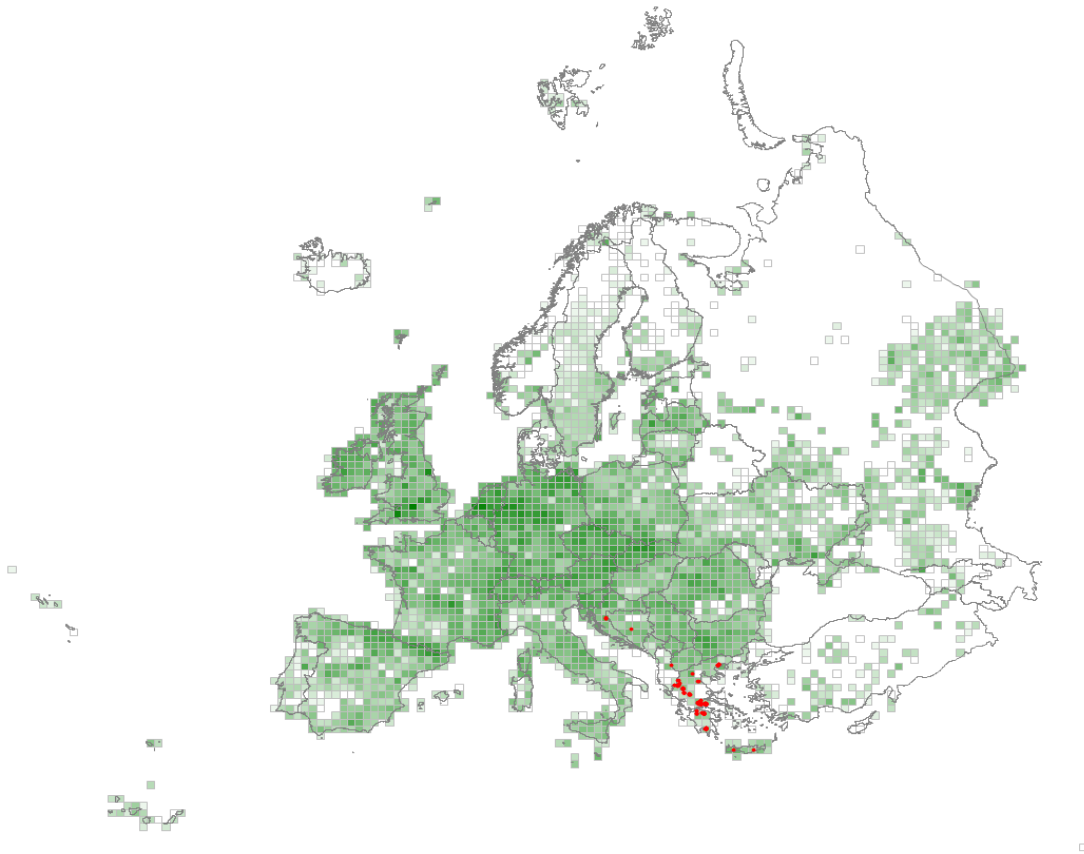
<i>Trisetum gracile</i>	24
<i>Avenella flexuosa</i>	24
<i>Armeria sardo</i>	24
<i>Thymus herba-barona</i>	23
<i>Galium corsicum</i>	23
<i>Pilosella lactucella</i>	22
<i>Cerastium gibraltarium</i>	22
<i>Genista lobelii</i>	20
<i>Carlina macrocephala</i>	20
<i>Agrostis castellana</i>	20
<i>Noccaea brevistyla</i>	19
<i>Berberis aetnensis</i>	18
<i>Hypochaeris cretensis</i>	17
<i>Petrorhagia saxifraga</i>	16
<i>Bunium alpinum</i>	16
<i>Stachys corsica</i>	15
<i>Brachypodium pinnatum</i>	15
<i>Arrhenatherum elatius</i>	15
<i>Anthyllis hermanniae</i>	15
<i>Paronychia polygonifolia</i>	14
<i>Anthoxanthum odoratum</i> aggr.	14
<i>Agrostis rupestris</i>	12
<i>Viola corsica</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Plantago subulata</i>	35
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R1K – Balkan and Anatolian oromediterranean dry grassland

Closed grassland of deeper acid soils occurring over various bedrocks above the tree line in Greece and Anatolia. It is found on high mountain slopes and depressions where snow accumulates and provides springtime irrigation with melt-water. The vegetation is species-rich, but the dominants and associates vary from place to place. It provides valuable summer grazing for traditional pastoralism.



Corresponding alliances in EuroVegChecklist 2016

- > ANA-01A *Trifolium parnassii* Quézel 1964

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Trifolium parnassii</i>	88
<i>Alopecurus gerardi</i>	74
<i>Herniaria parnassica</i>	67
<i>Lotus stenodon</i>	59
<i>Campanula tymphaea</i>	50
<i>Campanula radicata</i>	50
<i>Plantago atrata</i>	49
<i>Dianthus viscidus</i>	48

<i>Luzula pindica</i>	41
<i>Dianthus tymphresteus</i>	38
<i>Phleum alpinum</i> aggr.	38
<i>Silene roemerii</i>	35
<i>Poa thessala</i>	29
<i>Crocus sieberi</i>	29
<i>Carduus tmoleus</i>	29
<i>Trifolium heldreichianum</i>	25
<i>Campanula spatulata</i>	25
<i>Poa trichopoda</i>	25
<i>Thesium parnassii</i>	23
<i>Taraxacum</i> sect. <i>Erythrosperma</i>	23
<i>Crocus veluchensis</i>	20
<i>Astragalus sirinicus</i>	20
<i>Geranium subcaulescens</i>	20
<i>Astragalus depressus</i>	20
<i>Bellardiochloa variegata</i>	19
<i>Trifolium noricum</i>	19
<i>Myosotis suaveolens</i>	19
<i>Campanula sibirica</i>	19
<i>Berteroa obliqua</i>	19
<i>Armeria canescens</i>	19
<i>Podospermum roseum</i>	18
<i>Asperula lutea</i>	18
<i>Myosotis olympica</i>	18
<i>Ranunculus sartorianus</i>	18
<i>Allium phthioticum</i>	17
<i>Ranunculus demissus</i>	17
<i>Trinia frigida</i>	17
<i>Colchicum parnassicum</i>	17
<i>Beta nana</i>	17
<i>Taraxacum cylleneum</i>	17
<i>Festuca varia</i>	17
<i>Pilosella hoppeana</i>	17
<i>Edraianthus parnassicus</i>	16
<i>Cerastium decalvans</i>	15

Constant species (percentage frequencies)

<i>Trifolium parnassii</i>	80
<i>Alopecurus gerardi</i>	67
<i>Herniaria parnassica</i>	57
<i>Phleum alpinum</i> aggr.	49
<i>Plantago atrata</i>	48
<i>Lotus stenodon</i>	35
<i>Poa alpina</i>	30
<i>Campanula tymphaea</i>	26
<i>Campanula radicata</i>	26
<i>Taraxacum</i> sect. <i>Erythrosperma</i>	25
<i>Dianthus viscidus</i>	25
<i>Bellardiochloa variegata</i>	22
<i>Scleranthus perennis</i>	21
<i>Lotus corniculatus</i>	21
<i>Campanula sibirica</i>	21
<i>Nardus stricta</i>	20
<i>Trifolium repens</i>	19

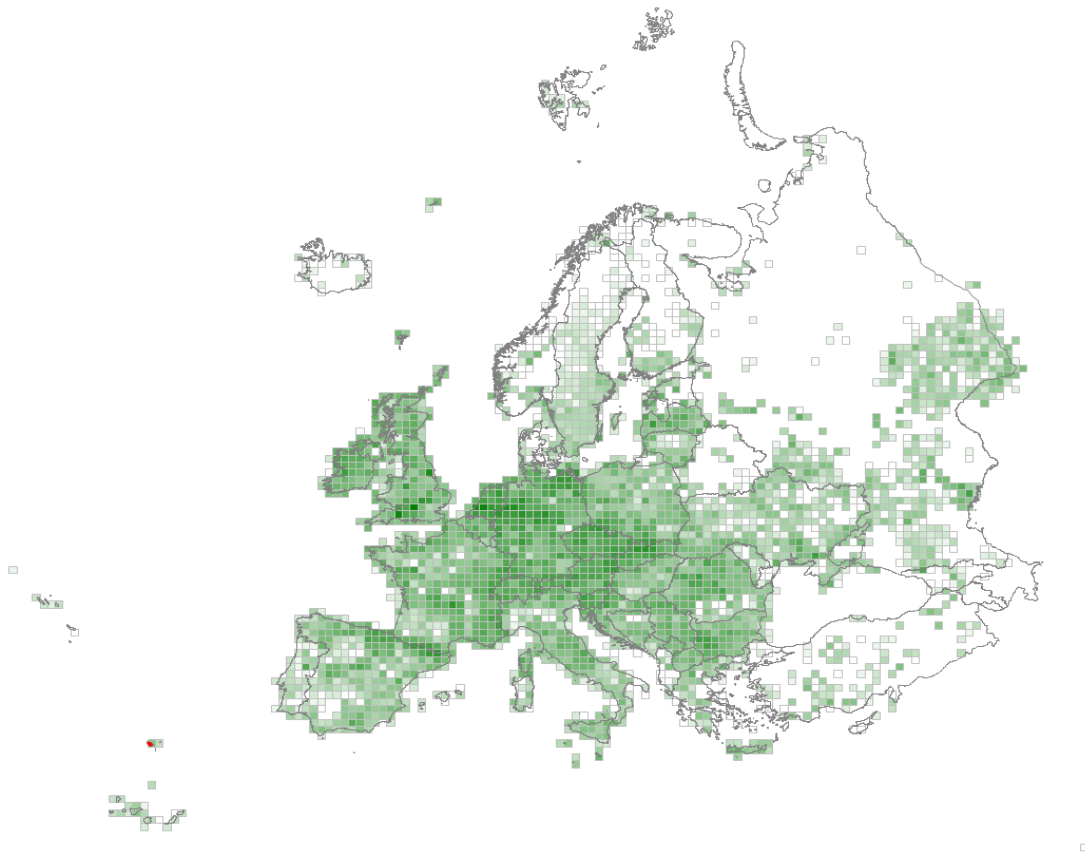
<i>Pilosella hoppeana</i>	19
<i>Campanula spatulata</i>	19
<i>Thymus longicaulis</i>	18
<i>Poa thessala</i>	18
<i>Luzula pindica</i>	18
<i>Carduus tmoleus</i>	18
<i>Plantago holosteum</i>	17
<i>Silene roemerii</i>	16
<i>Crocus veluchensis</i>	16
<i>Armeria canescens</i>	16
<i>Medicago lupulina</i>	15
<i>Dianthus tymphresteus</i>	15
<i>Crocus sieberi</i>	14
<i>Trisetum flavescens</i>	13
<i>Rumex acetosella</i>	13
<i>Festuca varia</i>	13
<i>Bellis perennis</i>	13
<i>Astragalus depressus</i>	13
<i>Anthoxanthum odoratum</i> aggr.	12
<i>Plantago lanceolata</i>	11
<i>Daphne oleoides</i>	11
<i>Dactylis glomerata</i>	11
<i>Astragalus sirinicus</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Trifolium parnassii</i>	28
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R1L – Madeiran oromediterranean siliceous dry grassland

Highly distinctive tussocky grassland, rich in endemics, restricted to mountains in Madeira, where it occurs in crevices and on ledges in siliceous volcanic rocks where the soils are kept permanently moist by the very humid climate. It typically occurs in mosaics with heaths and forests, being threatened by the decline of domestic goat grazing.



Corresponding alliances in EuroVegChecklist 2016

- > SAC-02A *Deschampsio maderensis-Parafestucion albidae* Capelo et al. 2000

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Tolpis macrorhiza</i>	70
<i>Saxifraga maderensis</i>	67
<i>Vicia capreolata</i>	63
<i>Galium productum</i>	62
<i>Parafestuca albida</i>	58
<i>Sinapidendron frutescens</i>	56
<i>Odontites holliana</i>	54
<i>Bupleurum salicifolium</i>	54
<i>Sedum farinosum</i>	52

<i>Deschampsia maderensis</i>	50
<i>Erysimum bicolor</i>	49
<i>Festuca jubata</i>	48
<i>Armeria maderensis</i>	48
<i>Argyranthemum pinnatifidum</i>	48
<i>Erica maderensis</i>	48
<i>Drabella muralis</i>	42
<i>Micromeria cacuminicula</i>	36
<i>Anthyllis lemmaniana</i>	36
<i>Bunium brevifolium</i>	34
<i>Dactylis smithii</i>	34
<i>Rumex bucephalophorus</i>	34
<i>Ranunculus cortusifolius</i>	33
<i>Aeonium glandulosum</i>	32
<i>Viola paradoxa</i>	31
<i>Pericallis aurita</i>	31
<i>Andryala glandulosa</i>	31
<i>Helichrysum melaleucum</i>	30
<i>Crepis vesicaria</i>	30
<i>Aichryson villosum</i>	30
<i>Centranthus calcitrapae</i>	28
<i>Rumex maderensis</i>	27
<i>Genista tenera</i>	26
<i>Scilla madeirensis</i>	26
<i>Orchis mascula</i> subsp. <i>scopulorum</i>	26
<i>Musschia aurea</i>	26
<i>Monizia edulis</i>	26
<i>Cardamine hirsuta</i>	24
<i>Fumaria capreolata</i>	22
<i>Aphanes australis</i>	21
<i>Aichryson divaricatum</i>	20
<i>Plantago malato-belizii</i>	18
<i>Senecio vulgaris</i>	18
<i>Geranium purpureum</i>	17
<i>Plantago arborescens</i>	17

Constant species (percentage frequencies)

<i>Tolpis macrorhiza</i>	53
<i>Saxifraga maderensis</i>	47
<i>Rumex bucephalophorus</i>	47
<i>Vicia capreolata</i>	40
<i>Galium productum</i>	40
<i>Aeonium glandulosum</i>	40
<i>Sinapidendron frutescens</i>	33
<i>Ranunculus cortusifolius</i>	33
<i>Parafestuca albida</i>	33
<i>Odontites holliana</i>	33
<i>Helichrysum melaleucum</i>	33
<i>Erysimum bicolor</i>	33
<i>Dactylis smithii</i>	33
<i>Crepis vesicaria</i>	33
<i>Bupleurum salicifolium</i>	33
<i>Anthoxanthum odoratum</i> aggr.	33
<i>Senecio vulgaris</i>	27
<i>Sedum farinosum</i>	27

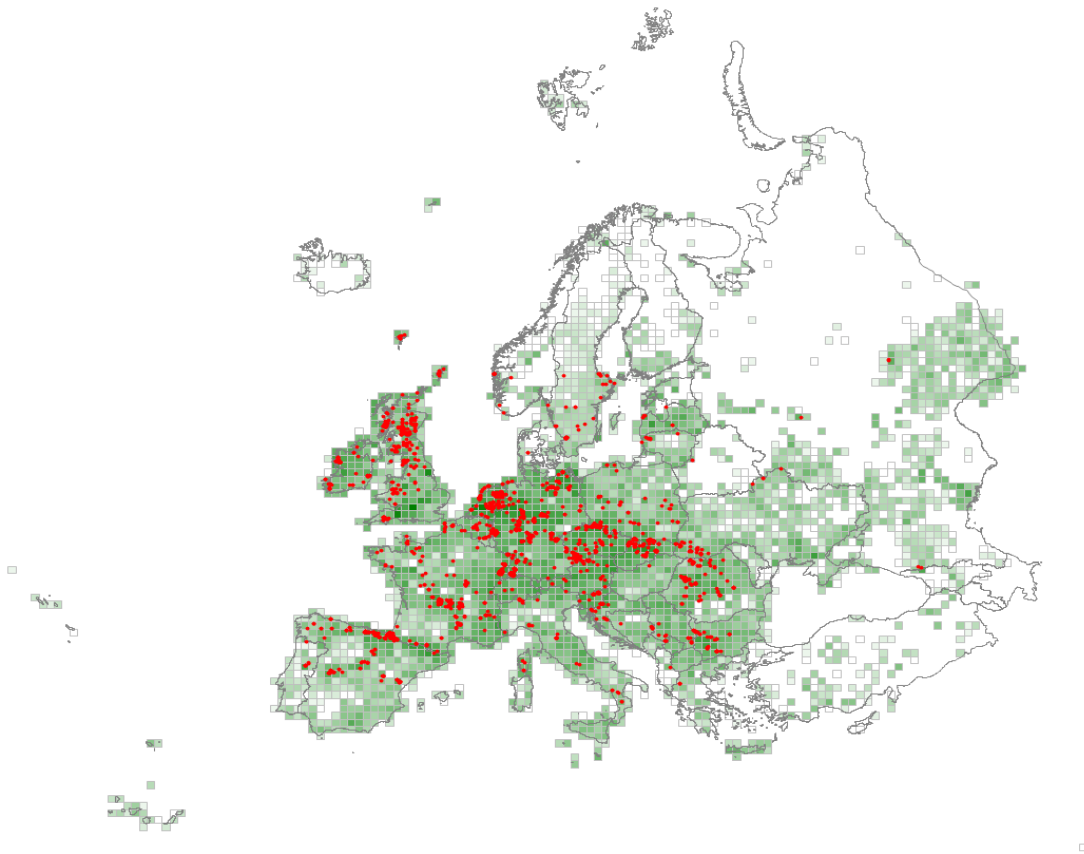
<i>Geranium purpureum</i>	27
<i>Festuca jubata</i>	27
<i>Erica maderensis</i>	27
<i>Drabella muralis</i>	27
<i>Deschampsia maderensis</i>	27
<i>Centranthus calcitrapae</i>	27
<i>Cardamine hirsuta</i>	27
<i>Armeria maderensis</i>	27
<i>Argyranthemum pinnatifidum</i>	27
<i>Pericallis aurita</i>	20
<i>Arabis alpina</i>	20
<i>Andryala glandulosa</i>	20
<i>Viola paradoxa</i>	13
<i>Umbilicus rupestris</i>	13
<i>Teesdalia nudicaulis</i>	13
<i>Senecio sylvaticus</i>	13
<i>Rumex maderensis</i>	13
<i>Plantago arborescens</i>	13
<i>Ornithopus perpusillus</i>	13
<i>Myosotis ramosissima</i>	13
<i>Micromeria cacuminicula</i>	13
<i>Luzula elegans</i>	13
<i>Leontodon saxatilis</i>	13
<i>Hypochaeris glabra</i>	13
<i>Geranium rotundifolium</i>	13
<i>Genista tenera</i>	13
<i>Galium murale</i>	13
<i>Fumaria capreolata</i>	13
<i>Carlina salicifolia</i>	13
<i>Bunium brevifolium</i>	13
<i>Anthyllis lemmaniana</i>	13
<i>Aichryson villosum</i>	13

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Odontites holliana</i>	27
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R1M – Lowland to montane, dry to mesic grassland usually dominated by *Nardus stricta*

Usually dominated by the tightly tussocky *Nardus stricta*, this grassland is characteristic of nutrient-poor, acidic soils, sometimes seasonally wet, on siliceous substrates through the entire lowlands and submontane belts of temperate Europe, though optimally developed in the cooler and rainier climate of the Atlantic region. Other grasses may share dominance, but the associated flora is generally rather species-poor and related to the type and intensity of grazing.



Corresponding alliances in EuroVegChecklist 2016

- > NAR-01A Equiseto-Galion borealis Tx. in Tx. et Böttcher 1969
- > NAR-01B Violion caninae Schwickerath 1944
- > NAR-01C Nardo-Juncion squarrosi (Oberd. 1957) Passarge 1964
- > NAR-01D Nardo-Agrostion tenuis Sillinger 1933
- > NAR-01F Nardo-Agrostion caninae Cortini-Pedrotti et al. 1973
- > NAR-01G Cirsio vallis-demoni-Nardion Giacomini et Gentile ex Di Pietro et Theurillat in Di Pietro et al. 2015
- > NAR-01H Achilleo-Arnicion Horvat et Pawłowski in Horvat 1960

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Danthonia decumbens</i>	30
<i>Galium saxatile</i>	29
<i>Carex pilulifera</i>	27
<i>Nardus stricta</i>	26
<i>Potentilla erecta</i>	20
<i>Luzula campestris</i> aggr.	19
<i>Arnica montana</i>	18
<i>Festuca filiformis</i>	17
<i>Agrostis capillaris</i>	17

Constant species (percentage frequencies)

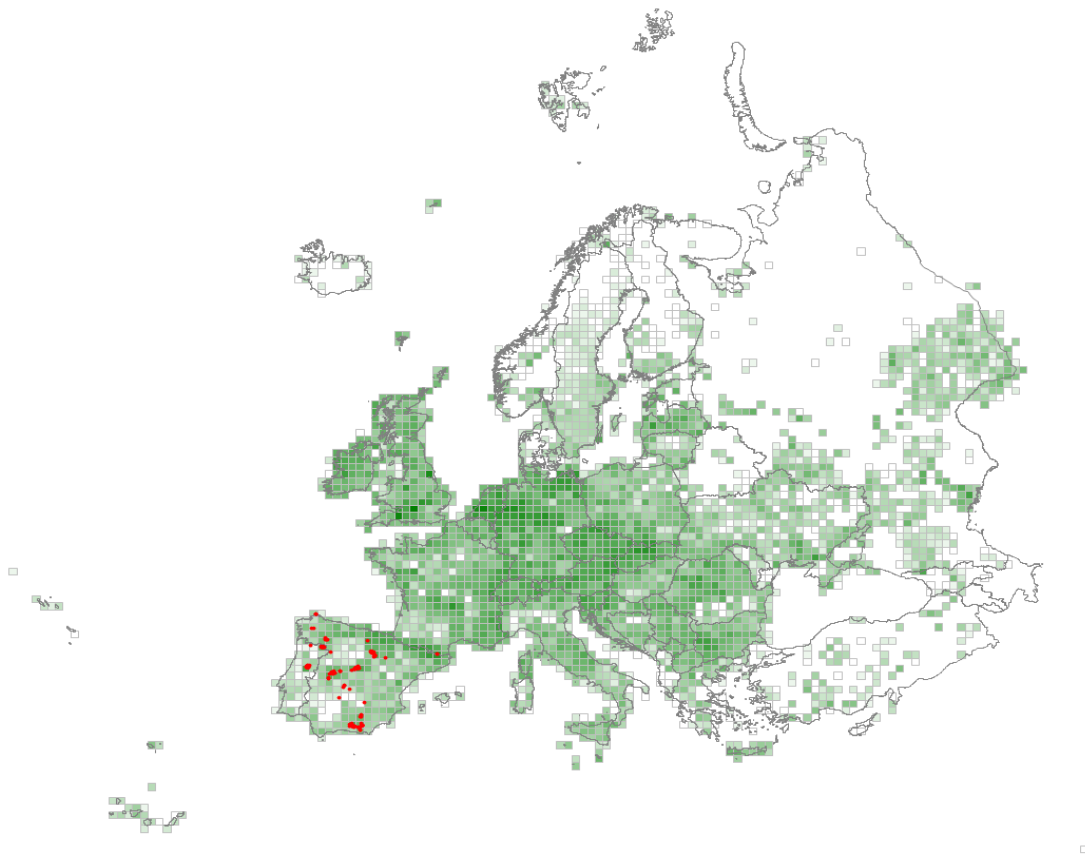
<i>Potentilla erecta</i>	76
<i>Nardus stricta</i>	73
<i>Agrostis capillaris</i>	60
<i>Luzula campestris</i> aggr.	56
<i>Galium saxatile</i>	51
<i>Danthonia decumbens</i>	50
<i>Carex pilulifera</i>	47
<i>Calluna vulgaris</i>	43
<i>Avenella flexuosa</i>	42
<i>Festuca rubra</i> aggr.	37
<i>Anthoxanthum odoratum</i> aggr.	35
<i>Veronica officinalis</i>	31
<i>Vaccinium myrtillus</i>	29
<i>Pilosella officinarum</i>	25
<i>Festuca ovina</i>	24
<i>Pleurozium schreberi</i>	20
<i>Viola canina</i>	19
<i>Rumex acetosella</i>	19
<i>Hypnum cupressiforme</i> aggr.	19
<i>Festuca filiformis</i>	19
<i>Rhynchospora squarrosus</i>	18
<i>Molinia caerulea</i> aggr.	18
<i>Polygala serpyllifolia</i>	15
<i>Hypericum maculatum</i> aggr.	15
<i>Dicranum scoparium</i>	15
<i>Campanula rotundifolia</i>	15
<i>Arnica montana</i>	15
<i>Polygala vulgaris</i>	14
<i>Lotus corniculatus</i>	14
<i>Achillea millefolium</i> aggr.	14
<i>Hypochaeris radicata</i>	13
<i>Rumex acetosa</i>	11
<i>Plantago lanceolata</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Nardus stricta</i>	51
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R1N – Open Iberian supramediterranean dry acid and neutral grassland

Dominated by small tussock grasses, forbs and mat-formers, including many endemics, this grassland occurs on shallow skeletal soils, nutrient-poor and drought-prone, developed over outcrops of siliceous and ultramafic bedrocks at moderate to high altitudes in the western Iberian Peninsula. The habitat is a traditional part of pastoral landscapes grazed mostly by sheep.



Corresponding alliances in EuroVegChecklist 2016

- > IND-02A Hieracio castellani-Plantaginion radicatae Rivas-Mart. et Cantó 1987
- > IND-02B Armerion eriophyllae Pinto da Silva 1970
- > IND-02C Thymion serpylloidis Rivas Goday et Rivas-Mart. in Rivas-Mart. 1965

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pilosella castellana</i>	46
<i>Lotus glareosus</i>	44
<i>Arenaria querooides</i>	38
<i>Festuca summilusitana</i>	36
<i>Neoschischkinia reuteri</i>	34
<i>Ranunculus nigrescens</i>	26

<i>Sedum brevifolium</i>	25
<i>Koeleria crassipes</i>	24
<i>Grimmia montana</i>	23
<i>Molineriella laevis</i>	22
<i>Festuca iberica</i>	22
<i>Scorzoneroides microcephala</i>	21
<i>Galium nevadense</i>	21
<i>Paronychia polygonifolia</i>	20
<i>Armeria eriophylla</i>	20
<i>Spergula morisonii</i>	20
<i>Plantago nivalis</i>	20
<i>Jasione crispa</i> aggr.	20
<i>Sagina merinoi</i>	19
<i>Ranunculus acetosellifolius</i>	18
<i>Leucanthemopsis pallida</i>	18
<i>Neoschischkinia truncatula</i>	18
<i>Thymus izcoi</i>	17
<i>Plantago subulata</i>	17
<i>Cerastium gracile</i>	17
<i>Narcissus rupicola</i>	17
<i>Festuca indigesta</i>	17
<i>Agrostis nevadensis</i>	16
<i>Leucanthemopsis pulverulenta</i>	16
<i>Polytrichum piliferum</i>	15
<i>Dianthus legionensis</i>	15
<i>Potentilla reuteri</i>	15
<i>Sedum arenarium</i>	15

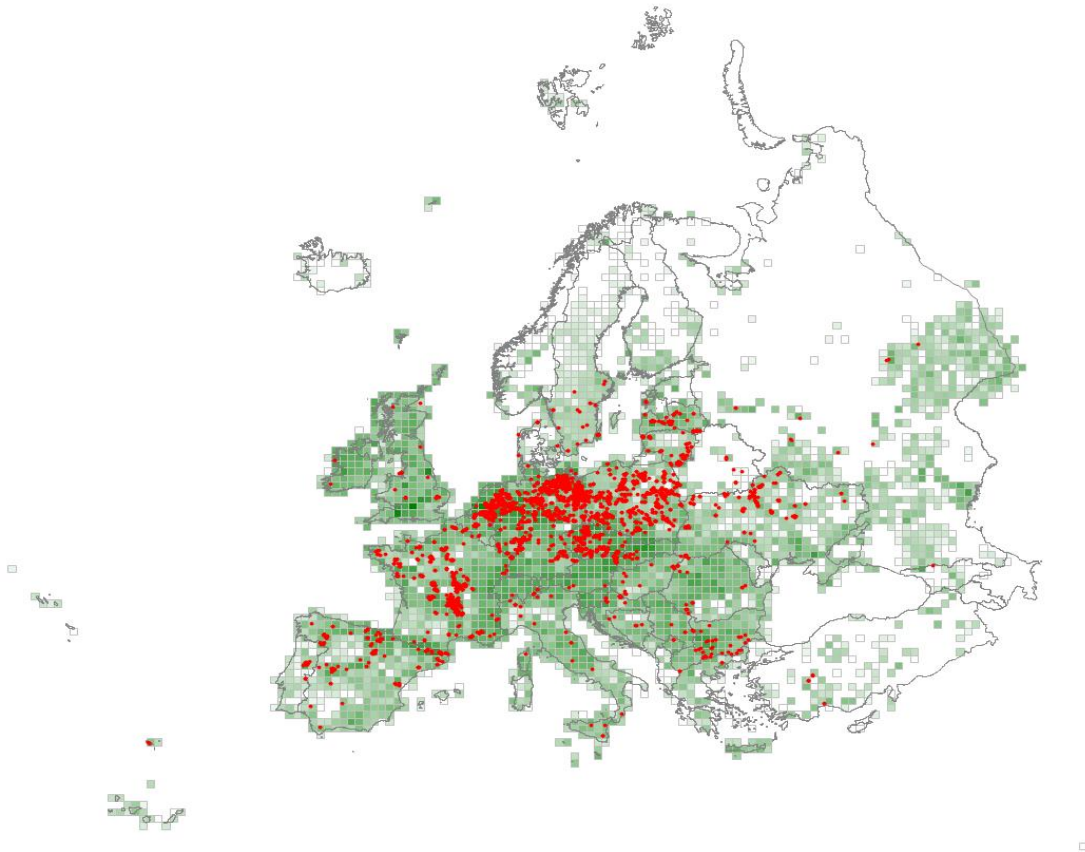
Constant species (percentage frequencies)

<i>Sedum brevifolium</i>	38
<i>Pilosella castellana</i>	38
<i>Rumex acetosella</i>	36
<i>Lotus glareosus</i>	34
<i>Arenaria querioides</i>	29
<i>Polytrichum piliferum</i>	27
<i>Nardus stricta</i>	27
<i>Festuca summilusitana</i>	27
<i>Neoschischkinia reuteri</i>	26
<i>Jasione crispa</i> aggr.	26
<i>Plantago subulata</i>	25
<i>Spergula morisonii</i>	22
<i>Cetraria aculeata</i>	22
<i>Agrostis castellana</i>	21
<i>Poa bulbosa</i>	20
<i>Festuca iberica</i>	20
<i>Ceratodon purpureus</i>	19
<i>Avenella flexuosa</i>	18
<i>Paronychia polygonifolia</i>	17
<i>Festuca indigesta</i>	17
<i>Neoschischkinia truncatula</i>	16
<i>Koeleria crassipes</i>	15
<i>Hypochaeris radicata</i>	15
<i>Filago minima</i>	15
<i>Cerastium gracile</i>	15
<i>Pilosella officinarum</i>	14

<i>Molineriella laevis</i>	14
<i>Ranunculus nigrescens</i>	13
<i>Plantago holosteum</i>	11
<i>Arnosseris minima</i>	11

R1P – Oceanic to subcontinental inland sand grassland on dry acid and neutral soils

Moderately open to closed grassland on nutrient-poor sandy soils, mostly acid to neutral though sometimes calcareous, on plains, river terraces and cliffs through the lowlands and submontane belts of temperate Europe. Narrow-leaved, tussocky graminoids dominate, associated herbs can be numerous and more open swards can have rich annual and cryptogam floras. Across the wide range, there is considerable variety among the dominants and companions, and the extreme topoclimate can provide a western outpost for steppe elements.



Corresponding alliances in EuroVegChecklist 2016

- > COR-01C *Sedo-Cerastion arvensis* Sissingh et Tideman 1960
- > COR-01D *Armerion elongatae* Pötsch 1962
- <> SED-03A *Thero-Airion Tx. ex Oberd.* 1957
- <> SED-04D *Armerion juncea* Br.-Bl. ex Br.-Bl. et al. 1952
- <> SED-04G *Sileno conicae-Cerastion semidecandri* Korneck 1974

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Festuca stricta</i> subsp. <i>trachyphylla</i>	24
<i>Cerastium semidecandrum</i>	22
<i>Brachythecium albicans</i>	22
<i>Ceratodon purpureus</i>	20
<i>Rumex acetosella</i>	20
<i>Trifolium arvense</i>	20
<i>Artemisia campestris</i>	19
<i>Corynephorus canescens</i>	19
<i>Jasione montana</i>	18
<i>Pilosella officinarum</i>	18
<i>Helichrysum arenarium</i>	18
<i>Ornithopus perpusillus</i>	16
<i>Polytrichum piliferum</i>	16
<i>Hypochaeris radicata</i>	16
<i>Festuca psammophila</i>	16
<i>Sedum acre</i>	15

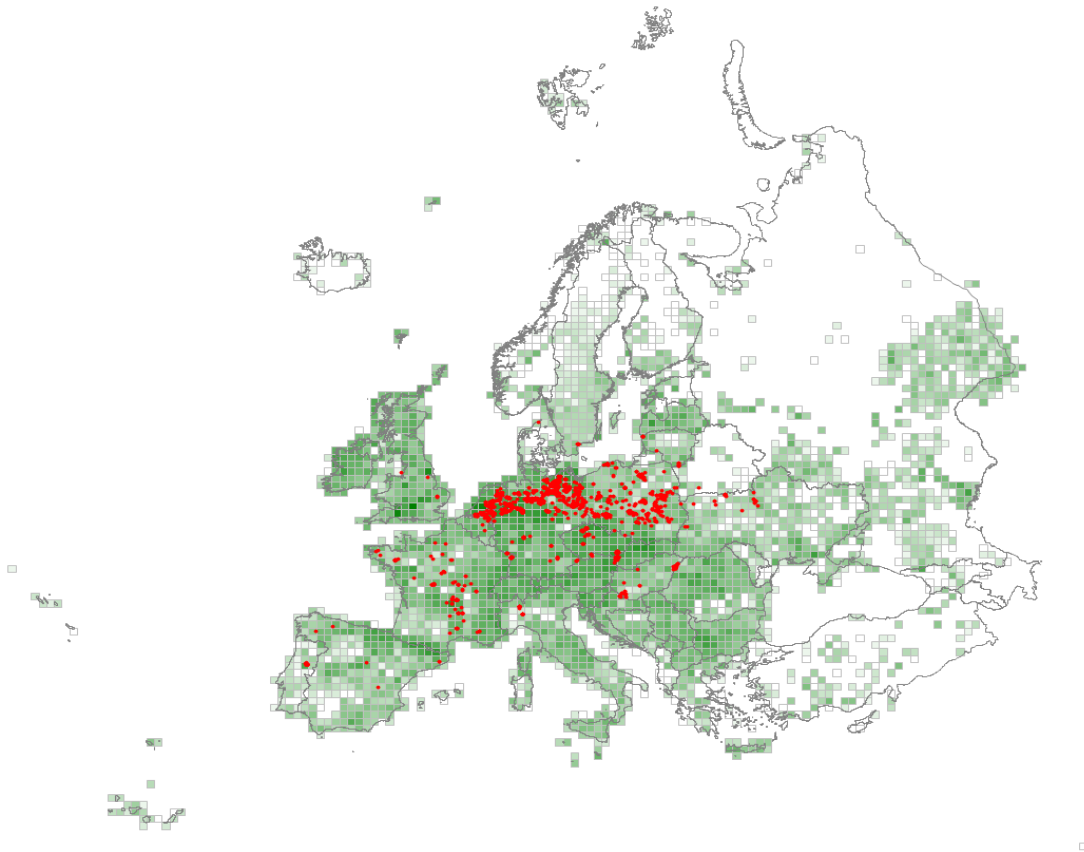
Constant species (percentage frequencies)

<i>Rumex acetosella</i>	59
<i>Pilosella officinarum</i>	51
<i>Trifolium arvense</i>	39
<i>Agrostis capillaris</i>	39
<i>Hypochaeris radicata</i>	38
<i>Artemisia campestris</i>	38
<i>Ceratodon purpureus</i>	36
<i>Jasione montana</i>	34
<i>Achillea millefolium</i> aggr.	34
<i>Cerastium semidecandrum</i>	33
<i>Corynephorus canescens</i>	32
<i>Plantago lanceolata</i>	31
<i>Polytrichum piliferum</i>	29
<i>Sedum acre</i>	27
<i>Arenaria serpyllifolia</i>	27
<i>Festuca ovina</i>	26
<i>Potentilla argentea</i>	22
<i>Poa pratensis</i> aggr.	22
<i>Brachythecium albicans</i>	22
<i>Hypericum perforatum</i>	21
<i>Helichrysum arenarium</i>	21
<i>Thymus serpyllum</i>	20
<i>Hypnum cupressiforme</i> aggr.	20
<i>Trifolium campestre</i>	19
<i>Festuca stricta</i> subsp. <i>trachyphylla</i>	18
<i>Euphorbia cyparissias</i>	18
<i>Ornithopus perpusillus</i>	17
<i>Erigeron canadensis</i>	17
<i>Scleranthus perennis</i>	16
<i>Filago minima</i>	15
<i>Draba verna</i> aggr.	15
<i>Armeria maritima</i>	15
<i>Luzula campestris</i> aggr.	14
<i>Cladonia furcata</i>	14

<i>Veronica arvensis</i>	13
<i>Teesdalia nudicaulis</i>	13
<i>Sedum sexangulare</i>	13
<i>Galium verum</i>	13
<i>Aira caryophyllea</i>	13
<i>Racomitrium canescens</i>	12
<i>Myosotis stricta</i>	12
<i>Festuca rubra</i> aggr.	12
<i>Erodium cicutarium</i>	12
<i>Cerastium arvense</i>	12
<i>Aira praecox</i>	12
<i>Agrostis vinealis</i>	12
<i>Thymus pulegioides</i>	11
<i>Polytrichum juniperinum</i>	11
<i>Koeleria glauca</i>	11
<i>Cladonia pyxidata</i> aggr.	11
<i>Bromus hordeaceus</i>	11
<i>Anthoxanthum odoratum</i> aggr.	11

R1Q – Inland sanddrift and dune with siliceous grassland

Usually sparse grasslands on sand drifts among inland dunes and other open landscapes, mainly in the northern Central European lowlands, where the nutrient-poor and highly acidic surface is prone to wind erosion and hot droughty summers, forming a highly distinctive shifting-dune landscape. Soil development is very slow, pioneer bryophyte vegetation succeeded by an open cover of small tussock grasses, often with rich contingents of lichens on the compacted surface. Military training zones and abandoned lignite areas provide a new environment for the development of these grasslands.



Corresponding alliances in EuroVegChecklist 2016

- ◁ COR-01A *Corynephorion canescentis* Klika 1931
- ◁ COR-01B *Koelerion glaucae* Volk 1931
- ◁ SED-03A *Thero-Airion* Tx. ex Oberd. 1957

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Corynephorus canescens</i>	57
<i>Spergula morisonii</i>	53
<i>Polytrichum piliferum</i>	39
<i>Teesdalia nudicaulis</i>	32

<i>Cetraria aculeata</i>	24
<i>Agrostis vinealis</i>	23
<i>Cladonia zopfii</i>	20
<i>Cladonia macilenta</i> aggr.	20
<i>Rumex acetosella</i>	20
<i>Cladonia cervicornis</i>	18
<i>Cladonia glauca</i>	17
<i>Filago minima</i>	16
<i>Ceratodon purpureus</i>	15

Constant species (percentage frequencies)

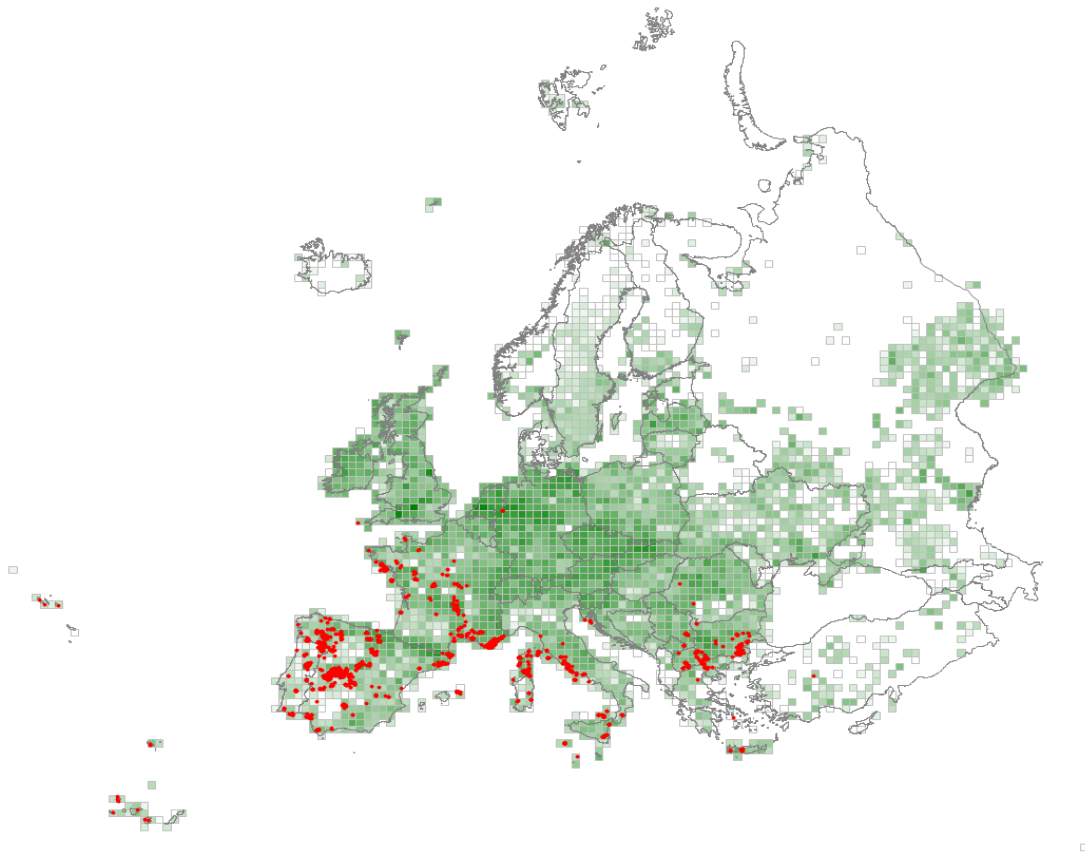
<i>Corynephorus canescens</i>	93
<i>Polytrichum piliferum</i>	67
<i>Rumex acetosella</i>	61
<i>Spergula morisonii</i>	58
<i>Teesdalia nudicaulis</i>	36
<i>Cetraria aculeata</i>	35
<i>Carex arenaria</i>	29
<i>Ceratodon purpureus</i>	28
<i>Jasione montana</i>	27
<i>Agrostis capillaris</i>	27
<i>Pilosella officinarum</i>	25
<i>Agrostis vinealis</i>	23
<i>Hypochaeris radicata</i>	22
<i>Cladonia pyxidata</i> aggr.	21
<i>Festuca ovina</i>	20
<i>Cladonia coccifera</i> aggr.	20
<i>Cladonia uncialis</i>	19
<i>Filago minima</i>	18
<i>Cladonia macilenta</i> aggr.	18
<i>Pinus sylvestris</i>	17
<i>Cladonia furcata</i>	17
<i>Scleranthus perennis</i>	14
<i>Cladonia glauca</i>	14
<i>Cladonia arbuscula</i> aggr.	14
<i>Cladonia gracilis</i>	13
<i>Cladonia foliacea</i>	12
<i>Cladonia cervicornis</i>	12
<i>Calluna vulgaris</i>	12
<i>Erigeron canadensis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Corynephorus canescens</i>	54
<i>Polytrichum piliferum</i>	27

R1R – Mediterranean to Atlantic open, dry, acid and neutral grassland

Usually ephemeral vegetation related to the yearly cycle of spring rains and summer drought through the Western Mediterranean and more fragmentarily into the Atlantic and continental areas where a high diversity of small annual plants make a brief, colourful appearance on bare patches of nutrient-poor, acidic soils. Typically, the habitat occurs as small patches in intimate mosaics with heath and scrub and has provided a valuable supplementary resource for sheep at lambing time.



Corresponding alliances in EuroVegChecklist 2016

- > SAC-03A *Armerio rumelicae*-*Potentillion* Mitsevski 1978
- <> SED-03A *Thero-Airion Tx.* ex Oberd. 1957
- > TUB-01A *Helianthemion guttati* Br.-Bl. in Br.-Bl. et al. 1940
- > TUB-01B *Crassulo tillaeae*-*Sedion caespitosi* de Foucault 1999
- > TUB-01C *Molinerion laevis* Br.-Bl. et al. 1952
- > TUB-01D *Sedion pedicellato-andegavensis* Rivas-Mart. et al. 1986
- > TUB-01E *Trifolion cherleri* Micevski 1972
- > TUB-01F *Sclerantho-Myositidion incrassatae* S. Brullo et al. 2001
- > TUB-01G *Thymion micantis* J.C. Costa et al. 2005
- > TUB-01H *Ornithopodo pinnati-Gaudinion coarctatae* Fernández Prieto et Aguiar in Fernández Prieto et al. 2012
- <> TUB-03A *Anthyllido hamosae-Malcolmion lacerae* Rivas Goday 1958
- > TUB-03B *Corynephoru articulati-Malcolmion patulae* Rivas Goday 1958

- > TUB-03C *Corynephorion maritimi* Costa, Pinto-Gomes, Neto et Rivas-Mart. in J.C. Costa et al. 2012
- > TUB-03D *Ormenido multicaulis-Malcolmion broussonetii* Br.-Bl. in Br.-Bl. et al. 1940
- > TUB-03E *Filagini asterisciflorae-Linarion humilis* Minissale et Sciandrello 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Tuberaria guttata</i>	43
<i>Filago gallica</i>	35
<i>Hypochaeris glabra</i>	33
<i>Aira cupaniana</i>	31
<i>Tolpis barbata</i>	28
<i>Ornithopus compressus</i>	28
<i>Filago minima</i>	27
<i>Vulpia bromoides</i>	27
<i>Ornithopus pinnatus</i>	23
<i>Galium divaricatum</i>	22
<i>Filago carpetana</i>	21
<i>Plantago bellardii</i>	20
<i>Vulpia myuros</i>	20
<i>Hispidella hispanica</i>	20
<i>Trifolium glomeratum</i>	19
<i>Moenchia erecta</i>	19
<i>Juncus capitatus</i>	19
<i>Silene gallica</i>	19
<i>Linaria pelisseriana</i>	19
<i>Trifolium arvense</i>	18
<i>Aira caryophyllea</i>	18
<i>Micropyrum tenellum</i>	18
<i>Anthoxanthum aristatum</i>	17
<i>Lathyrus angulatus</i>	17
<i>Coronilla repanda</i>	17
<i>Teesdalia coronopifolia</i>	17
<i>Crassula tillaea</i>	17
<i>Anthyllis lotooides</i>	17
<i>Sedum andegavense</i>	17
<i>Silene scabriflora</i>	16
<i>Psilurus incurvus</i>	16
<i>Trisetaria ovata</i>	16
<i>Trifolium cherleri</i>	16
<i>Vulpia ciliata</i>	16
<i>Crassula lycopodioides</i>	15
<i>Paronychia echinulata</i>	15

Constant species (percentage frequencies)

<i>Tuberaria guttata</i>	64
<i>Hypochaeris glabra</i>	41
<i>Trifolium arvense</i>	36
<i>Filago gallica</i>	33
<i>Trifolium campestre</i>	31
<i>Filago minima</i>	31
<i>Vulpia bromoides</i>	29
<i>Poa bulbosa</i>	28

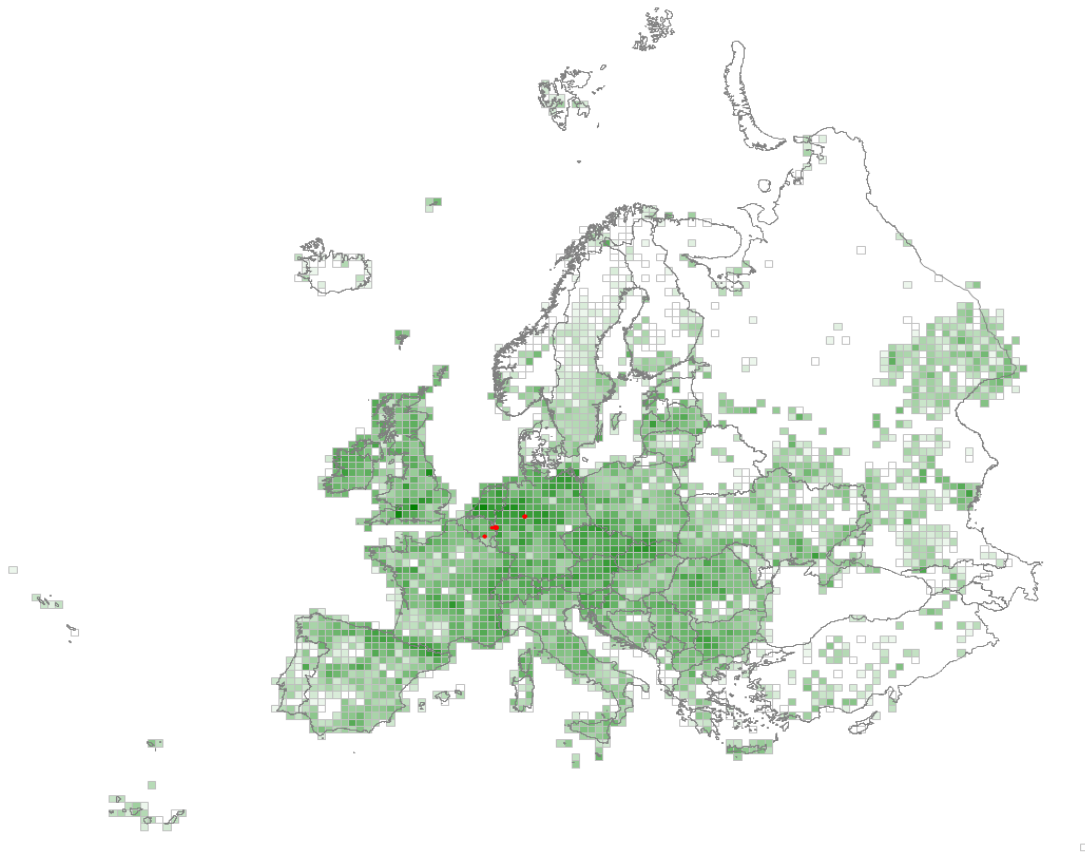
<i>Ornithopus compressus</i>	28
<i>Aira caryophyllea</i>	25
<i>Vulpia myuros</i>	24
<i>Rumex bucephalophorus</i>	21
<i>Galium divaricatum</i>	21
<i>Aira cupaniana</i>	21
<i>Vulpia ciliata</i>	19
<i>Tolpis barbata</i>	19
<i>Plantago bellardii</i>	19
<i>Leontodon saxatilis</i>	19
<i>Briza maxima</i>	19
<i>Trifolium glomeratum</i>	18
<i>Silene gallica</i>	18
<i>Micropyrum tenellum</i>	17
<i>Anthoxanthum aristatum</i>	17
<i>Sherardia arvensis</i>	15
<i>Rumex acetosella</i>	15
<i>Psilurus incurvus</i>	15
<i>Asterolinon linum-stellatum</i>	15
<i>Anagallis arvensis</i>	15
<i>Ornithopus perpusillus</i>	14
<i>Erodium cicutarium</i>	14
<i>Trifolium angustifolium</i>	13
<i>Linaria pelisseriana</i>	13
<i>Jasione montana</i>	13
<i>Aira elegantissima</i>	13
<i>Trifolium scabrum</i>	12
<i>Trifolium cherleri</i>	12
<i>Teesdalia coronopifolia</i>	12
<i>Linum trigynum</i>	12
<i>Bromus hordeaceus</i>	12
<i>Sagina apetala</i>	11
<i>Petrorhagia prolifera</i>	11
<i>Ornithopus pinnatus</i>	11
<i>Moenchia erecta</i>	11
<i>Arnoseris minima</i>	11
<i>Aira praecox</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Tuberaria guttata</i>	25
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R1S – Heavy-metal grassland in Western and Central Europe

Short open sward with a distinctive metallophyte component, occurring on shallow, skeletal soils over natural rock exposures with heavy metals in western and Central Europe, on mine spoil or ground contaminated by dust and waters from such sources. Typically it occurs in small patches in the landscapes, colonising slowly and sustained by the extreme environment. Sometimes it is dependent on grazing by wild herbivores that maintain early successional stages that are richer in cryptogams.



Corresponding alliances in EuroVegChecklist 2016

- > THL-10A *Thlaspion calaminarii* Ernst 1965
- > THL-10B *Armerion halleri* Ernst 1965

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Viola guesphalica</i>	76
<i>Viola calaminaria</i>	65
<i>Noccaea caerulescens</i>	52
<i>Arabidopsis halleri</i>	50
<i>Weissia controversa</i>	42
<i>Rumex acetosa</i>	32

<i>Ranunculus acris</i> aggr.	26
<i>Polygala vulgaris</i>	22
<i>Euphrasia stricta</i>	21
<i>Thymus pulegioides</i>	21
<i>Rhytidadelphus squarrosus</i>	21
<i>Arrhenatherum elatius</i>	21
<i>Pimpinella saxifraga</i>	21
<i>Agrostis capillaris</i>	20
<i>Brachythecium rutabulum</i>	20
<i>Bryum imbricatum</i>	19
<i>Silene vulgaris</i>	19
<i>Minuartia verna</i> aggr.	19
<i>Armeria alpina</i>	17
<i>Galium pumilum</i>	16
<i>Campanula rotundifolia</i>	16

Constant species (percentage frequencies)

<i>Rumex acetosa</i>	82
<i>Ranunculus acris</i> aggr.	71
<i>Agrostis capillaris</i>	71
<i>Viola guesstphalica</i>	57
<i>Arrhenatherum elatius</i>	49
<i>Silene vulgaris</i>	45
<i>Campanula rotundifolia</i>	45
<i>Arabidopsis halleri</i>	45
<i>Viola calaminaria</i>	43
<i>Holcus lanatus</i>	43
<i>Thymus pulegioides</i>	41
<i>Pimpinella saxifraga</i>	39
<i>Festuca ovina</i>	39
<i>Brachythecium rutabulum</i>	39
<i>Rhytidadelphus squarrosus</i>	35
<i>Polygala vulgaris</i>	31
<i>Minuartia verna</i> aggr.	31
<i>Noccaea caerulea</i>	29
<i>Cladonia pyxidata</i> aggr.	29
<i>Potentilla erecta</i>	27
<i>Poa trivialis</i>	24
<i>Galium pumilum</i>	24
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	24
<i>Armeria maritima</i>	24
<i>Weissia controversa</i>	22
<i>Plantago lanceolata</i>	22
<i>Molinia caerulea</i> aggr.	22
<i>Pseudoscleropodium purum</i>	20
<i>Lotus corniculatus</i>	20
<i>Euphrasia stricta</i>	20
<i>Equisetum arvense</i>	20
<i>Cladonia rangiferina</i>	20
<i>Genista tinctoria</i>	18
<i>Achillea millefolium</i> aggr.	16
<i>Cladonia furcata</i>	14
<i>Pleurozium schreberi</i>	12
<i>Peltigera canina</i>	12
<i>Climacium dendroides</i>	12

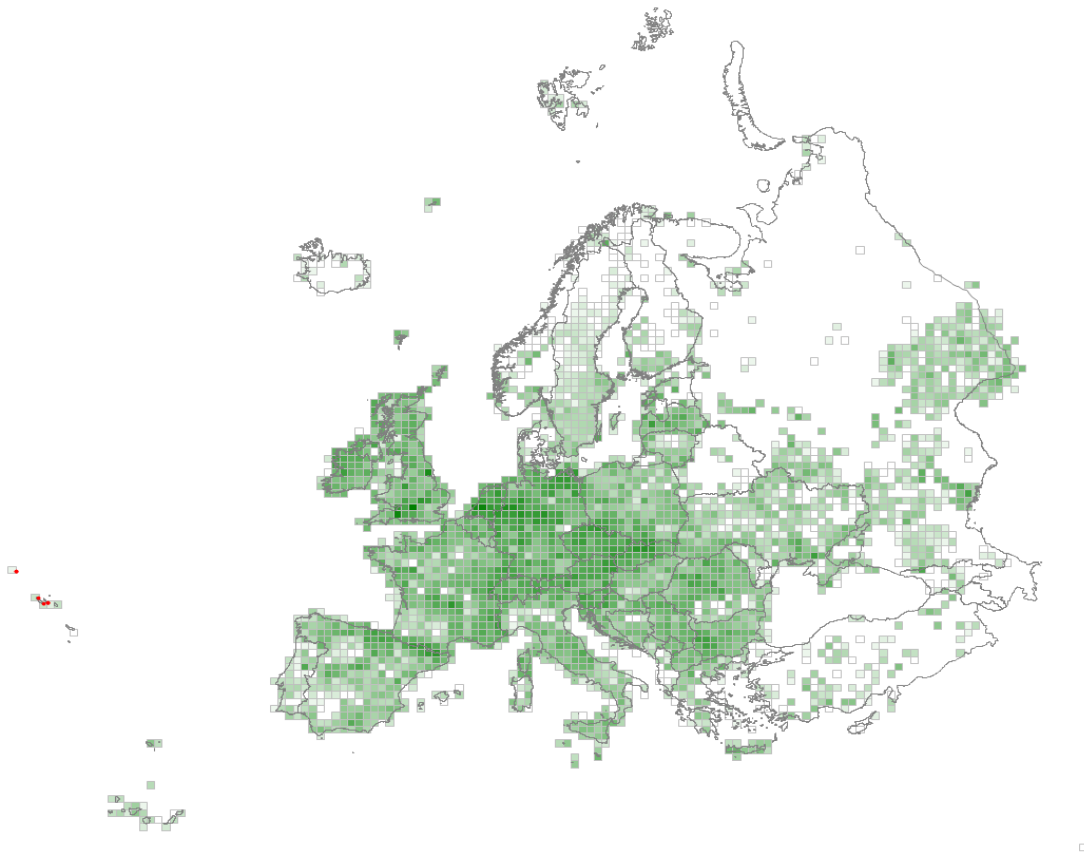
<i>Carex hirta</i>	12
<i>Armeria alpina</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Festuca ovina</i>	37
<i>Agrostis capillaris</i>	37

R1T – Azorean open, dry, acid to neutral grassland

Ungrazed grassland, with mixtures of grasses, herbs and mat-formers, including many endemics which may dominate, confined to the Azores where it is characteristic of exposed or unstable rocky slopes, ledges and landslips with nutrient-poor acid soils. The species composition varies according to altitude and climate, rock type and terrain stability.



Corresponding alliances in EuroVegChecklist 2016

- > TOL-01A Festucion francoi Lüpnitz 1976 corr. Fernández Prieto, Aguiar, J.C. Costa, Lousã et Rivas-Mart. in Fernández Prieto et al. 2012
- > TOL-01B Tolpido succulentae-Agrostion congestiflorae Aguiar et Fernández Prieto in Fernández Prieto et al. 2012

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Agrostis congestiflora</i>	58
<i>Brachypodium gaditanum</i>	54
<i>Festuca petraea</i>	51
<i>Holcus rigidus</i>	51
<i>Sibthorpia europaea</i>	46
<i>Juniperus brevifolia</i>	45

<i>Deschampsia foliosa</i>	45
<i>Festuca francoi</i>	42
<i>Euphorbia azorica</i>	38
<i>Carex hochstetterana</i>	36
<i>Cyclosorus pozoii</i>	36
<i>Luzula elegans</i>	34
<i>Selaginella kraussiana</i>	34
<i>Corema album</i>	32
<i>Carex peregrina</i>	31
<i>Blechnum spicant</i>	30
<i>Centaurium scilloides</i>	29
<i>Lysimachia nemorum</i>	28
<i>Diplazium caudatum</i>	27
<i>Huperzia dentata</i>	26
<i>Vaccinium cylindraceum</i>	24
<i>Woodwardia radicans</i>	23
<i>Osmunda regalis</i>	21
<i>Erica scoparia</i>	20
<i>Thymus caespititius</i>	18
<i>Agrostis castellana</i>	18

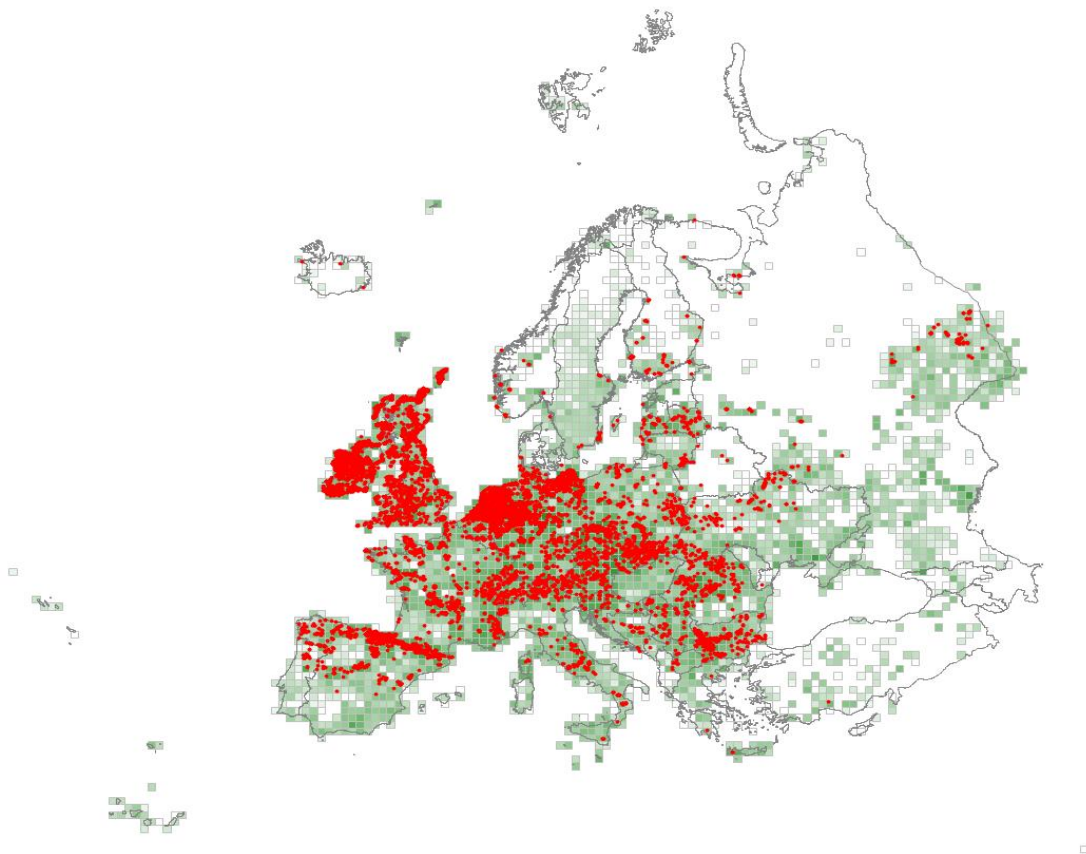
Constant species (percentage frequencies)

<i>Holcus rigidus</i>	50
<i>Blechnum spicant</i>	50
<i>Sibthorpia europaea</i>	33
<i>Rubia peregrina</i>	33
<i>Lysimachia nemorum</i>	33
<i>Luzula elegans</i>	33
<i>Juniperus brevifolia</i>	33
<i>Festuca petraea</i>	33
<i>Festuca francoi</i>	33
<i>Erica scoparia</i>	33
<i>Deschampsia foliosa</i>	33
<i>Daucus carota</i>	33
<i>Brachypodium gaditanum</i>	33
<i>Agrostis congestiflora</i>	33
<i>Agrostis castellana</i>	33
<i>Woodwardia radicans</i>	17
<i>Vaccinium cylindraceum</i>	17
<i>Thymus caespititius</i>	17
<i>Sphagnum palustre</i> aggr.	17
<i>Selaginella kraussiana</i>	17
<i>Potentilla erecta</i>	17
<i>Plantago lanceolata</i>	17
<i>Osmunda regalis</i>	17
<i>Lotus pedunculatus</i>	17
<i>Juncus effusus</i>	17
<i>Huperzia dentata</i>	17
<i>Euphorbia azorica</i>	17
<i>Diplazium caudatum</i>	17
<i>Cyclosorus pozoii</i>	17
<i>Crithmum maritimum</i>	17
<i>Corema album</i>	17
<i>Clinopodium vulgare</i>	17
<i>Centaurium scilloides</i>	17

<i>Carex peregrina</i>	17
<i>Carex hochstetterana</i>	17
<i>Carex echinata</i>	17
<i>Athyrium filix-femina</i>	17

R21 – Mesic permanent pasture of lowlands and mountains

The most common and widespread kind of traditionally managed pasture on deeper, well-drained mesic soils throughout temperate Europe, with many local types related to regional climate, terrain and pastoral traditions. Typically dominated by mixtures of productive grasses and herbs, it can be species-rich with distinctive scarce and rare plants where low input grazing and manuring are maintained. Often once part of wider pastoral landscapes with associated meadows, it is now widely transformed by intensive grazing.



Corresponding alliances in EuroVegChecklist 2016

- <> MOL-01C Cynosurion cristati Tx. 1947
- <> MOL-03B Poion alpinae Gams ex Oberd. 1950
- <> MOL-03C Poion supinae Rivas-Mart. et Géhu 1978

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Lolium perenne</i>	29
<i>Bellis perennis</i>	28
<i>Trifolium repens</i>	28
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	25
<i>Cynosurus cristatus</i>	24

<i>Phleum pratense</i>	24
<i>Scorzoneroides autumnalis</i>	23
<i>Alopecurus geniculatus</i>	20
<i>Ranunculus repens</i>	19
<i>Schedonorus pratensis</i>	18
<i>Taraxacum</i> sect. <i>Taraxacum</i>	16
<i>Poa trivialis</i>	15

Constant species (percentage frequencies)

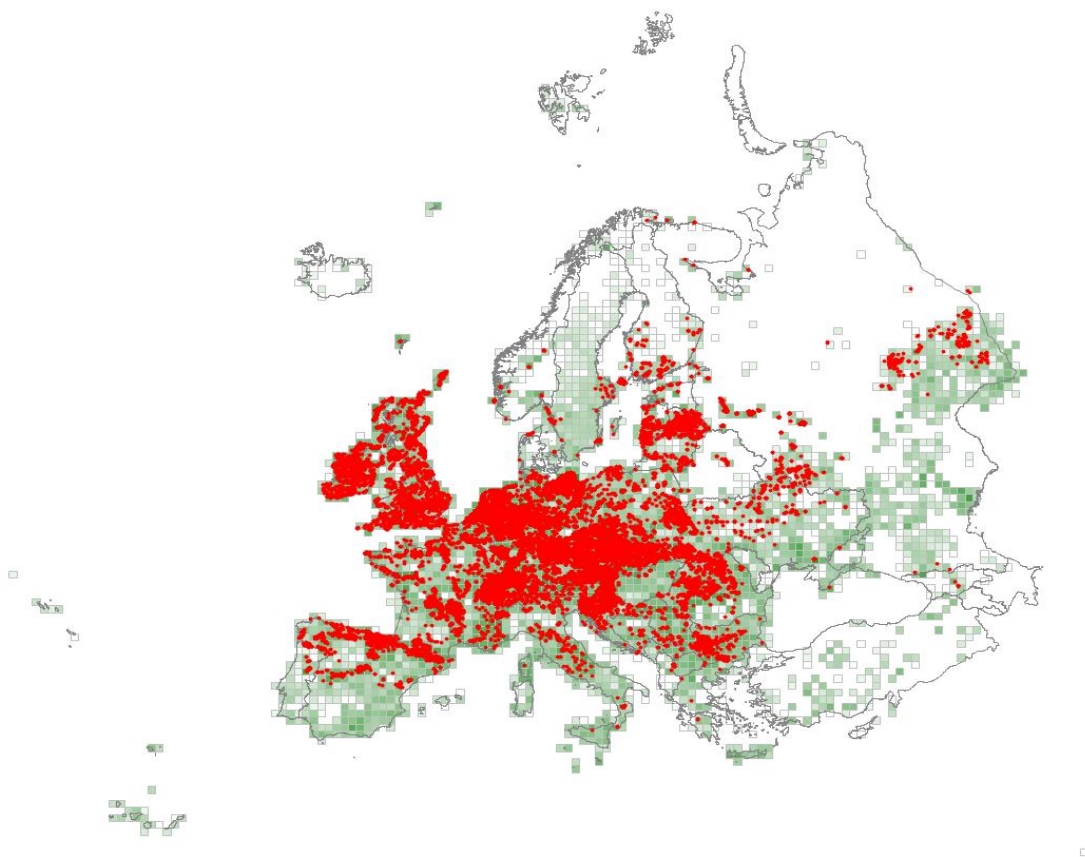
<i>Trifolium repens</i>	81
<i>Festuca rubra</i> aggr.	63
<i>Lolium perenne</i>	60
<i>Plantago lanceolata</i>	53
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	53
<i>Ranunculus repens</i>	51
<i>Holcus lanatus</i>	48
<i>Poa pratensis</i> aggr.	47
<i>Agrostis capillaris</i>	47
<i>Taraxacum</i> sect. <i>Taraxacum</i>	46
<i>Poa trivialis</i>	45
<i>Bellis perennis</i>	45
<i>Scorzoneroides autumnalis</i>	40
<i>Ranunculus acris</i> aggr.	40
<i>Agrostis stolonifera</i>	40
<i>Cynosurus cristatus</i>	38
<i>Trifolium pratense</i>	36
<i>Achillea millefolium</i> aggr.	36
<i>Anthoxanthum odoratum</i> aggr.	35
<i>Phleum pratense</i>	34
<i>Schedonorus pratensis</i>	29
<i>Rumex acetosa</i>	29
<i>Plantago major</i>	26
<i>Lotus corniculatus</i>	26
<i>Prunella vulgaris</i>	25
<i>Dactylis glomerata</i>	25
<i>Cardamine pratensis</i>	24
<i>Ochlopoa annua</i>	21
<i>Hypochaeris radicata</i>	20
<i>Alopecurus geniculatus</i>	19
<i>Cirsium arvense</i>	18
<i>Luzula campestris</i> aggr.	15
<i>Elytrigia repens</i> aggr.	14
<i>Galium verum</i>	13
<i>Ranunculus bulbosus</i>	12
<i>Carex nigra</i>	12
<i>Bromus hordeaceus</i>	12
<i>Stellaria media</i>	11
<i>Argentina anserina</i>	11
<i>Alopecurus pratensis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Festuca rubra</i> aggr.	26
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R22 – Low and medium altitude hay meadow

The most common and widespread kind of traditionally managed meadow in deeper, well-drained mesic soils throughout the lowlands and foothills of temperate Europe, with many local types differing according to regional climate, terrain and mowing traditions. Typically dominated by mixtures of productive grasses and herbs, it can be very species-rich with distinctive scarce and rare plants where traditional regimes of mowing, grazing and manuring are maintained. Often once part of wider agricultural landscapes with associated pastures, it is now widely transformed by shifts to silage production and transitions to intensive silage grasslands are commonplace.



Corresponding alliances in EuroVegChecklist 2016

- > DRY-02B *Gypsophilo glomeratae-Cephalarion coriaceae* Ryff in Golub et al. 2011
- > MOL-01A *Arrhenatherion elatioris* Luquet 1926
- ◁ MOL-01C *Cynosurion cristati* Tx. 1947
- > MOL-01E *Brachypodio-Centaureion nemoralis* Br.-Bl. 1967
- > MOL-01F *Salvio pratensis-Dactylidion glomeratae* Ubaldi et al. in Ubaldi 2003
- > MOL-01G *Rumicion thyrsoflori* Micevski 1994
- > MOL-01H *Trifolio pratensis-Brizion elatioris* Didukh et Kuzemko 2009
- > MOL-02A *Agrostion vinealis* Sipailova et al. 1985
- > MOL-02C *Trifolion montani* Naumova 1986

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Trisetum flavescens</i>	27
<i>Schedonorus pratensis</i>	24
<i>Rumex acetosa</i>	23
<i>Crepis biennis</i>	23
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	23
<i>Ranunculus acris</i> aggr.	21
<i>Leucanthemum vulgare</i> aggr.	21
<i>Trifolium pratense</i>	21
<i>Holcus lanatus</i>	19
<i>Arrhenatherum elatius</i>	19
<i>Plantago lanceolata</i>	19
<i>Alopecurus pratensis</i>	19
<i>Achillea millefolium</i> aggr.	18
<i>Lathyrus pratensis</i>	18
<i>Stellaria graminea</i>	17
<i>Avenula pubescens</i>	17
<i>Trifolium repens</i>	16
<i>Taraxacum</i> sect. <i>Taraxacum</i>	16
<i>Veronica chamaedrys</i> aggr.	16
<i>Poa pratensis</i> aggr.	16
<i>Cynosurus cristatus</i>	16
<i>Festuca rubra</i> aggr.	15
<i>Vicia cracca</i>	15

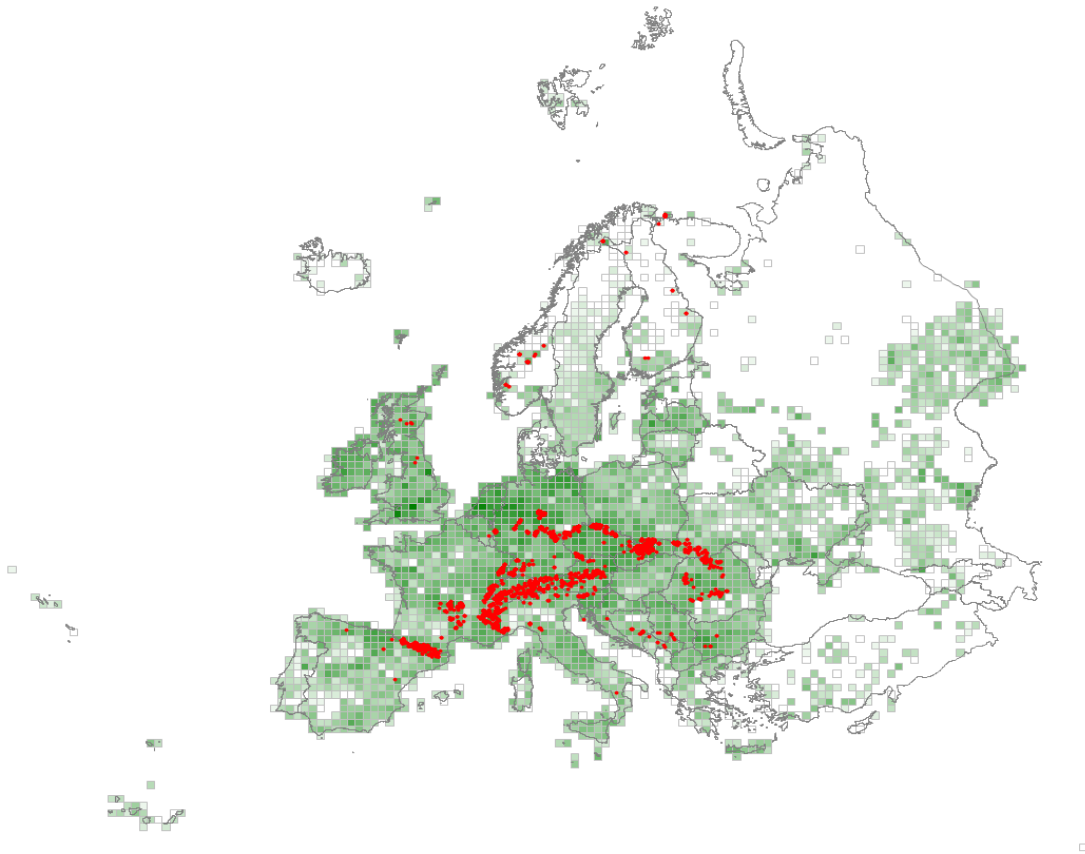
Constant species (percentage frequencies)

<i>Plantago lanceolata</i>	68
<i>Festuca rubra</i> aggr.	68
<i>Dactylis glomerata</i>	67
<i>Rumex acetosa</i>	60
<i>Holcus lanatus</i>	60
<i>Achillea millefolium</i> aggr.	59
<i>Ranunculus acris</i> aggr.	58
<i>Trifolium pratense</i>	55
<i>Anthoxanthum odoratum</i> aggr.	54
<i>Poa pratensis</i> aggr.	51
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	49
<i>Trifolium repens</i>	48
<i>Taraxacum</i> sect. <i>Taraxacum</i>	45
<i>Arrhenatherum elatius</i>	45
<i>Agrostis capillaris</i>	43
<i>Veronica chamaedrys</i> aggr.	39
<i>Schedonorus pratensis</i>	39
<i>Leucanthemum vulgare</i> aggr.	38
<i>Lotus corniculatus</i>	36
<i>Trisetum flavescens</i>	34
<i>Galium mollugo</i> aggr.	34
<i>Poa trivialis</i>	33
<i>Lathyrus pratensis</i>	33
<i>Vicia cracca</i>	31
<i>Luzula campestris</i> aggr.	30
<i>Heracleum sphondylium</i>	28
<i>Alopecurus pratensis</i>	28

<i>Centaurea jacea</i>	26
<i>Ranunculus repens</i>	25
<i>Cynosurus cristatus</i>	25
<i>Stellaria graminea</i>	23
<i>Lolium perenne</i>	23
<i>Prunella vulgaris</i>	22
<i>Leontodon hispidus</i>	22
<i>Briza media</i>	21
<i>Phleum pratense</i>	20
<i>Galium verum</i>	20
<i>Knautia arvensis</i>	19
<i>Avenula pubescens</i>	19
<i>Daucus carota</i>	18
<i>Bromus hordeaceus</i>	17
<i>Bellis perennis</i>	17
<i>Rhinanthus minor</i>	16
<i>Ranunculus bulbosus</i>	16
<i>Elytrigia repens</i> aggr.	16
<i>Cirsium arvense</i>	16
<i>Anthriscus sylvestris</i>	16
<i>Scorzonerooides autumnalis</i>	15
<i>Pimpinella saxifraga</i>	15
<i>Deschampsia cespitosa</i> aggr.	15
<i>Crepis biennis</i>	15
<i>Cardamine pratensis</i>	15
<i>Trifolium dubium</i>	14
<i>Silene flos-cuculi</i>	14
<i>Sanguisorba officinalis</i>	14
<i>Medicago lupulina</i>	14
<i>Hypochaeris radicata</i>	14
<i>Campanula patula</i> aggr.	14
<i>Tragopogon pratensis</i>	13
<i>Vicia sepium</i>	12
<i>Plantago media</i>	12
<i>Filipendula ulmaria</i>	12
<i>Equisetum arvense</i>	12
<i>Glechoma hederacea</i>	11
<i>Ajuga reptans</i>	11
<i>Agrostis stolonifera</i>	11

R23 – Mountain hay meadow

The typical kind of traditionally-managed meadow on deep, well-drained, mesic soils throughout the mountains of Northern and Central Europe where there is a short cool growing season. There are many local types differing according to regional climate, terrain and farming traditions but the vegetation is typically dominated by mixtures of productive grasses and herbs and can be species-rich with distinctive scarce and rare plants where traditional regimes of mowing, grazing and dunging are maintained. Often once part of wider agricultural landscapes with associated pastures, good examples of the habitat now often survive more fragmentarily and transitions to silage grassland are widespread.



Corresponding alliances in EuroVegChecklist 2016

- > MOL-01B *Phyteumato-Trisetion* Ellmauer et Mucina 1993
- <> MOL-03A *Trisetio flavescens-Polygonion bistortae* Br.-Bl. et Tx. ex Marschall 1947
- <> MOL-03D *Violion cornutae* Nègre 1972
- <> MOL-03E *Panicion serbicae* Lakušić 1966
- <> MOL-03F *Helictotricho compressi-Bistortion officinalis* Didukh et Kuzemko 2009
- <> MOL-03G *Astrantion maximae* Korotkov 2013
- > MOL-04A *Polygonion krascheninnikovii* Kashapov 1985

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Poa chaixii</i>	39
<i>Meum athamanticum</i>	38
<i>Crepis mollis</i>	33
<i>Hypericum maculatum</i> aggr.	33
<i>Phyteuma spicatum</i>	31
<i>Trisetum flavescens</i>	28
<i>Alchemilla vulgaris</i> aggr.	28
<i>Astrantia major</i>	27
<i>Bistorta officinalis</i>	27
<i>Geranium sylvaticum</i> aggr.	26
<i>Crepis pyrenaica</i>	25
<i>Arabidopsis halleri</i>	24
<i>Pimpinella major</i>	22
<i>Leucanthemum vulgare</i> aggr.	21
<i>Campanula serrata</i>	20
<i>Crocus vernus</i>	20
<i>Trollius europaeus</i>	20
<i>Centaurea phrygia</i> aggr.	18
<i>Veronica chamaedrys</i> aggr.	18
<i>Trifolium pratense</i>	18
<i>Agrostis capillaris</i>	17
<i>Leontodon hispidus</i>	17
<i>Rumex acetosa</i>	17
<i>Crepis conyzifolia</i>	17
<i>Stellaria graminea</i>	17
<i>Phleum alpinum</i> aggr.	17
<i>Ranunculus acris</i> aggr.	16
<i>Potentilla aurea</i>	16
<i>Ranunculus polyanthemus</i>	15
<i>Festuca rubra</i> aggr.	15
<i>Anthoxanthum odoratum</i> aggr.	15

Constant species (percentage frequencies)

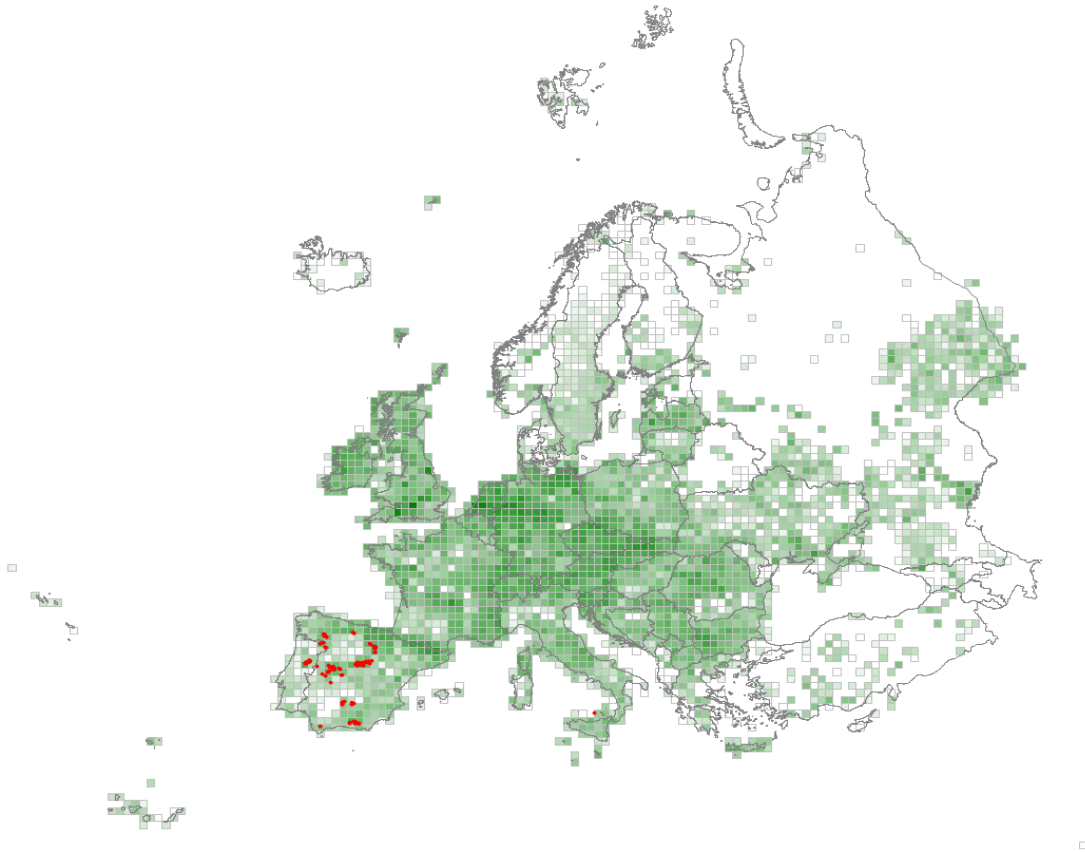
<i>Festuca rubra</i> aggr.	67
<i>Agrostis capillaris</i>	63
<i>Anthoxanthum odoratum</i> aggr.	61
<i>Geranium sylvaticum</i> aggr.	60
<i>Hypericum maculatum</i> aggr.	52
<i>Achillea millefolium</i> aggr.	50
<i>Trifolium pratense</i>	47
<i>Dactylis glomerata</i>	47
<i>Rumex acetosa</i>	45
<i>Veronica chamaedrys</i> aggr.	44
<i>Ranunculus acris</i> aggr.	44
<i>Potentilla erecta</i>	42
<i>Phyteuma spicatum</i>	40
<i>Leucanthemum vulgare</i> aggr.	37
<i>Bistorta officinalis</i>	37
<i>Trisetum flavescens</i>	36
<i>Poa chaixii</i>	35
<i>Luzula campestris</i> aggr.	35
<i>Leontodon hispidus</i>	34

<i>Meum athamanticum</i>	33
<i>Lotus corniculatus</i>	32
<i>Alchemilla vulgaris</i> aggr.	31
<i>Deschampsia cespitosa</i> aggr.	30
<i>Plantago lanceolata</i>	29
<i>Briza media</i>	29
<i>Trifolium repens</i>	27
<i>Nardus stricta</i>	27
<i>Heracleum sphondylium</i>	27
<i>Vicia cracca</i>	25
<i>Trollius europaeus</i>	24
<i>Campanula rotundifolia</i>	24
<i>Astrantia major</i>	24
<i>Stellaria graminea</i>	23
<i>Luzula luzuloides</i>	23
<i>Avenella flexuosa</i>	23
<i>Ranunculus polyanthemos</i>	22
<i>Pimpinella major</i>	22
<i>Phleum alpinum</i> aggr.	22
<i>Lathyrus pratensis</i>	22
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	22
<i>Arabidopsis halleri</i>	22
<i>Silene vulgaris</i>	21
<i>Vaccinium myrtillus</i>	19
<i>Taraxacum</i> sect. <i>Taraxacum</i>	19
<i>Potentilla aurea</i>	19
<i>Rumex arifolius</i>	18
<i>Galium mollugo</i> aggr.	18
<i>Carlina acaulis</i>	18
<i>Vicia sepium</i>	17
<i>Primula elatior</i>	17
<i>Knautia arvensis</i>	17
<i>Crepis mollis</i>	17
<i>Rhynchospora squarrosus</i>	16
<i>Ajuga reptans</i>	16
<i>Solidago virgaurea</i>	15
<i>Poa trivialis</i>	15
<i>Poa pratensis</i> aggr.	14
<i>Cruciata glabra</i>	14
<i>Campanula scheuchzeri</i>	14
<i>Avenula pubescens</i>	14
<i>Anemone nemorosa</i>	14
<i>Alopecurus pratensis</i>	14
<i>Thymus pulegioides</i>	13
<i>Prunella vulgaris</i>	13
<i>Phyteuma orbiculare</i>	13
<i>Lathyrus linifolius</i>	13
<i>Galium pumilum</i>	13
<i>Crepis pyrenaica</i>	13
<i>Carex sempervirens</i>	13
<i>Campanula patula</i> aggr.	13
<i>Tragopogon pratensis</i>	12
<i>Silene dioica</i>	12
<i>Rhinanthus minor</i>	12
<i>Polygala vulgaris</i>	12

<i>Holcus lanatus</i>	12
<i>Helianthemum nummularium</i>	12
<i>Gymnadenia conopsea</i>	12
<i>Galium saxatile</i>	12
<i>Chaerophyllum hirsutum</i>	12
<i>Carex pallescens</i>	12
<i>Veronica officinalis</i>	11
<i>Schedonorus pratensis</i>	11
<i>Gentiana lutea</i>	11
<i>Cynosurus cristatus</i>	11
<i>Crocus vernus</i>	11
<i>Centaurea phrygia</i> aggr.	11
<i>Campanula glomerata</i>	11
<i>Arnica montana</i>	11

R24 – Iberian summer pasture (vallicar)

Highly distinctive tall grass pasture and meadow associated with traditional cattle rearing in the lowlands and foothills of western Iberia where a mediterranean or submediterranean climate and the long-established grazing and occasional mowing regimes sustain a striking contingent of regional plants and association with dehesa. The substrate is sandy or clayey, often subject to temporary flooding with rapid desiccation, conditions which affect the pattern of grass dominance.



Corresponding alliances in EuroVegChecklist 2016

- > SAC-01A *Festuco amplae-Agrostion castellanæ* Theurillat in Di Pietro et al. 2015
- > SAC-01B *Festucion merinoi* Rivas-Mart. et Sánchez-Mata in Rivas-Mart. et al. 1986
corr. Rivas-Mart. et Sánchez-Mata in Rivas-Mart. et al. 2002
- > SAC-01C *Agrostio castellanæ-Stipion giganteæ* Rivas Goday ex Rivas-Mart. et
Fernández-González 1991

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Festuca ampla</i>	80
<i>Agrostis castellanæ</i>	48
<i>Trifolium strictum</i>	29

<i>Anthoxanthum aristatum</i>	28
<i>Chamaemelum nobile</i>	27
<i>Hypochaeris radicata</i>	24
<i>Trifolium striatum</i>	23
<i>Armeria arenaria</i>	22
<i>Centaurea ornata</i>	22
<i>Armeria transmontana</i>	22
<i>Lepidium heterophyllum</i>	21
<i>Ctenopsis delicatula</i>	19
<i>Celtica gigantea</i>	19
<i>Festuca elegans</i>	18
<i>Vulpia bromoides</i>	18
<i>Carex camposii</i>	16
<i>Lotus glacialis</i>	15
<i>Crepis capillaris</i>	15
<i>Briza minor</i>	15

Constant species (percentage frequencies)

<i>Agrostis castellana</i>	88
<i>Festuca ampla</i>	73
<i>Hypochaeris radicata</i>	57
<i>Plantago lanceolata</i>	46
<i>Holcus lanatus</i>	39
<i>Pilosella officinarum</i>	31
<i>Daucus carota</i>	29
<i>Trifolium pratense</i>	27
<i>Anthoxanthum aristatum</i>	27
<i>Dactylis glomerata</i>	26
<i>Bromus hordeaceus</i>	24
<i>Galium verum</i>	23
<i>Trifolium striatum</i>	22
<i>Trifolium strictum</i>	21
<i>Convolvulus arvensis</i>	21
<i>Trifolium campestre</i>	20
<i>Jasione montana</i>	20
<i>Vulpia bromoides</i>	18
<i>Trifolium dubium</i>	18
<i>Eryngium campestre</i>	18
<i>Arrhenatherum elatius</i>	18
<i>Aira caryophyllea</i>	16
<i>Ranunculus bulbosus</i>	14
<i>Ononis spinosa</i>	14
<i>Nardus stricta</i>	14
<i>Juncus squarrosus</i>	14
<i>Crepis capillaris</i>	14
<i>Chamaemelum nobile</i>	14
<i>Armeria arenaria</i>	14
<i>Trifolium repens</i>	13
<i>Cynosurus cristatus</i>	13
<i>Tuberaria guttata</i>	12
<i>Trifolium glomeratum</i>	12
<i>Trifolium angustifolium</i>	12
<i>Jacobaea vulgaris</i>	12
<i>Andryala integrifolia</i>	12
<i>Rhinanthus minor</i>	11

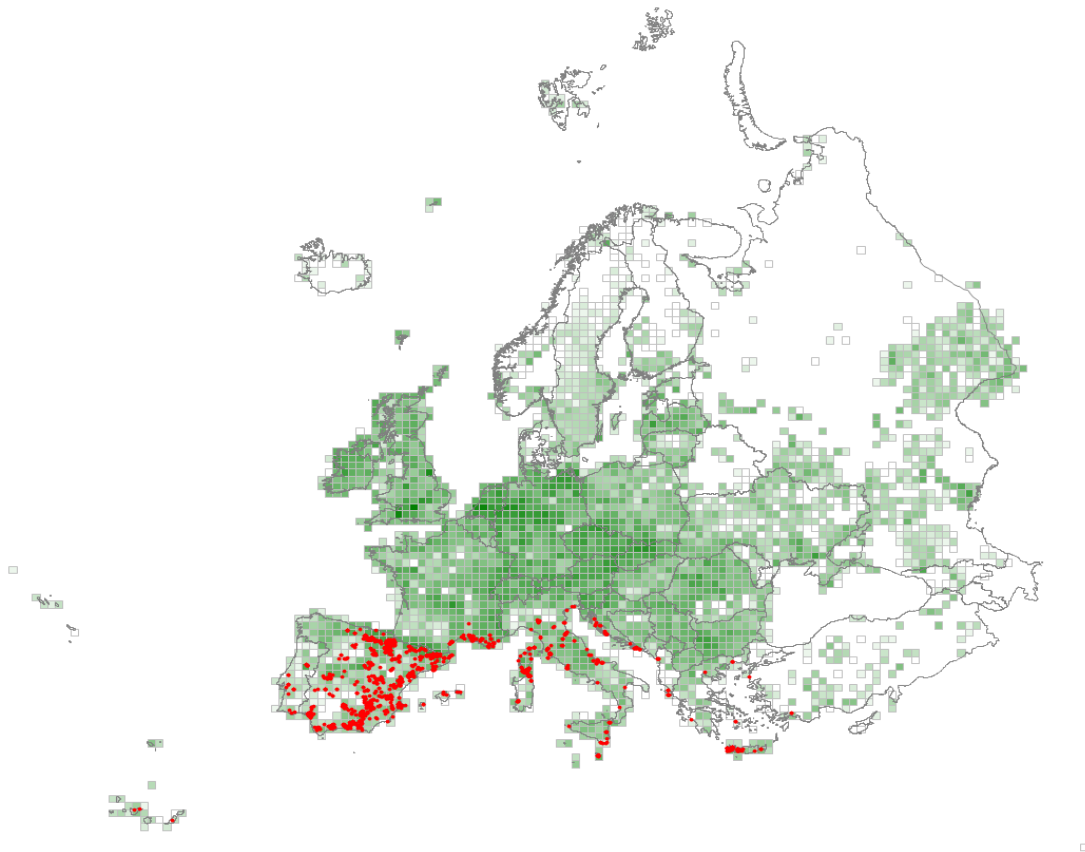
<i>Poa bulbosa</i>	11
<i>Danthonia decumbens</i>	11
<i>Campanula rapunculus</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Agrostis castellana</i>	63
<i>Festuca ampla</i>	32

R31 – Mediterranean tall humid inland grassland

Rush- and tall grass-dominated vegetation of seasonally waterlogged soils, mostly acidic and slightly saline, occurring in depressions throughout the Mediterranean Basin. Though not dependent on grazing, it can be a valuable source of fodder for cattle and sheep in traditional pastoral systems during summer when other pastures are dried up.



Corresponding alliances in EuroVegChecklist 2016

- <> MOL-07A Molinio-Holoschoenion Br.-Bl. ex Tchou 1948
- > MOL-07C Dactylorhizo-Juncion striati S. Brullo et Grillo 1978
- > MOL-07F Brachypodio sylvatici-Holoschoenion romani Gradstein et Smittenberg 1977

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cirsium monspessulanum</i>	44
<i>Scirpoides holoschoenus</i>	37
<i>Lysimachia ephemera</i>	35
<i>Cirsium pyrenaicum</i>	34
<i>Carex mairei</i>	32
<i>Hypericum caprifolium</i>	29
<i>Sonchus maritimus</i>	28

<i>Senecio doria</i> aggr.	25
<i>Dactylorhiza elata</i>	25
<i>Lotus maritimus</i>	25
<i>Thalictrum speciosissimum</i>	19
<i>Juncus inflexus</i>	19
<i>Peucedanum hispanicum</i>	18
<i>Dorycnium rectum</i>	17
<i>Pulicaria dysenterica</i>	17
<i>Mentha suaveolens</i>	17
<i>Mentha longifolia</i>	16
<i>Schoenus nigricans</i>	16

Constant species (percentage frequencies)

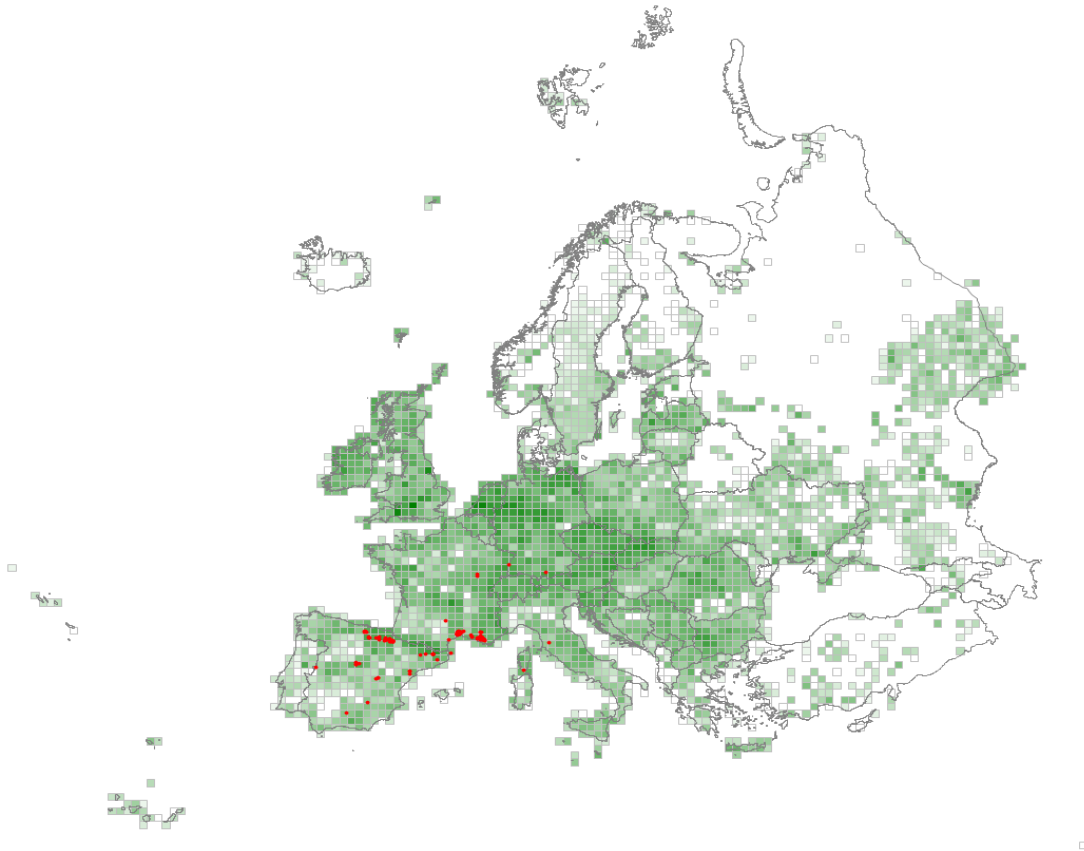
<i>Scirpoides holoschoenus</i>	61
<i>Schoenus nigricans</i>	30
<i>Dittrichia viscosa</i>	29
<i>Agrostis stolonifera</i>	29
<i>Molinia caerulea</i> aggr.	28
<i>Sonchus maritimus</i>	24
<i>Cirsium monspessulanum</i>	23
<i>Holcus lanatus</i>	20
<i>Carex flacca</i>	20
<i>Schedonorus arundinaceus</i>	17
<i>Mentha longifolia</i>	17
<i>Juncus inflexus</i>	17
<i>Cirsium pyrenaicum</i>	17
<i>Brachypodium phoenicoides</i>	17
<i>Pulicaria dysenterica</i>	16
<i>Potentilla reptans</i>	16
<i>Lotus maritimus</i>	16
<i>Phragmites australis</i>	15
<i>Lythrum salicaria</i>	14
<i>Mentha suaveolens</i>	13
<i>Lysimachia ephemerum</i>	13
<i>Juncus maritimus</i>	13
<i>Blackstonia perfoliata</i>	13
<i>Trifolium pratense</i>	12
<i>Prunella vulgaris</i>	12
<i>Juncus acutus</i>	12
<i>Equisetum ramosissimum</i>	12
<i>Daucus carota</i>	12
<i>Carex mairei</i>	12
<i>Juncus articulatus</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Scirpoides holoschoenus</i>	29
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R32 – Mediterranean short moist grassland of lowlands

Short species-rich swards dominated by graminoids, traditionally sustained by heavy grazing, on clay soils through the Mediterranean region where there is winter waterlogging and distinctive surface cracking in the droughty summer.



Corresponding alliances in EuroVegChecklist 2016

- > MOL-07D *Deschampsia mediae* Br.-Bl. et al. 1952 nom. conserv. propos.
- > MOL-07E *Gaudinio fragilis-Hordeion bulbosi* Galán de Mera et al. 1997
- > MOL-10C *Trifolium maritimi* Br.-Bl. ex Br.-Bl. et al. 1952

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Prunella hyssopifolia</i>	78
<i>Deschampsia media</i>	69
<i>Jasonia tuberosa</i>	66
<i>Plantago maritima</i> subsp. <i>serpentina</i>	59
<i>Leontodon hirtus</i>	48
<i>Seseli longifolium</i>	43
<i>Carex flacca</i>	32
<i>Centaurium pulchellum</i>	31

<i>Lotus tenuis</i>	27
<i>Brachypodium phoenicoides</i>	24
<i>Hypericum tomentosum</i>	18
<i>Thymelaea passerina</i>	17
<i>Achillea ageratum</i>	16

Constant species (percentage frequencies)

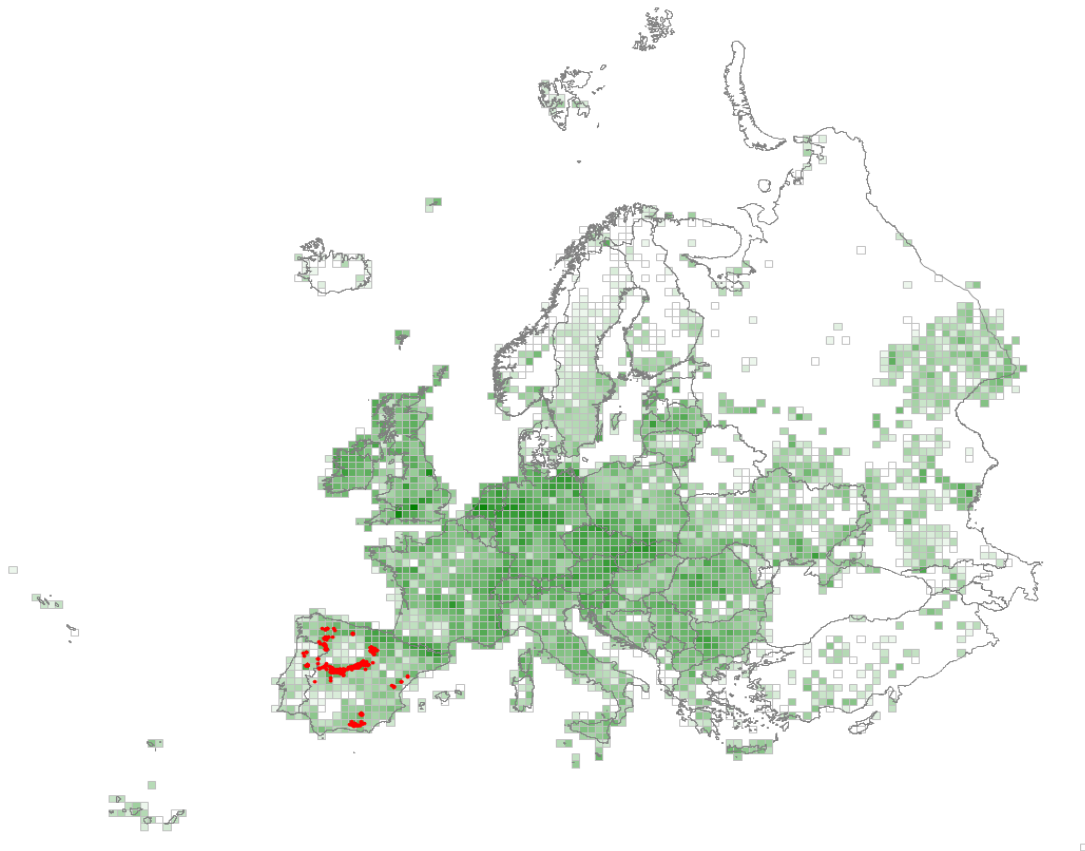
<i>Carex flacca</i>	86
<i>Prunella hyssopifolia</i>	77
<i>Plantago maritima</i> subsp. <i>serpentina</i>	64
<i>Deschampsia media</i>	57
<i>Jasonia tuberosa</i>	52
<i>Agrostis stolonifera</i>	44
<i>Leontodon hirtus</i>	36
<i>Brachypodium phoenicoides</i>	36
<i>Lotus tenuis</i>	35
<i>Centaureum pulchellum</i>	31
<i>Koeleria vallesiana</i>	28
<i>Centaurea jacea</i>	25
<i>Seseli longifolium</i>	23
<i>Festuca rubra</i> aggr.	23
<i>Briza media</i>	23
<i>Pilosella officinarum</i>	22
<i>Schoenus nigricans</i>	20
<i>Lotus corniculatus</i>	20
<i>Juncus articulatus</i>	19
<i>Deschampsia cespitosa</i> aggr.	19
<i>Dorycnium pentaphyllum</i>	18
<i>Daucus carota</i>	18
<i>Potentilla tabernaemontani</i>	16
<i>Bromopsis erecta</i>	15
<i>Thymus serpyllum</i>	14
<i>Sanguisorba minor</i> aggr.	14
<i>Linum suffruticosum</i> aggr.	14
<i>Leontodon saxatilis</i>	14
<i>Blackstonia perfoliata</i>	14
<i>Plantago lanceolata</i>	13
<i>Festuca ovina</i>	13
<i>Juncus bufonius</i> aggr.	12
<i>Scirpoides holoschoenus</i>	11
<i>Schedonorus arundinaceus</i>	11
<i>Phleum nodosum</i>	11
<i>Juniperus communis</i> subsp. <i>communis</i>	11
<i>Aphyllanthes monspeliensis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Deschampsia media</i>	34
<i>Plantago maritima</i> subsp. <i>serpentina</i>	30

R33 – Mediterranean short moist grassland of mountains

Closed tussocky grassland of moist ground at high altitudes in the Western Mediterranean which, remaining green through the summer, provide valuable grazing for transhumant cattle and sheep.



Corresponding alliances in EuroVegChecklist 2016

- > GEN-01B Plantaginion insularis Klein 1972
- > MOL-07B Sieglingion decumbentis Gamisans 1976
- > TRI-06B Plantaginion thalackeri Quézel 1953

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Festuca rothmaleri</i>	53
<i>Campanula herminii</i>	44
<i>Narcissus bulbocodium</i> aggr.	42
<i>Festuca iberica</i>	39
<i>Carum verticillatum</i>	32
<i>Juncus squarrosus</i>	31
<i>Nardus stricta</i>	28
<i>Scorzoneroides carpetana</i>	26

<i>Ranunculus bulbosus</i>	24
<i>Festuca henriquesii</i>	22
<i>Poa legionensis</i>	22
<i>Jasione laevis</i>	20
<i>Pedicularis sylvatica</i>	18
<i>Carex leporina</i>	18
<i>Carex furva</i>	16
<i>Euphrasia hirtella</i>	16
<i>Ranunculus abnormis</i>	16
<i>Agrostis castellana</i>	16

Constant species (percentage frequencies)

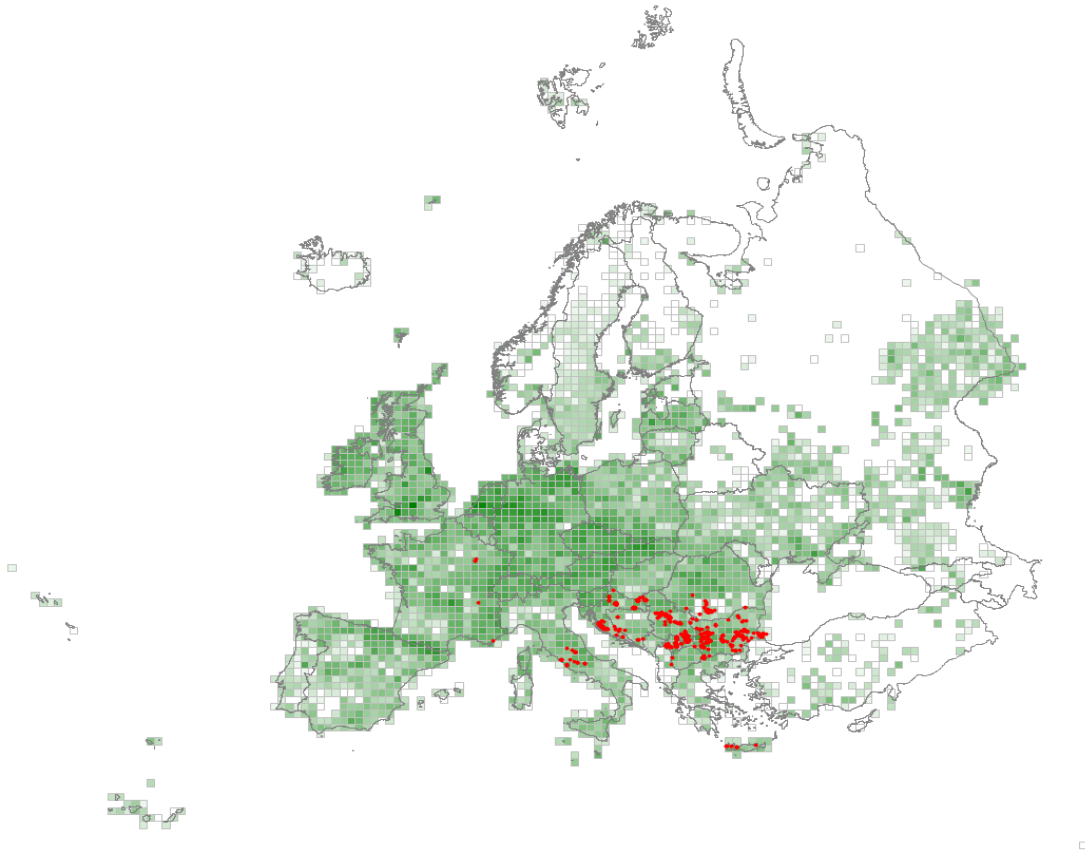
<i>Nardus stricta</i>	77
<i>Festuca rothmaleri</i>	40
<i>Ranunculus bulbosus</i>	39
<i>Juncus squarrosus</i>	38
<i>Festuca iberica</i>	35
<i>Campanula herminii</i>	31
<i>Agrostis castellana</i>	30
<i>Luzula campestris</i> aggr.	28
<i>Potentilla erecta</i>	26
<i>Pilosella officinarum</i>	26
<i>Narcissus bulbocodium</i> aggr.	26
<i>Carum verticillatum</i>	25
<i>Trifolium repens</i>	24
<i>Hypochaeris radicata</i>	22
<i>Holcus lanatus</i>	22
<i>Danthonia decumbens</i>	22
<i>Cynosurus cristatus</i>	21
<i>Trifolium pratense</i>	19
<i>Galium saxatile</i>	18
<i>Carex leporina</i>	18
<i>Anthoxanthum odoratum</i> aggr.	18
<i>Pedicularis sylvatica</i>	17
<i>Jasione laevis</i>	16
<i>Scorzoneroides carpetana</i>	15
<i>Lotus corniculatus</i>	15
<i>Briza media</i>	15
<i>Carex caryophyllea</i>	14
<i>Agrostis capillaris</i>	13
<i>Plantago alpina</i>	12
<i>Juncus acutiflorus</i>	12
<i>Galium verum</i>	12
<i>Anthoxanthum aristatum</i>	12
<i>Sedum brevifolium</i>	11
<i>Prunella vulgaris</i>	11
<i>Carex nigra</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Nardus stricta</i>	48
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R34 – Submediterranean moist meadow

Moist meadows of sandy to clayey, mesotrophic to eutrophic soils on riverside terraces and gentle slopes, mainly in the lowland to submontane belts of South-Eastern Europe, extending westwards to central Italy. Winter and spring flooding is common, but later in the season the ground may dry up and become locally saline. The species composition reflects regional differences in temperature and rainfall, but patterns of mowing and grazing can also affect the species composition.



Corresponding alliances in EuroVegChecklist 2016

- > MOL-06A Molinio-Hordeion secalini Horvatić 1934
- > MOL-06B Trifolion resupinati Micevski 1957
- > MOL-06C Trifolio-Ranunculion pedati Slavnić 1948
- > MOL-06D Trifolion pallidi Ilijanić 1969
- > MOL-06E Ranunculion velutini Pedrotti 1978

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Alopecurus rendlei</i>	65
<i>Trifolium patens</i>	63
<i>Trifolium resupinatum</i>	56

<i>Bromus racemosus</i>	54
<i>Moenchia mantica</i>	50
<i>Trifolium pallidum</i>	46
<i>Crepis setosa</i>	43
<i>Ranunculus velutinus</i>	43
<i>Bromus commutatus</i>	38
<i>Trifolium michelianum</i>	38
<i>Oenanthe silaifolia</i>	37
<i>Ranunculus sardous</i>	37
<i>Alopecurus pratensis</i>	35
<i>Galium debile</i>	34
<i>Hordeum secalinum</i>	33
<i>Oenanthe peucedanifolia</i>	28
<i>Potentilla reptans</i>	27
<i>Schedonorus pratensis</i>	27
<i>Tragopogon pratensis</i>	26
<i>Trifolium fragiferum</i>	26
<i>Cynosurus cristatus</i>	26
<i>Lolium perenne</i>	25
<i>Rhinanthus rumelicus</i>	25
<i>Trifolium incarnatum</i>	22
<i>Poa trivialis</i>	22
<i>Carex cuprina</i>	22
<i>Scilla litardierei</i>	21
<i>Trifolium cinctum</i>	21
<i>Silene flos-cuculi</i>	20
<i>Oenanthe banatica</i>	20
<i>Carex hirta</i>	20
<i>Anacamptis palustris</i> aggr.	20
<i>Trifolium pratense</i>	19
<i>Rorippa pyrenaica</i>	19
<i>Medicago arabica</i>	19
<i>Gratiola officinalis</i>	19
<i>Cirsium canum</i>	18
<i>Rorippa sylvestris</i>	17
<i>Cichorium intybus</i>	16
<i>Plantago lanceolata</i>	16
<i>Leucojum aestivum</i>	15

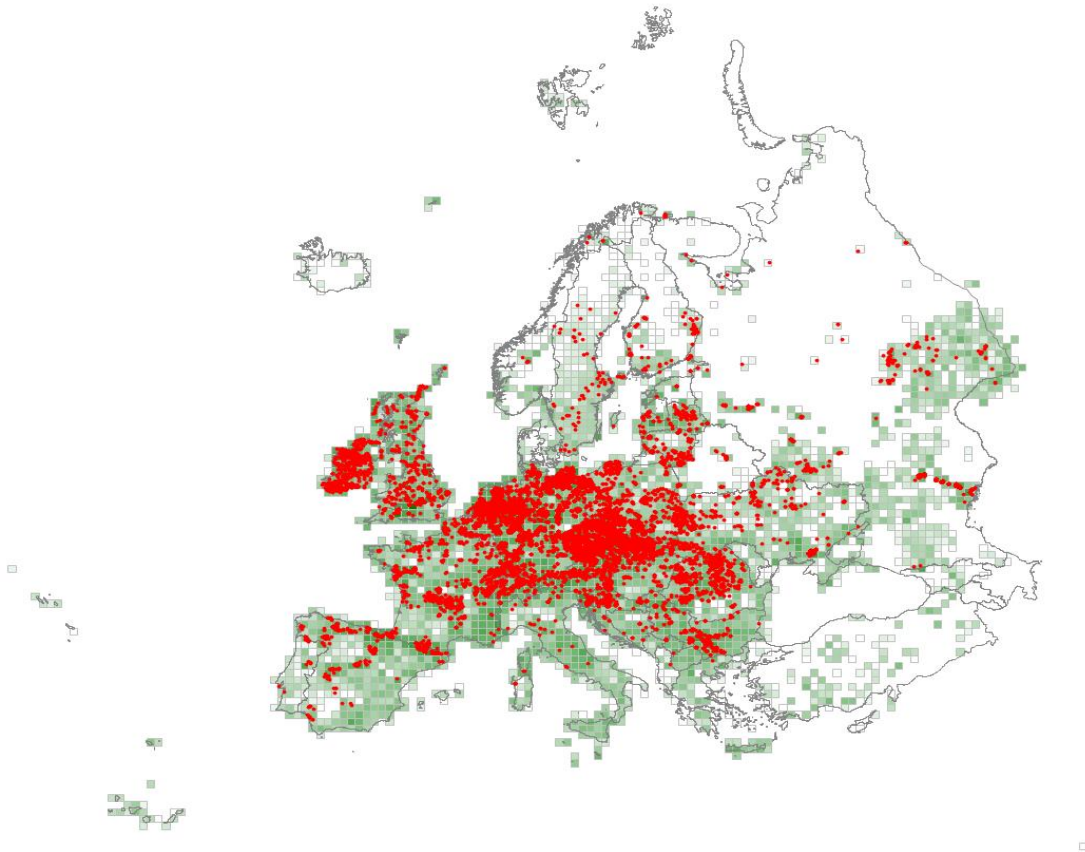
Constant species (percentage frequencies)

<i>Poa trivialis</i>	64
<i>Plantago lanceolata</i>	57
<i>Alopecurus pratensis</i>	53
<i>Lolium perenne</i>	52
<i>Trifolium resupinatum</i>	51
<i>Trifolium pratense</i>	51
<i>Lotus corniculatus</i>	48
<i>Potentilla reptans</i>	45
<i>Moenchia mantica</i>	45
<i>Schedonorus pratensis</i>	44
<i>Alopecurus rendlei</i>	44
<i>Trifolium patens</i>	43
<i>Bromus racemosus</i>	43
<i>Trifolium repens</i>	42
<i>Anthoxanthum odoratum</i> aggr.	42

<i>Cynosurus cristatus</i>	40
<i>Taraxacum</i> sect. <i>Taraxacum</i>	39
<i>Crepis setosa</i>	38
<i>Poa pratensis</i> aggr.	35
<i>Trifolium fragiferum</i>	33
<i>Ranunculus acris</i> aggr.	33
<i>Ranunculus sardous</i>	30
<i>Silene flos-cuculi</i>	29
<i>Trifolium pallidum</i>	27
<i>Rumex crispus</i>	27
<i>Carex hirta</i>	26
<i>Tragopogon pratensis</i>	25
<i>Rumex acetosa</i>	25
<i>Achillea millefolium</i> aggr.	25
<i>Oenanthe silaifolia</i>	24
<i>Leucanthemum vulgare</i> aggr.	24
<i>Cichorium intybus</i>	24
<i>Bromus commutatus</i>	24
<i>Ranunculus velutinus</i>	23
<i>Elytrigia repens</i> aggr.	22
<i>Convolvulus arvensis</i>	22
<i>Hordeum secalinum</i>	21
<i>Ranunculus repens</i>	20
<i>Prunella vulgaris</i>	20
<i>Trifolium dubium</i>	18
<i>Rorippa sylvestris</i>	18
<i>Holcus lanatus</i>	18
<i>Trifolium michelianum</i>	17
<i>Daucus carota</i>	17
<i>Cynodon dactylon</i>	17
<i>Lysimachia nummularia</i>	16
<i>Galium verum</i>	16
<i>Galium debile</i>	16
<i>Carex distans</i>	16
<i>Agrostis stolonifera</i>	16
<i>Gratiola officinalis</i>	15
<i>Centaurea jacea</i>	15
<i>Carex cuprina</i>	15
<i>Anacamptis palustris</i> aggr.	15
<i>Trifolium campestre</i>	14
<i>Rhinanthus rumelicus</i>	14
<i>Rhinanthus minor</i>	14
<i>Trifolium incarnatum</i>	13
<i>Ononis spinosa</i>	13
<i>Trifolium striatum</i>	12
<i>Lathyrus pratensis</i>	12
<i>Hypochaeris radicata</i>	12
<i>Galium palustre</i> aggr.	12
<i>Filipendula vulgaris</i>	12
<i>Bromus hordeaceus</i>	12
<i>Medicago arabica</i>	11
<i>Lythrum salicaria</i>	11
<i>Agrostis canina</i>	11

R35 – Moist or wet mesotrophic to eutrophic hay meadow

Meadows of moist, sometimes seasonally flooded, nutrient-rich soils on floodplains and in brook-valleys throughout the lowland to submontane belts of Europe. Traditionally cut for hay, though sometimes also lightly grazed in late summer and autumn, the vegetation is often species-rich with a diverse associated invertebrate fauna attracted by the abundance of flowers. Often once part of wider agricultural landscapes with associated pastures, good examples of the habitat now often survive more fragmentarily, and transitions to improved silage grassland on flood-protected land are widespread.



Corresponding alliances in EuroVegChecklist 2016

- > MOL-02B *Artemision ponticae* Golub et Saveleva in Golub 1995
- > MOL-05B *Calthion palustris* Tx. 1937
- > MOL-05C *Bromion racemosi* Tx. In Tx. et Preising ex de Foucault 2009
- > MOL-05D *Deschampsion cespitosae* Horvatić 1930
- > MOL-05F *Oenanthion fistulosae* de Foucault 2009
- > MOL-05G *Eleocharition palustris* Mirkin et Naumova 1986

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Scirpus sylvaticus</i>	27
<i>Silene flos-cuculi</i>	27
<i>Filipendula ulmaria</i>	24
<i>Myosotis scorpioides</i> aggr.	22
<i>Caltha palustris</i>	22
<i>Cardamine pratensis</i>	21
<i>Lotus pedunculatus</i>	20
<i>Galium uliginosum</i>	19
<i>Alopecurus pratensis</i>	19
<i>Lathyrus pratensis</i>	18
<i>Juncus effusus</i>	18
<i>Ranunculus acris</i> aggr.	16
<i>Cirsium rivulare</i>	16
<i>Cirsium palustre</i>	16
<i>Sanguisorba officinalis</i>	16
<i>Carex disticha</i>	16
<i>Equisetum palustre</i>	16
<i>Ranunculus repens</i>	15

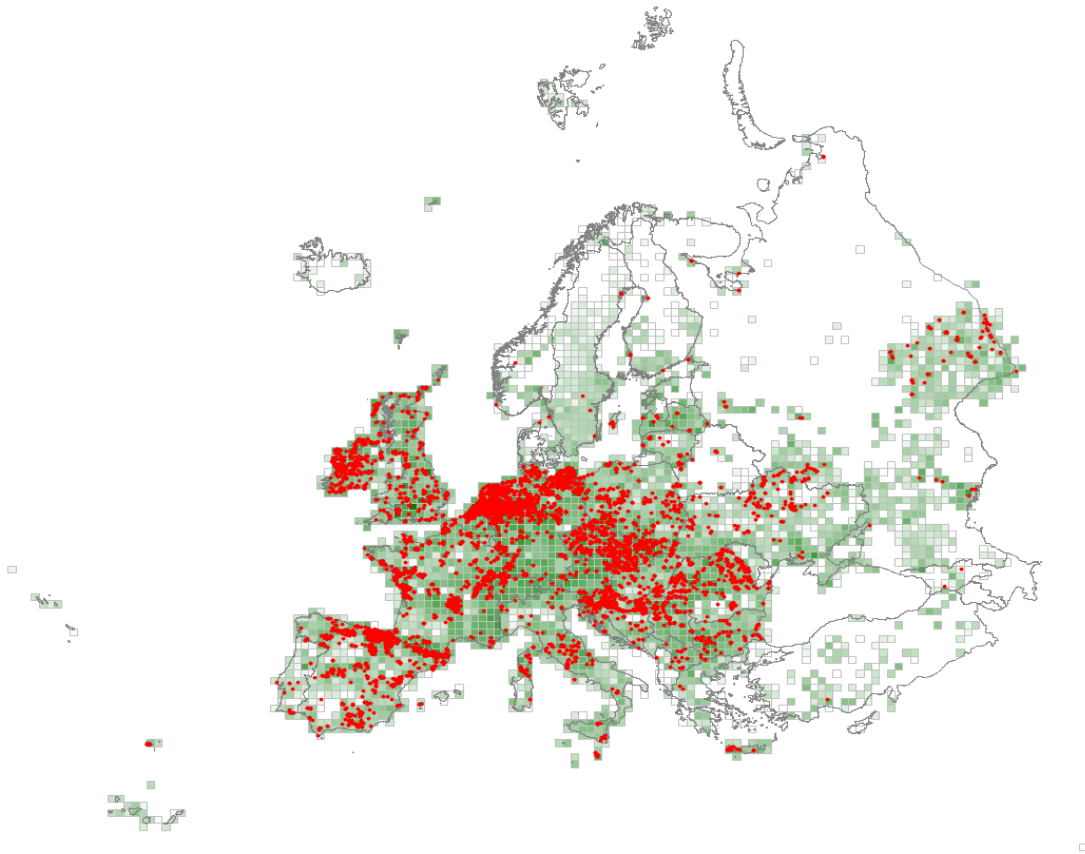
Constant species (percentage frequencies)

<i>Filipendula ulmaria</i>	51
<i>Ranunculus acris</i> aggr.	45
<i>Holcus lanatus</i>	45
<i>Ranunculus repens</i>	41
<i>Caltha palustris</i>	40
<i>Rumex acetosa</i>	39
<i>Juncus effusus</i>	39
<i>Silene flos-cuculi</i>	38
<i>Myosotis scorpioides</i> aggr.	38
<i>Deschampsia cespitosa</i> aggr.	38
<i>Poa trivialis</i>	37
<i>Galium palustre</i> aggr.	36
<i>Cardamine pratensis</i>	35
<i>Lathyrus pratensis</i>	34
<i>Festuca rubra</i> aggr.	32
<i>Equisetum palustre</i>	32
<i>Agrostis stolonifera</i>	32
<i>Cirsium palustre</i>	31
<i>Lotus pedunculatus</i>	30
<i>Alopecurus pratensis</i>	29
<i>Scirpus sylvaticus</i>	28
<i>Carex nigra</i>	28
<i>Anthoxanthum odoratum</i> aggr.	28
<i>Galium uliginosum</i>	27
<i>Lysimachia vulgaris</i>	23
<i>Angelica sylvestris</i>	23
<i>Carex panicea</i>	21
<i>Schedonorus pratensis</i>	20
<i>Sanguisorba officinalis</i>	20
<i>Lythrum salicaria</i>	20
<i>Lysimachia nummularia</i>	20
<i>Vicia cracca</i>	19

<i>Calliergonella cuspidata</i>	19
<i>Poa pratensis</i> aggr.	18
<i>Bistorta officinalis</i>	18
<i>Carex acuta</i>	17
<i>Crepis paludosa</i>	16
<i>Cirsium oleraceum</i>	16
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	16
<i>Potentilla erecta</i>	15
<i>Plantago lanceolata</i>	15
<i>Geum rivale</i>	15
<i>Ranunculus flammula</i>	14
<i>Juncus conglomeratus</i>	14
<i>Carex disticha</i>	14
<i>Agrostis canina</i>	14
<i>Carex acutiformis</i>	13
<i>Valeriana dioica</i>	12
<i>Trifolium repens</i>	12
<i>Epilobium palustre</i>	12
<i>Phalaroides arundinacea</i>	11
<i>Mentha aquatica</i>	11
<i>Juncus articulatus</i>	11
<i>Juncus acutiflorus</i>	11
<i>Equisetum fluviatile</i>	11
<i>Elytrigia repens</i> aggr.	11
<i>Cirsium rivulare</i>	11

R36 – Moist or wet mesotrophic to eutrophic pasture

Pastures of moist to wet, mesotrophic to eutrophic soils, generally inundated during winter and spring, on floodplains, lake shores and ditch sides throughout temperate Europe, sometimes with a brackish influence. Grazing is mostly by cattle which can strongly affect the nutrient status, and compaction of the soil and plants tolerant of inundation and trampling dominate here with a paucity of attractive flowers and a poor associated invertebrate fauna.



Corresponding alliances in EuroVegChecklist 2016

- <> MOL-05E Conioselinion tatarici Golub et al. 2003
- > MOL-08E Mentho longifoliae-Juncion inflexi T. Müller et Görs ex de Foucault 2009
- <> MOL-10A Potentillion anserinae Tx. 1947

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Alopecurus geniculatus</i>	36
<i>Ranunculus repens</i>	22
<i>Oenanthe fistulosa</i>	21
<i>Argentina anserina</i>	21
<i>Glyceria fluitans</i> aggr.	21
<i>Plantago major</i>	19

<i>Agrostis stolonifera</i>	19
<i>Juncus inflexus</i>	16
<i>Rumex crispus</i>	15

Constant species (percentage frequencies)

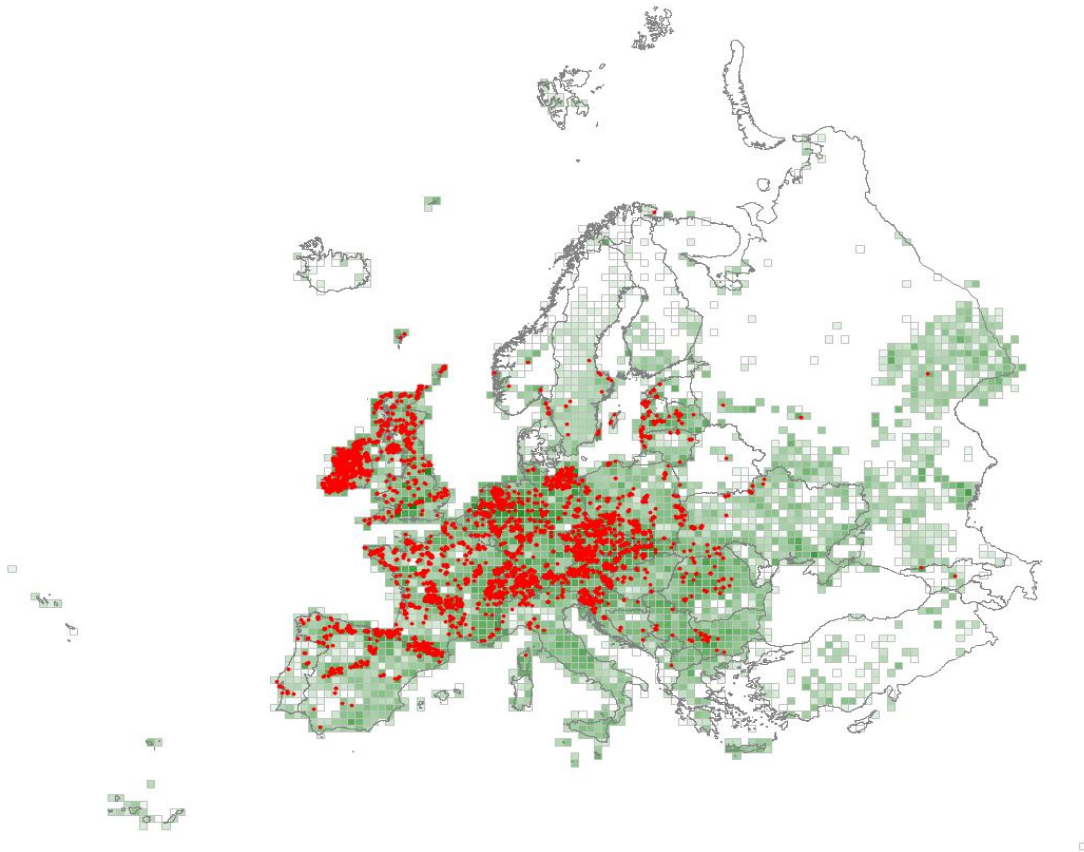
<i>Agrostis stolonifera</i>	69
<i>Ranunculus repens</i>	59
<i>Trifolium repens</i>	45
<i>Plantago major</i>	42
<i>Argentina anserina</i>	41
<i>Poa trivialis</i>	40
<i>Alopecurus geniculatus</i>	34
<i>Juncus articulatus</i>	30
<i>Rumex crispus</i>	28
<i>Lolium perenne</i>	26
<i>Galium palustre</i> aggr.	24
<i>Juncus effusus</i>	22
<i>Glyceria fluitans</i> aggr.	22
<i>Eleocharis palustris</i>	22
<i>Carex hirta</i>	20
<i>Holcus lanatus</i>	19
<i>Cardamine pratensis</i>	18
<i>Potentilla reptans</i>	17
<i>Ochlopoa annua</i>	17
<i>Phalaroides arundinacea</i>	16
<i>Persicaria amphibia</i>	16
<i>Elytrigia repens</i> aggr.	16
<i>Taraxacum</i> sect. <i>Taraxacum</i>	14
<i>Rorippa sylvestris</i>	14
<i>Ranunculus flammula</i>	14
<i>Polygonum aviculare</i> aggr.	14
<i>Oenanthe fistulosa</i>	14
<i>Myosotis scorpioides</i> aggr.	14
<i>Juncus inflexus</i>	14
<i>Trifolium fragiferum</i>	12
<i>Scorzoneroides autumnalis</i>	12
<i>Schedonorus arundinaceus</i>	11
<i>Mentha aquatica</i>	11
<i>Cirsium arvense</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Agrostis stolonifera</i>	31
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R37 – Temperate and boreal moist or wet oligotrophic grassland

Meadows and pastures of less nutrient-rich soils, wet for much of the year, though not inundated by flood-waters and drying out in summer, especially in more continental regions. The soils may be somewhat acidic to base-rich, sometimes peaty above, and through the lowland to submontane belts of Europe, they have been part of wider landscapes among fens and drier grasslands. Less productive than flood meadows, they are mown just once a year, and towards the west of the range, often just lightly grazed, but they can be species-rich with some characteristic and striking species.



Corresponding alliances in EuroVegChecklist 2016

- > MOL-05A Molinion caeruleae Koch 1926

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Succisa pratensis</i>	30
<i>Carex panicea</i>	26
<i>Juncus acutiflorus</i>	24
<i>Cirsium dissectum</i>	23
<i>Selinum carvifolia</i>	23
<i>Sanguisorba officinalis</i>	23

<i>Molinia caerulea</i> aggr.	20
<i>Potentilla erecta</i>	20
<i>Serratula tinctoria</i>	16
<i>Scorzonera humilis</i>	16
<i>Gentiana pneumonanthe</i>	16
<i>Briza media</i>	16
<i>Galium uliginosum</i>	15

Constant species (percentage frequencies)

<i>Potentilla erecta</i>	77
<i>Molinia caerulea</i> aggr.	74
<i>Carex panicea</i>	61
<i>Succisa pratensis</i>	58
<i>Anthoxanthum odoratum</i> aggr.	51
<i>Holcus lanatus</i>	46
<i>Ranunculus acris</i> aggr.	39
<i>Festuca rubra</i> aggr.	39
<i>Briza media</i>	35
<i>Carex flacca</i>	32
<i>Sanguisorba officinalis</i>	29
<i>Luzula campestris</i> aggr.	29
<i>Cirsium palustre</i>	28
<i>Filipendula ulmaria</i>	26
<i>Plantago lanceolata</i>	25
<i>Juncus acutiflorus</i>	25
<i>Prunella vulgaris</i>	23
<i>Carex nigra</i>	23
<i>Galium uliginosum</i>	21
<i>Deschampsia cespitosa</i> aggr.	21
<i>Lotus corniculatus</i>	20
<i>Agrostis canina</i>	20
<i>Rumex acetosa</i>	19
<i>Lotus pedunculatus</i>	19
<i>Galium boreale</i>	19
<i>Centaurea jacea</i>	19
<i>Calliergonella cuspidata</i>	19
<i>Agrostis capillaris</i>	19
<i>Vicia cracca</i>	18
<i>Stachys officinalis</i>	18
<i>Lysimachia vulgaris</i>	18
<i>Equisetum palustre</i>	18
<i>Angelica sylvestris</i>	18
<i>Trifolium pratense</i>	17
<i>Serratula tinctoria</i>	17
<i>Lathyrus pratensis</i>	17
<i>Danthonia decumbens</i>	17
<i>Valeriana dioica</i>	16
<i>Silene flos-cuculi</i>	15
<i>Rhynchospora squarrosus</i>	15
<i>Phragmites australis</i>	15
<i>Nardus stricta</i>	15
<i>Juncus effusus</i>	15
<i>Juncus conglomeratus</i>	15
<i>Galium palustre</i> aggr.	15
<i>Agrostis stolonifera</i>	15

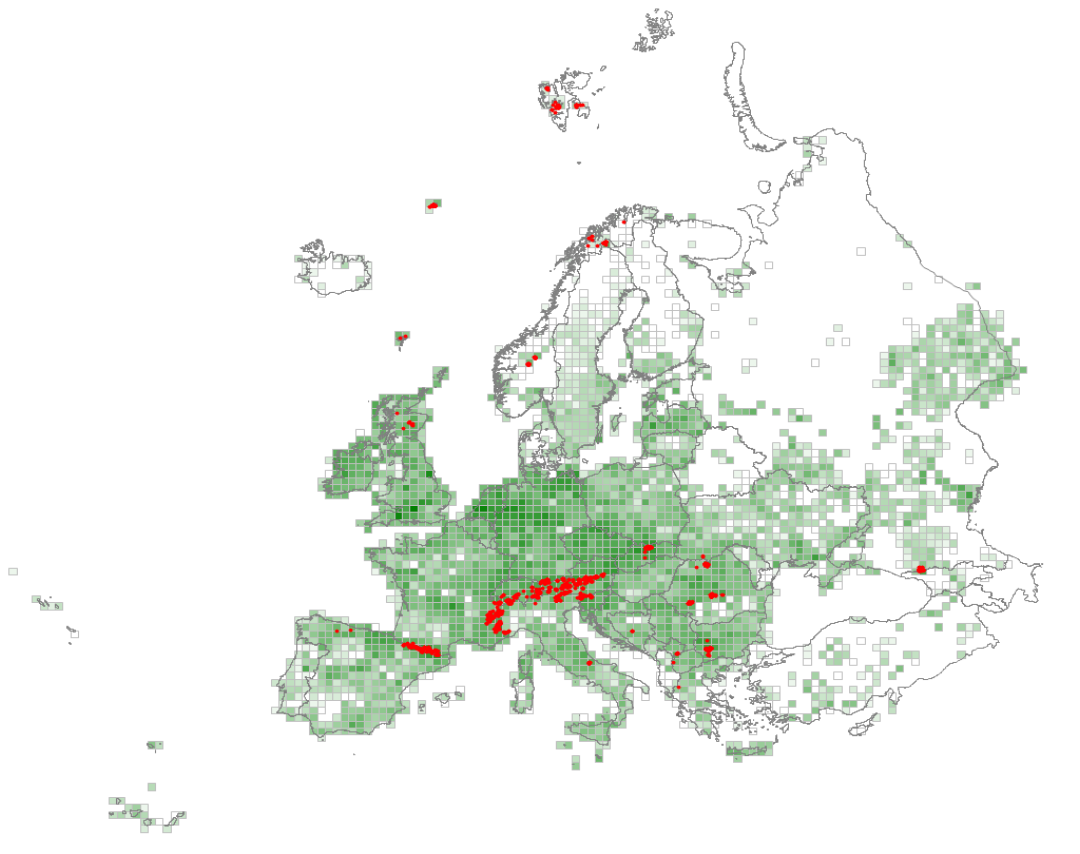
<i>Selinum carvifolia</i>	14
<i>Galium verum</i>	14
<i>Dactylorhiza maculata</i> aggr.	14
<i>Cirsium dissectum</i>	14
<i>Carex echinata</i>	14
<i>Cardamine pratensis</i>	13
<i>Calluna vulgaris</i>	13
<i>Trifolium repens</i>	12
<i>Lythrum salicaria</i>	12
<i>Cynosurus cristatus</i>	12
<i>Carex pallescens</i>	12
<i>Carex hostiana</i>	12
<i>Achillea millefolium</i> aggr.	12
<i>Scorzonera humilis</i>	11
<i>Ranunculus flammula</i>	11
<i>Parnassia palustris</i>	11
<i>Linum catharticum</i>	11
<i>Carex pulicaris</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Molinia caerulea</i> aggr.	54
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R41 – Snow-bed vegetation

Vegetation on skeletal, sometimes humic, soils developed beneath late-lying snow patches in Arctic and subarctic lowlands, boreal mountains and temperate high mountains of Central and Southern Europe. Dominated by grasses, sedges, herbs and cryptogams, the species composition depends on regional climate, altitude, bedrock and soil type, and sometimes includes endemics, particularly in Southern Europe.



Corresponding alliances in EuroVegChecklist 2016

- <> HER-01A *Salicion herbaceae* Br.-Bl. in Br.-Bl. et Jenny 1926
- <> HER-01B *Salici herbaceae-Arabidion caeruleae* Englisch 1999
- > HER-01C *Salici herbaceae-Caricion lachenalii* Béguin et Theurillat 1982
- > HER-01D *Festucion picturatae* Krajina 1933 corr. Dúbravcová 2007
- > HER-01E *Ranunculion crenati* Lakušić 1968
- > HER-01F *Sedion candollei* Rivas-Mart., Fernández-González et Loidi in Rivas-Mart. et al. 2011
- > HER-01G *Hyalopoion ponticae* Rabortnova et Onipchenko in Onipchenko 2002
- <> HER-01H *Cassiopo-Salicion herbaceae* Nordhagen 1943
- > HER-01I *Deschampsio-Anthoxanthion* Gjaerevoll 1950
- > HER-01J *Saxifrago stellaris-Oxyrion digynae* Gjaerevoll 1950
- > THL-02A *Saxifrago oppositifoliae-Oxyrion digynae* Gjaerevoll 1950
- > THL-02B *Ranunculo-Poion alpinae* Gjaerevoll ex Daniëls in Mucina et al. 2016
- > THL-02C *Arabidion caeruleae* Br.-Bl. in Br.-Bl. et Jenny 1926

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Saxifraga androsacea</i>	32
<i>Cerastium cerastoides</i>	31
<i>Veronica alpina</i>	27
<i>Luzula alpinopilosa</i>	27
<i>Ranunculus crenatus</i>	25
<i>Polytrichastrum sexangulare</i>	25
<i>Hornungia alpina</i>	24
<i>Cardamine alpina</i>	24
<i>Carex pyrenaica</i>	23
<i>Gnaphalium supinum</i>	23
<i>Ranunculus glacialis</i>	23
<i>Ranunculus alpestris</i>	23
<i>Achillea clusiana</i>	23
<i>Poa alpina</i>	23
<i>Arenaria biflora</i>	23
<i>Anthelia juratzkana</i>	22
<i>Taraxacum</i> sect. <i>Alpina</i>	22
<i>Sedum alpestre</i>	21
<i>Salix herbacea</i>	21
<i>Saxifraga cespitosa</i>	20
<i>Leucanthemopsis alpina</i>	20
<i>Gnaphalium hoppeanum</i>	20
<i>Achillea atrata</i>	19
<i>Pohlia drummondii</i>	19
<i>Oxyria digyna</i>	19
<i>Arabis caerulea</i>	19
<i>Saxifraga cernua</i>	19
<i>Soldanella pusilla</i>	18
<i>Sibbaldia procumbens</i>	18
<i>Potentilla brauneana</i>	18
<i>Alchemilla fissa</i>	17
<i>Gentiana bavarica</i>	17
<i>Saxifraga stellaris</i>	17
<i>Saxifraga carpatica</i>	17
<i>Ranunculus pygmaeus</i>	16
<i>Saxifraga tenuis</i>	16
<i>Sagina saginoides</i>	16
<i>Alchemilla pentaphyllea</i>	15

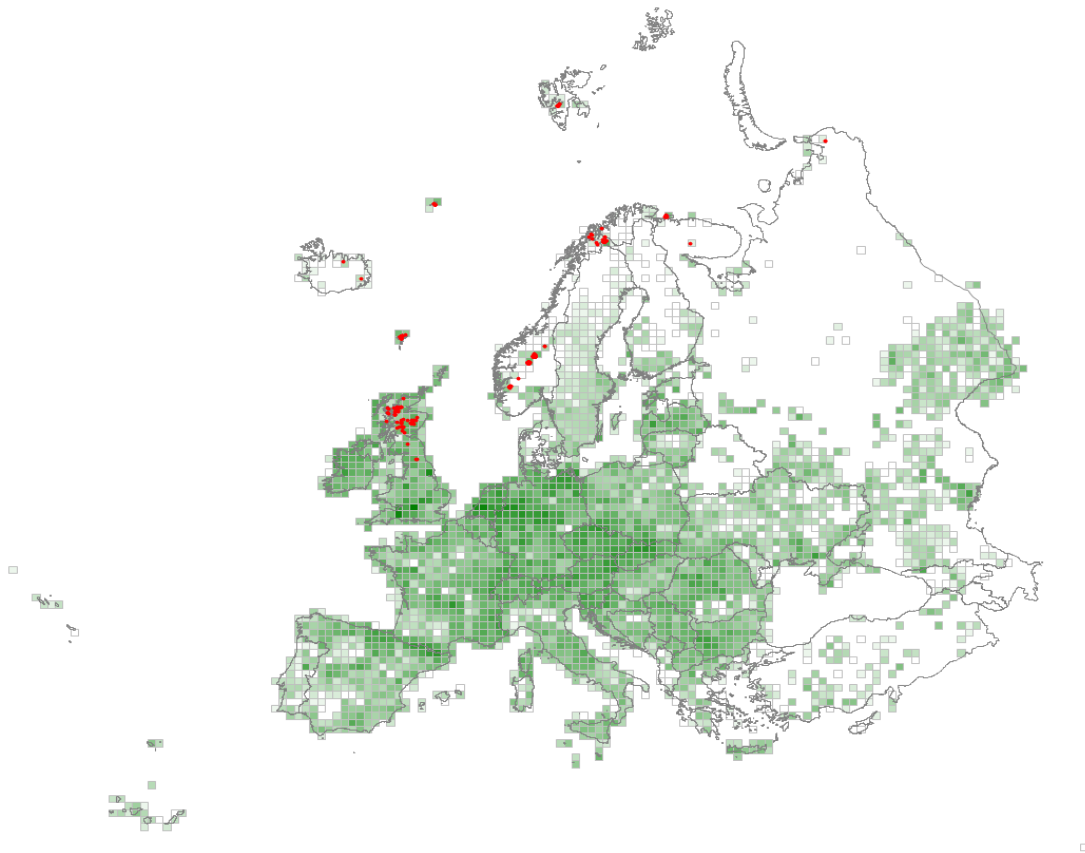
Constant species (percentage frequencies)

<i>Poa alpina</i>	50
<i>Salix herbacea</i>	40
<i>Veronica alpina</i>	36
<i>Gnaphalium supinum</i>	35
<i>Bistorta vivipara</i>	29
<i>Luzula alpinopilosa</i>	26
<i>Sibbaldia procumbens</i>	24
<i>Hornungia alpina</i>	23
<i>Cerastium cerastoides</i>	23
<i>Saxifraga androsacea</i>	21

<i>Oxyria digyna</i>	20
<i>Leucanthemopsis alpina</i>	20
<i>Silene acaulis</i>	19
<i>Sedum alpestre</i>	19
<i>Ranunculus alpestris</i>	19
<i>Saxifraga stellaris</i>	17
<i>Saxifraga oppositifolia</i>	16
<i>Ligusticum mutellina</i>	16
<i>Ranunculus glacialis</i>	15
<i>Geum montanum</i>	15
<i>Arabis alpina</i>	15
<i>Myosotis alpestris</i>	14
<i>Taraxacum</i> sect. <i>Alpina</i>	13
<i>Polytrichastrum sexangulare</i>	12
<i>Soldanella pusilla</i>	11
<i>Sanionia uncinata</i>	11
<i>Sagina saginoides</i>	11
<i>Polytrichastrum alpinum</i>	11
<i>Achillea atrata</i>	11

R42 – Boreal and Arctic acidophilous alpine grassland

Boreal and Arctic acidophilous alpine grasslands, dominated by low graminoids and herbs, characteristic of shallow mostly base-poor soils with thick late snow-lie, occurring through the high mountains of Fennoscandia, Iceland and Scotland.



Corresponding alliances in EuroVegChecklist 2016

- > TRI-01A Carici-Juncion trifidi Nordhagen 1943
- <> TRI-01B Nardo-Caricion rigidae Nordhagen 1943
- > TRI-01C Cladonio-Viscarion alpinae Daniëls 1982

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Carex bigelowii</i>	39
<i>Salix herbacea</i>	32
<i>Sibbaldia procumbens</i>	31
<i>Bistorta vivipara</i>	24
<i>Cassiope hypnoides</i>	24
<i>Phylodoce caerulea</i>	23
<i>Gnaphalium supinum</i>	22
<i>Euphrasia frigida</i>	21

<i>Juncus trifidus</i>	21
<i>Cassiope tetragona</i>	19
<i>Lycopodium alpinum</i>	19
<i>Alchemilla alpina</i>	18
<i>Antennaria alpina</i>	18
<i>Agrostis mertensii</i>	17
<i>Carex glacialis</i>	17

Constant species (percentage frequencies)

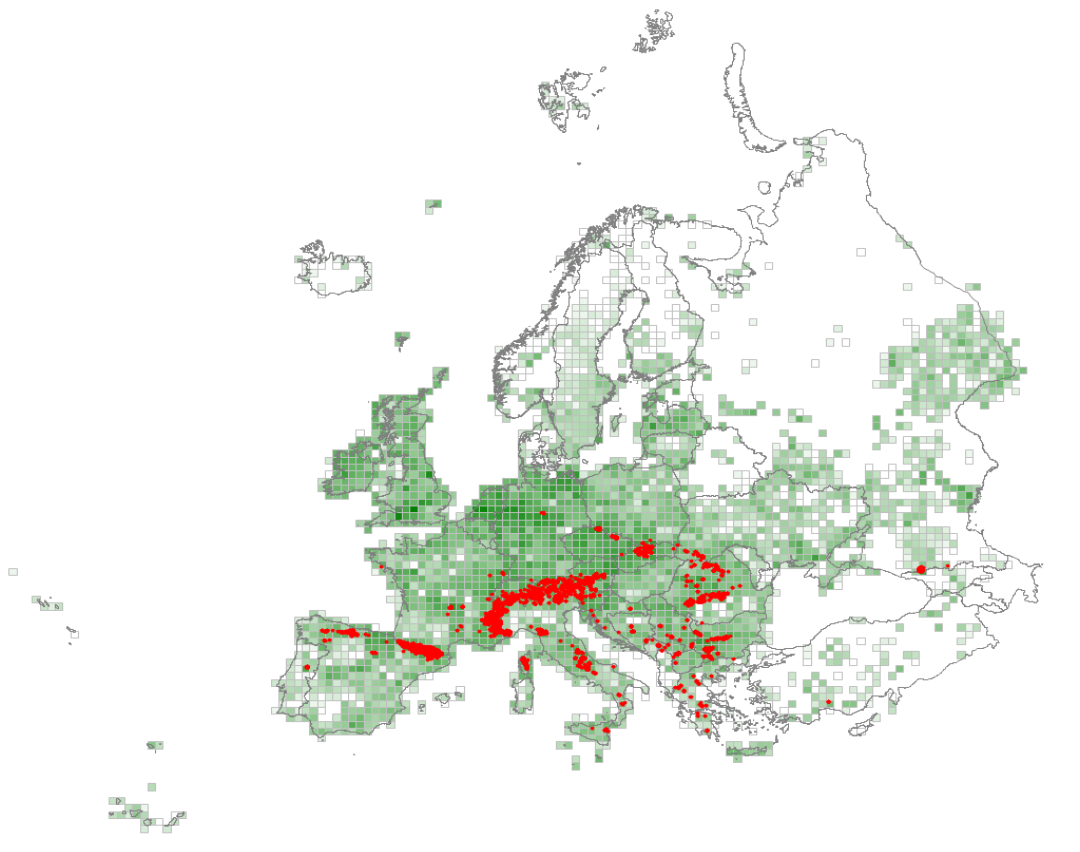
<i>Carex bigelowii</i>	74
<i>Bistorta vivipara</i>	64
<i>Salix herbacea</i>	61
<i>Festuca ovina</i>	50
<i>Anthoxanthum odoratum</i> aggr.	45
<i>Vaccinium vitis-idaea</i>	41
<i>Sibbaldia procumbens</i>	40
<i>Juncus trifidus</i>	38
<i>Avenella flexuosa</i>	35
<i>Gnaphalium supinum</i>	33
<i>Empetrum nigrum</i> aggr.	29
<i>Solidago virgaurea</i>	28
<i>Phyllodoce caerulea</i>	28
<i>Vaccinium myrtillus</i>	27
<i>Viola biflora</i>	24
<i>Cassiope hypnoides</i>	24
<i>Thalictrum alpinum</i>	20
<i>Ranunculus acris</i> aggr.	20
<i>Antennaria alpina</i>	20
<i>Selaginella selaginoides</i>	19
<i>Nardus stricta</i>	19
<i>Cassiope tetragona</i>	19
<i>Alchemilla alpina</i>	19
<i>Saussurea alpina</i> aggr.	18
<i>Luzula spicata</i>	18
<i>Luzula campestris</i> aggr.	18
<i>Hieracium lachenalii</i>	18
<i>Agrostis capillaris</i>	18
<i>Deschampsia cespitosa</i> aggr.	17
<i>Calamagrostis lapponica</i>	17
<i>Agrostis mertensii</i>	17
<i>Rumex acetosa</i>	15
<i>Galium saxatile</i>	15
<i>Euphrasia frigida</i>	15
<i>Veronica alpina</i>	14
<i>Silene acaulis</i>	14
<i>Huperzia selago</i>	14
<i>Trientalis europaea</i>	13
<i>Lycopodium alpinum</i>	13
<i>Carex vaginata</i>	13
<i>Campanula rotundifolia</i>	13
<i>Betula nana</i>	13
<i>Antennaria dioica</i>	13
<i>Festuca vivipara</i>	12
<i>Rhytidiadelphus squarrosus</i>	11
<i>Polytrichastrum alpinum</i>	11

Hylocomium splendens

11

R43 – Temperate acidophilous alpine grassland

Grassland and dwarf chamaephyte vegetation on skeletal and shallow soils over predominantly siliceous bedrocks in the alpine belt throughout the temperate mountains of Europe, typical of the highest summits and ridges, often very exposed to strong winds and largely blown clear of snow in the winter.



Corresponding alliances in EuroVegChecklist 2016

- > NAR-01E Campanulo-Nardion Rivas-Mart. 1964
- > NAR-01I Potentillo montenegrinae-Festucion paniculatae Redžić ex Čarni et Mucina 2015
- <> TRI-01B Nardo-Caricion rigidae Nordhagen 1943
- > TRI-01D Lagotido uralensis-Caricion ensifoliae Chytrý et Mucina in Chytrý et al. 2015
- > TRI-02A Caricion curvulae Br.-Bl. 1925
- > TRI-02B Juncion trifidi Krajina 1933
- > TRI-02C Festucion supinae Br.-Bl. 1948
- > TRI-02D Anemonion speciosae Minaeva ex Onipchenko 2002
- > TRI-03A Carici macrostylidi-Nardion (Rivas-Mart. et al. 1984) de Foucault 1994
- > TRI-03B Nardion strictae Br.-Bl. 1926
- > TRI-03C Potentillo ternatae-Nardion Simon 1958
- > TRI-03D Festucion variae Br.-Bl. ex Guinochet 1938
- > TRI-03E Agrostion schraderianae Grabherr 1993
- > TRI-03F Festucion eskiae Br.-Bl. 1948

- > TRI-04A Festuco italicae-Nardion strictae Di Pietro, Terzi et Fortini ined.
- > TRI-04B Ranunculo-Nardion strictae Bonin 1972
- > TRI-05A Festucion woronowii Tsepikova 1987
- > TRI-06A Campanulo herminii-Nardion strictae Rivas-Mart. 1964
- > TRI-07A Poion violaceae Horvat et al. 1937
- > TRI-07B Seslerion comosae Horvat et al. 1937
- > TRI-07C Campanulion albanicae Lakušić 1966

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Agrostis rupestris</i>	31
<i>Trifolium alpinum</i>	30
<i>Carex curvula</i>	30
<i>Potentilla aurea</i>	28
<i>Geum montanum</i>	26
<i>Festuca airoides</i>	25
<i>Oreochloa disticha</i>	24
<i>Campanula alpina</i>	24
<i>Helictochloa versicolor</i>	23
<i>Hieracium alpinum</i>	23
<i>Veronica bellidioides</i>	22
<i>Primula minima</i>	21
<i>Scorzoneroides helvetica</i>	20
<i>Euphrasia minima</i>	19
<i>Phyteuma hemisphaericum</i>	18
<i>Ligusticum mutellina</i>	17
<i>Leucanthemopsis alpina</i>	17
<i>Ranunculus pyrenaicus</i>	16
<i>Festuca eskia</i>	16
<i>Pilosella glacialis</i>	16
<i>Gentiana alpina</i>	16

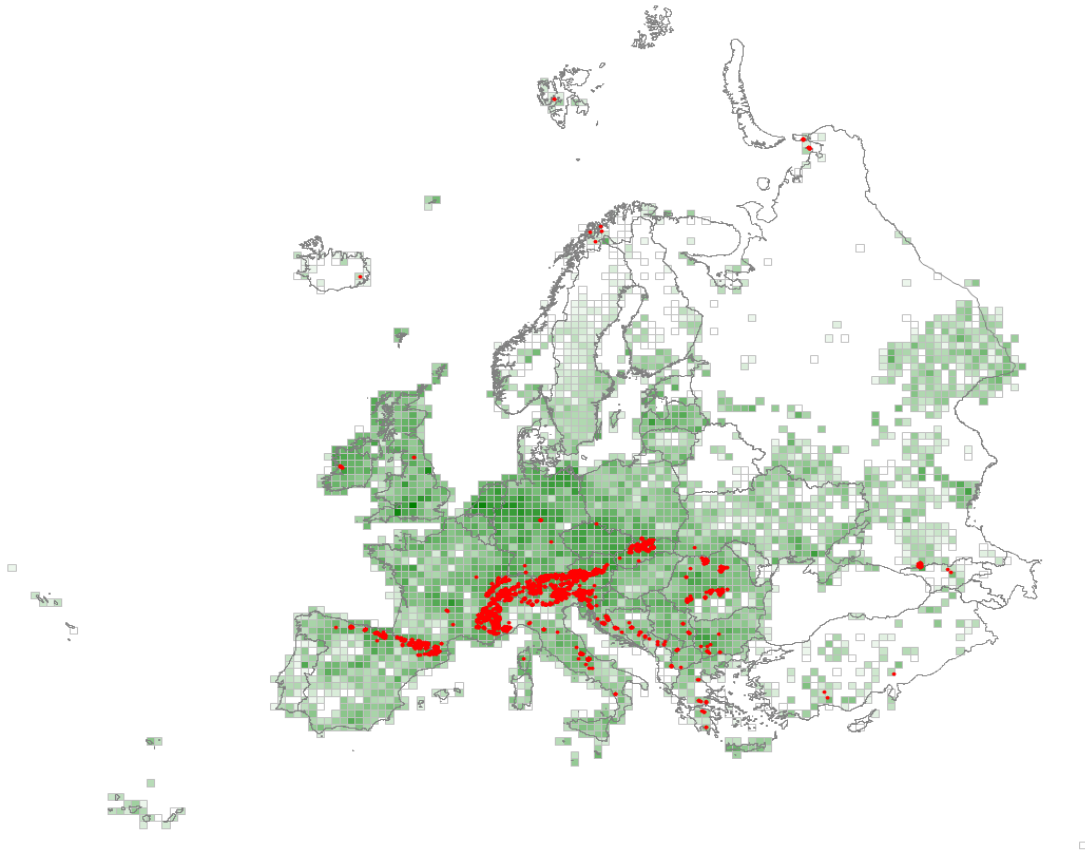
Constant species (percentage frequencies)

<i>Nardus stricta</i>	39
<i>Agrostis rupestris</i>	36
<i>Potentilla aurea</i>	33
<i>Poa alpina</i>	33
<i>Geum montanum</i>	32
<i>Anthoxanthum odoratum</i> aggr.	29
<i>Juncus trifidus</i>	27
<i>Helictochloa versicolor</i>	26
<i>Homogyne alpina</i>	25
<i>Carex sempervirens</i>	24
<i>Avenella flexuosa</i>	24
<i>Festuca airoides</i>	23
<i>Carex curvula</i>	23
<i>Luzula spicata</i>	22
<i>Ligusticum mutellina</i>	22
<i>Campanula scheuchzeri</i>	22
<i>Trifolium alpinum</i>	21
<i>Vaccinium myrtillus</i>	20
<i>Festuca rubra</i> aggr.	20
<i>Scorzoneroides helvetica</i>	19

<i>Euphrasia minima</i>	19
<i>Cetraria islandica</i>	19
<i>Bistorta vivipara</i>	19
<i>Phyteuma hemisphaericum</i>	18
<i>Oreochloa disticha</i>	18
<i>Leucanthemopsis alpina</i>	17
<i>Campanula alpina</i>	17
<i>Silene acaulis</i>	16
<i>Primula minima</i>	16
<i>Hieracium alpinum</i>	15
<i>Vaccinium uliginosum</i>	14
<i>Plantago alpina</i>	14
<i>Gnaphalium supinum</i>	14
<i>Pulsatilla alpina</i>	13
<i>Luzula alpinopilosa</i>	13
<i>Antennaria dioica</i>	13
<i>Vaccinium vitis-idaea</i>	12
<i>Phleum alpinum</i> aggr.	12
<i>Minuartia sedoides</i>	12
<i>Luzula campestris</i> aggr.	12
<i>Lotus alpinus</i>	12
<i>Myosotis alpestris</i>	11

R44 – Arctic-alpine calcareous grassland

Grasslands on usually shallow, highly calcareous soils on limestone or dolomite slopes and ridges in the alpine or subalpine belts of the high mountains of the temperate zone, being best developed in the Alps, but occurring also in the Carpathians and Pyrenees, with small fragmentary stands also in the Sudetes and in Scotland. Grasses and sedges dominate, along with numerous small herbs, the cover varying from sparse to complete according to the soil depth.



Corresponding alliances in EuroVegChecklist 2016

- <> KOB-01A Kobresio-Dryadion Nordhagen 1943
- <> KOB-01C Dryadion integrifoliae Ohba ex Daniéls 1982
- > KOB-02A Oxytropido-Elyinion myosuroidis Br.-Bl. 1950
- > KOB-02B Leontopodio nivalis-Elyinion myosuroidis (Blasi et al. 2003) Di Pietro et Mucina in Chytrý et al. 2015
- > KOB-02C Festucion versicoloris Krajina 1933
- > KOB-02D Agrostion alpinae Jeník et al. 1980
- > KOB-03A Kobresion capilliformis Tsepkova 1987
- > SES-01A Seslerion caeruleae Br.-Bl. in Br.-Bl. et Jenny 1926
- > SES-01B Caricion austroalpinae Sutter 1962
- > SES-01C Caricion ferrugineae G. Br.-Bl. et Br.-Bl. in G. Br.-Bl. 1931
- > SES-01D Caricion firmae Gams 1936
- > SES-01E Astero alpini-Seslerion calcariae Hadač in Hadač et al. 1969 nom. invers.

- propos.
- > SES-01F Seslerion tatrae Pawłowski 1935 corr. Klika 1955
 - > SES-01G Festuco saxatilis-Seslerion bielzii (Pawłowski et Walas 1949) Coldea 1984
 - > SES-01H Primulion intricatae Br.-Bl. ex Vigo 1972
 - > SES-01I Armerion cantabricae Rivas-Mart. et al. 1984

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Carex firma</i>	29
<i>Gentiana clusii</i>	28
<i>Sesleria caerulea</i>	25
<i>Carex sempervirens</i>	25
<i>Helianthemum alpestre</i>	24
<i>Dryas octopetala</i>	23
<i>Crepis jacquinii</i>	23
<i>Primula auricula</i>	23
<i>Saxifraga caesia</i>	22
<i>Festuca versicolor</i>	21
<i>Galium anisophyllum</i>	21
<i>Bellidiastrum michelii</i>	20
<i>Thymus pulcherrimus</i>	20
<i>Pedicularis rostratocapitata</i>	20
<i>Euphrasia salisburgensis</i>	19
<i>Trisetum alpestre</i>	19
<i>Scabiosa lucida</i>	19
<i>Phyteuma orbiculare</i>	19
<i>Androsace chamaejasme</i>	18
<i>Campanula cochleariifolia</i>	18
<i>Hieracium villosum</i>	18
<i>Festuca quadriflora</i>	18
<i>Leontopodium nivale</i>	18
<i>Carex mucronata</i>	16
<i>Aster alpinus</i>	15

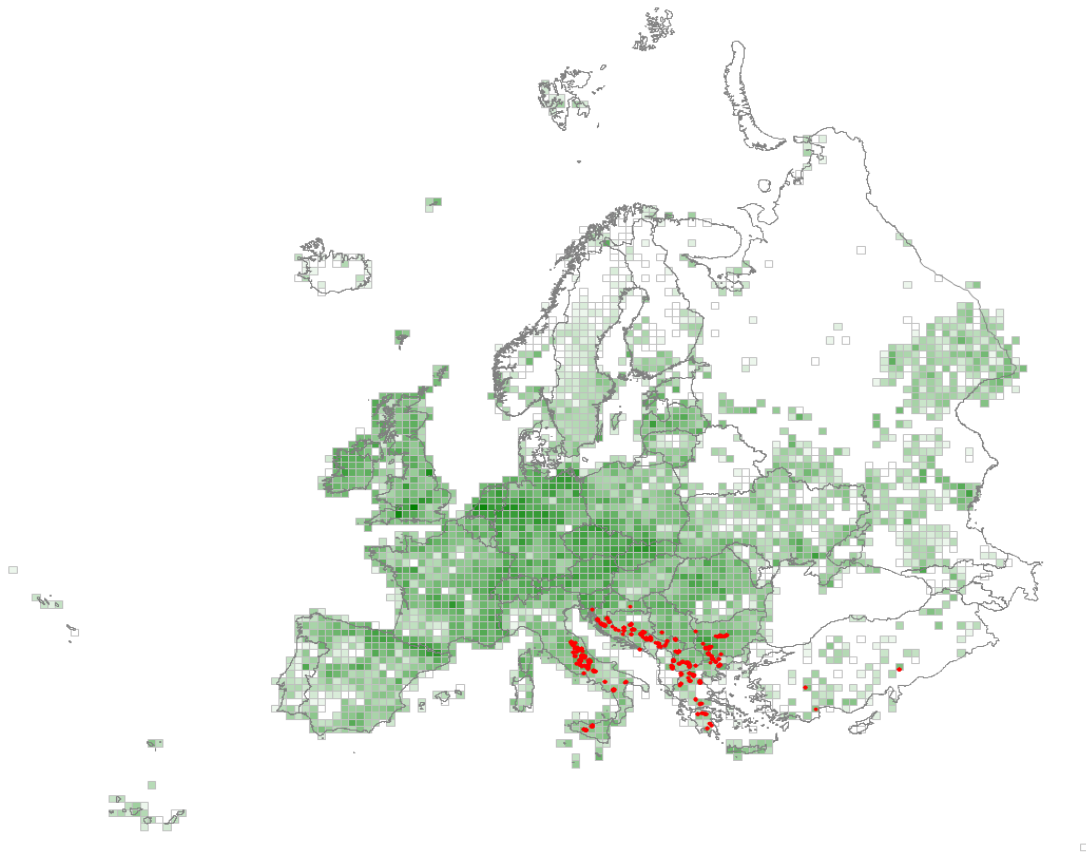
Constant species (percentage frequencies)

<i>Sesleria caerulea</i>	58
<i>Carex sempervirens</i>	39
<i>Anthyllis vulneraria</i>	35
<i>Bistorta vivipara</i>	31
<i>Dryas octopetala</i>	29
<i>Carex firma</i>	29
<i>Bellidiastrum michelii</i>	29
<i>Galium anisophyllum</i>	27
<i>Phyteuma orbiculare</i>	26
<i>Helianthemum alpestre</i>	25
<i>Helianthemum nummularium</i>	24
<i>Poa alpina</i>	21
<i>Campanula cochleariifolia</i>	20
<i>Tortella tortuosa</i>	19
<i>Gentiana clusii</i>	19
<i>Euphrasia salisburgensis</i>	19
<i>Carduus defloratus</i> aggr.	19
<i>Silene acaulis</i>	18

<i>Scabiosa lucida</i>	18
<i>Saxifraga paniculata</i>	18
<i>Primula auricula</i>	18
<i>Lotus corniculatus</i>	17
<i>Globularia cordifolia</i>	17
<i>Thymus praecox</i>	16
<i>Festuca quadriflora</i>	16
<i>Biscutella laevigata</i>	16
<i>Bartsia alpina</i>	16
<i>Saxifraga caesia</i>	15
<i>Gentiana verna</i>	14
<i>Minuartia verna</i> aggr.	13
<i>Myosotis alpestris</i>	12
<i>Hieracium villosum</i>	12
<i>Carex mucronata</i>	12
<i>Aster alpinus</i>	12
<i>Thesium alpinum</i>	11
<i>Linum catharticum</i>	11
<i>Clinopodium alpinum</i>	11
<i>Carlina acaulis</i>	11

R45 – Alpine and subalpine calcareous grassland of the Balkans and Apennines

Grass-dominated vegetation of base-rich soils in the high mountains in the Balkans and Apennines including both primary vegetation above the tree line but also secondary grasslands maintained by grazing at lower altitudes.



Corresponding alliances in EuroVegChecklist 2016

- > SES-02A Seslerion tenuifoliae Horvat 1930
- > SES-02B Seslerio juncifoliae-Caricion firmae Trinajstić 2005
- > SES-02C Festucion pungentis Horvat 1930
- > SES-02D Seslerion apenninae Furnari in Bruno et Furnari 1966
- > SES-03A Oxytropidion dinaricae Lakušić 1966
- > SES-03B Anthyllido-Seslerion klasterskyi Simon 1958
- > SES-03C Seslerio-Festucion xanthinae Horvat in Horvat et al. 1974
- > SES-03D Festuco-Knaution longifoliae Jovanović-Dunjić 1955
- > SES-03E Festucion xanthinae Lakušić et al. 1969
- > SES-03F Seslerion nitidae Horvat 1936

Characteristic species combination

Diagnostic species (phi coefficient * 100)

Carex kitaibeliana

<i>Edraianthus graminifolius</i>	46
<i>Trinia dalechampii</i>	39
<i>Pedicularis elegans</i>	32
<i>Sesleria juncifolia</i>	29
<i>Scabiosa silenifolia</i>	27
<i>Erigeron epiroticus</i>	26
<i>Helianthemum alpestre</i>	26
<i>Sesleria nitida</i>	25
<i>Oxytropis dinarica</i>	25
<i>Globularia meridionalis</i>	24
<i>Festuca violacea</i>	23
<i>Draba aizoides</i> aggr.	23
<i>Viola eugeniae</i>	22
<i>Carum carvi</i>	22
<i>Anthyllis aurea</i>	21
<i>Pedicularis brachyodonta</i>	21
<i>Alyssum cuneifolium</i>	20
<i>Androsace villosa</i>	20
<i>Anthyllis vulneraria</i>	20
<i>Achillea barrelieri</i>	20
<i>Gnaphalium diminutum</i>	19
<i>Gentiana verna</i>	19
<i>Myosotis graui</i>	19
<i>Dianthus haematocalyx</i>	19
<i>Thymus praecox</i>	17
<i>Gentiana dinarica</i>	17
<i>Festuca hirtovaginata</i>	16
<i>Achillea ageratifolia</i>	16
<i>Sedum atratum</i>	16
<i>Ranunculus pollinensis</i>	16
<i>Galium magellense</i>	16
<i>Clinopodium alpinum</i>	16
<i>Galium oreophilum</i>	15
<i>Saxifraga paniculata</i>	15

Constant species (percentage frequencies)

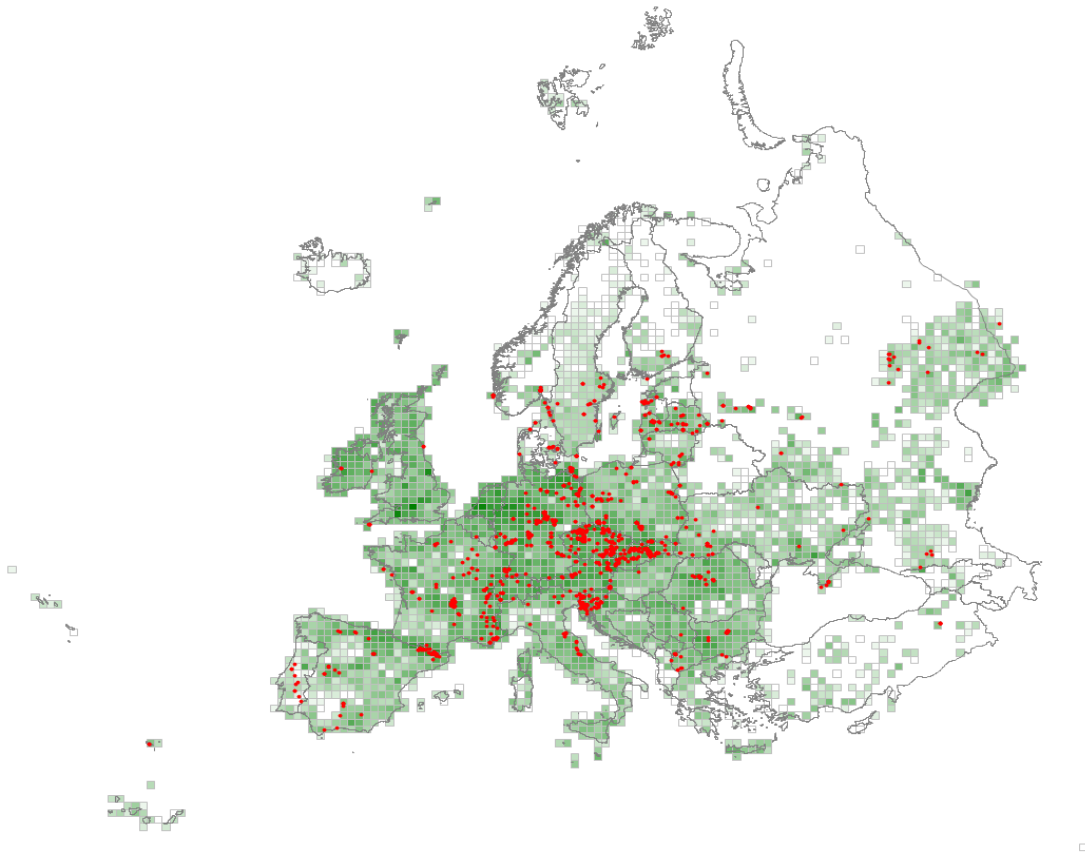
<i>Carex kitaibeliana</i>	71
<i>Anthyllis vulneraria</i>	53
<i>Thymus praecox</i>	38
<i>Edraianthus graminifolius</i>	37
<i>Poa alpina</i>	33
<i>Sesleria juncifolia</i>	31
<i>Clinopodium alpinum</i>	29
<i>Helianthemum alpestre</i>	27
<i>Minuartia verna</i> aggr.	23
<i>Helianthemum canum</i>	23
<i>Trinia dalechampii</i>	21
<i>Helianthemum nummularium</i>	21
<i>Gentiana verna</i>	21
<i>Festuca violacea</i>	20
<i>Draba aizoides</i> aggr.	20
<i>Dianthus sylvestris</i>	20
<i>Asperula aristata</i>	20
<i>Saxifraga paniculata</i>	19
<i>Globularia meridionalis</i>	19

<i>Carum carvi</i>	18
<i>Potentilla crantzii</i>	17
<i>Bromopsis erecta</i>	17
<i>Asperula cynanchica</i>	17
<i>Sesleria nitida</i>	16
<i>Helictochloa versicolor</i>	16
<i>Teucrium montanum</i>	15
<i>Cerastium arvense</i>	15
<i>Androsace villosa</i>	15
<i>Silene acaulis</i>	14
<i>Plantago atrata</i>	14
<i>Anthyllis montana</i>	14
<i>Viola eugeniae</i>	13
<i>Trifolium pratense</i>	13
<i>Pedicularis elegans</i>	12
<i>Koeleria splendens</i>	12
<i>Festuca circummediterranea</i>	12
<i>Pulsatilla alpina</i>	11
<i>Pilosella officinarum</i>	11
<i>Phyteuma orbiculare</i>	11
<i>Juniperus communis</i> subsp. <i>nana</i>	11
<i>Galium lucidum</i>	11
<i>Euphrasia salisburgensis</i>	11
<i>Biscutella laevigata</i>	11
<i>Asyneuma limonifolium</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Carex kitaibeliana 28

R51 – Thermophilous forest fringe of base-rich soils

Fringe communities on neutral to base-rich, only moderately nutrient-rich soils in the transition zone between forests or scrub and open habitats or in similar situations alongside cliffs and on roadsides. They occur across large parts of lowland North-Western Europe, but also extending into more continental regions where they fringe more open thermophilous forests, and into cooler montane levels to the south and south-east. Typically comprising half-shade plants, other species of neighbouring habitats can also find a place and, in calcareous landscapes, the vegetation can be very species-rich, harbouring many rare and/or endangered species. This vegetation depends on grazing or mowing to prevent succession.



Corresponding alliances in EuroVegChecklist 2016

- > GER-01A *Knaution dipsacifoliae* Julve ex Dengler et Boch 2008
- > GER-01B *Trifolion medii* T. Müller 1962
- > GER-01C *Violion kitaibelianae* Ubaldi 2011
- > GER-02A *Geranion sanguinei* Tx. in T. Müller 1962
- > GER-02B *Galio littoralis-Geranion sanguinei* Géhu et Géhu-Franck in de Foucault et al. 1983
- > GER-02C *Dictamno albi-Ferulagion galbaniferae* (van Gils et al. 1975) de Foucault et al. ex Čarni et Dengler in Mucina et al. 2009
- > GER-02D *Lathyro laxiflori-Trifolion velenovskyi* (Čarni et al. 2000) Čarni 2005
- > GER-02E *Asparago acutifolii-Teucrion chamaedryos* Ubaldi 2011
- > GER-03A *Stachyo lusitanicae-Cheirolophion sempervirentis* (Capelo 1996) Capelo in Di

- Pietro et al. 2015
- > GER-03B *Thalictro aquilegiifolii*-*Asphodelion macrocarpi* Allegrezza et al. 2015
 - > GER-03C *Cyano triumfetti*-*Asphodelion macrocarpa*e Biondi et Allegrezza in Biondi et al. 2014

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Geranium sanguineum</i>	31
<i>Trifolium medium</i>	24
<i>Peucedanum cervaria</i>	19
<i>Origanum vulgare</i>	18
<i>Dictamnus albus</i>	16
<i>Polygonatum odoratum</i>	16

Constant species (percentage frequencies)

<i>Geranium sanguineum</i>	39
<i>Dactylis glomerata</i>	35
<i>Origanum vulgare</i>	31
<i>Euphorbia cyparissias</i>	31
<i>Achillea millefolium</i> aggr.	31
<i>Vincetoxicum hirundinaria</i>	29
<i>Trifolium medium</i>	29
<i>Galium mollugo</i> aggr.	28
<i>Poa pratensis</i> aggr.	27
<i>Hypericum perforatum</i>	27
<i>Polygonatum odoratum</i>	24
<i>Galium verum</i>	23
<i>Clinopodium vulgare</i>	23
<i>Brachypodium pinnatum</i>	23
<i>Fragaria vesca</i>	21
<i>Teucrium chamaedrys</i>	20
<i>Pimpinella saxifraga</i>	19
<i>Lotus corniculatus</i>	19
<i>Arrhenatherum elatius</i>	19
<i>Veronica chamaedrys</i> aggr.	18
<i>Helianthemum nummularium</i>	18
<i>Festuca rubra</i> aggr.	18
<i>Agrostis capillaris</i>	17
<i>Agrimonia eupatoria</i>	17
<i>Viola hirta</i>	16
<i>Tanacetum corymbosum</i>	16
<i>Peucedanum cervaria</i>	16
<i>Fragaria viridis</i>	16
<i>Centaurea scabiosa</i>	16
<i>Centaurea jacea</i>	15
<i>Vicia cracca</i>	14
<i>Stachys recta</i>	14
<i>Securigera varia</i>	14
<i>Knautia arvensis</i>	14
<i>Filipendula vulgaris</i>	14
<i>Carex humilis</i>	14
<i>Stachys officinalis</i>	13
<i>Lathyrus pratensis</i>	13

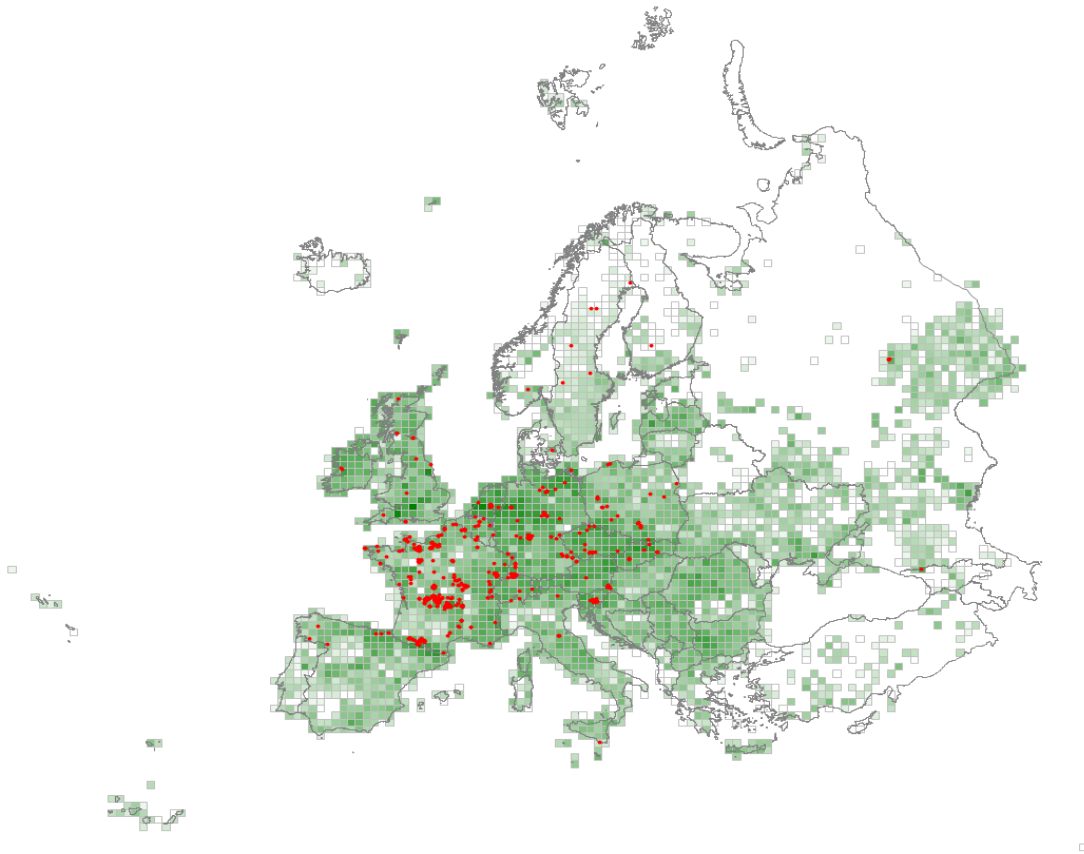
<i>Laserpitium latifolium</i>	13
<i>Bupleurum falcatum</i>	13
<i>Solidago virgaurea</i>	12
<i>Silene nutans</i>	12
<i>Sesleria caerulea</i>	12
<i>Salvia pratensis</i>	12
<i>Primula veris</i>	12
<i>Silene vulgaris</i>	11
<i>Sanguisorba minor</i> aggr.	11
<i>Prunus spinosa</i>	11
<i>Poa nemoralis</i>	11
<i>Plantago lanceolata</i>	11
<i>Medicago falcata</i>	11
<i>Astragalus glycyphyllos</i>	11
<i>Anthericum ramosum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Geranium sanguineum</i>	25
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R52 – Forest fringe of acidic nutrient-poor soils

Fringe vegetation of semi-shaded forest margins and similar situations on acidic, nutrient-poor soils in the cooler Atlantic, subatlantic and subcontinental regions of Europe, becoming rare and more species-poor in Eastern Europe. It is generally dominated by bulky grasses and tall forbs, rather species-poor, and ultimately dependent on extensive grazing or occasional mowing to prevent encroachment by shrubs and trees that threaten denser shade.



Corresponding alliances in EuroVegChecklist 2016

- > GER-03D *Hyperico calabricae-Asphodelion macrocarpi* Biondi, Gangale et Uzunov in Biondi et al. 2014
- > GER-05A *Melampyrion pratensis* Passarge 1979
- > GER-05B *Violo riviniana-Stellarion holostea* Passarge 1994
- > GER-05C *Poion nemoralis* Dengler et al. 2006
- > GER-05D *Teucrion scorodoniae* de Foucault et al. 1983
- > GER-05E *Linarion triornithophorae* Rivas-Mart. et al. 1984
- > GER-05F *Origanion virentis* Rivas-Mart. et O. de Bolòs in Rivas-Mart. et al. 1984
- > GER-05G *Luzulo sieberi-Brachypodium genuensis* Allegrezza et Biondi in Biondi et al. 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Holcus mollis</i>	34
<i>Teucrium scorodonia</i>	33
<i>Hypericum pulchrum</i>	19
<i>Lonicera periclymenum</i>	18
<i>Melampyrum pratense</i>	15

Constant species (percentage frequencies)

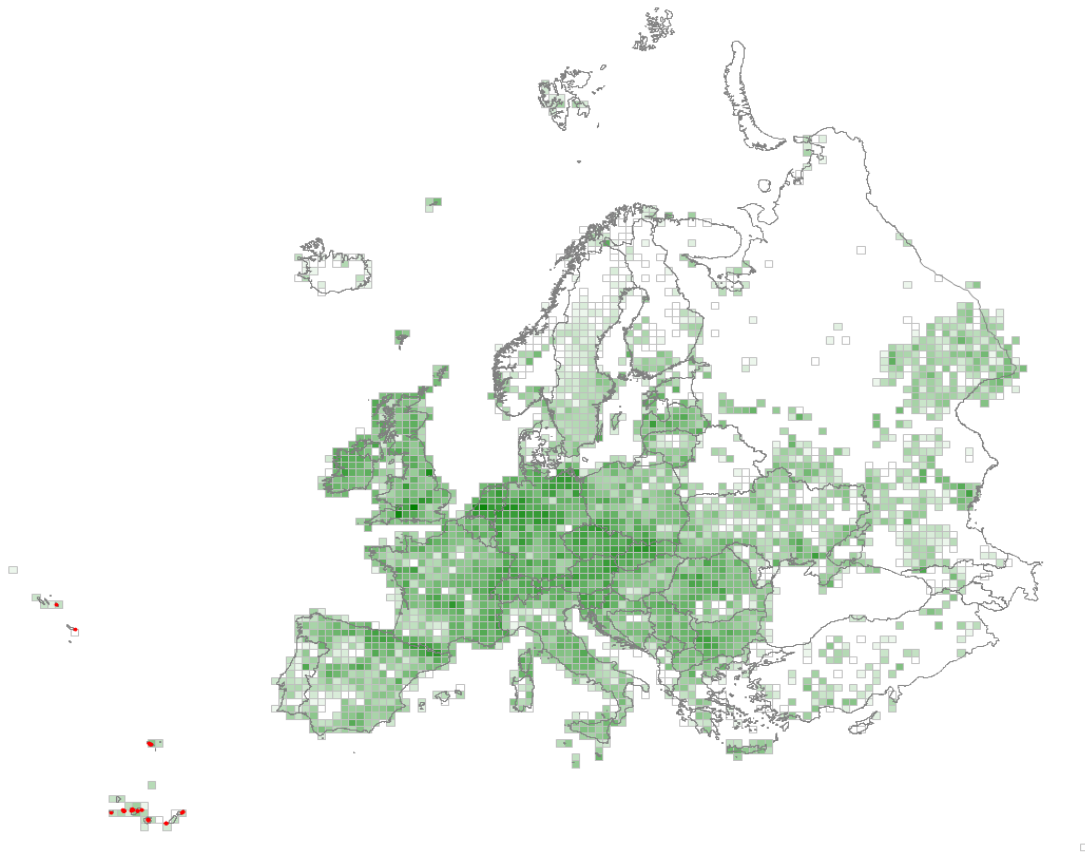
<i>Teucrium scorodonia</i>	68
<i>Holcus mollis</i>	60
<i>Avenella flexuosa</i>	45
<i>Agrostis capillaris</i>	44
<i>Lonicera periclymenum</i>	39
<i>Melampyrum pratense</i>	35
<i>Pteridium aquilinum</i>	34
<i>Solidago virgaurea</i>	24
<i>Quercus robur</i>	24
<i>Stellaria holostea</i>	23
<i>Hedera helix</i> aggr.	23
<i>Vaccinium myrtillus</i>	21
<i>Cytisus scoparius</i>	19
<i>Viola riviniana</i>	18
<i>Hypericum pulchrum</i>	17
<i>Fragaria vesca</i>	17
<i>Dactylis glomerata</i>	17
<i>Potentilla erecta</i>	16
<i>Galium mollugo</i> aggr.	16
<i>Calluna vulgaris</i>	16
<i>Anthoxanthum odoratum</i> aggr.	16
<i>Hieracium murorum</i>	15
<i>Carex pilulifera</i>	15
<i>Veronica chamaedrys</i> aggr.	13
<i>Sorbus aucuparia</i>	13
<i>Rubus fruticosus</i> aggr.	13
<i>Pseudoscleropodium purum</i>	13
<i>Polytrichastrum formosum</i>	13
<i>Luzula campestris</i> aggr.	13
<i>Hypericum perforatum</i>	13
<i>Achillea millefolium</i> aggr.	13
<i>Veronica officinalis</i>	12
<i>Poa nemoralis</i>	12
<i>Luzula pilosa</i>	12
<i>Lathyrus linifolius</i>	12
<i>Festuca rubra</i> aggr.	12
<i>Fagus sylvatica</i>	12
<i>Linaria repens</i>	11
<i>Ilex aquifolium</i>	11
<i>Hieracium lachenalii</i>	11
<i>Dryopteris filix-mas</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Teucrium scorodonia</i>	37
<i>Holcus mollis</i>	27

R53 – Macaronesian thermophilous forest fringe

Perennial herbaceous communities of the warm half-shade of forest fringes and clearings of Macaronesian laurel forests in the Canary Islands, Madeira and Azores. It is found as sunnier micro-sites in or along humid woodland edges but is dependent on forest litter producing somewhat mesotrophic conditions.



Corresponding alliances in EuroVegChecklist 2016

- > GER-04A *Ranunculo cortusifolii*-*Geranium canariensis* Rivas-Mart. et al. 1993
- > GER-04B *Pericallion malvifoliae* Fernández Prieto, Dias et Aguiar in Fernández Prieto et al. 2012

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Ranunculus cortusifolius</i>	45
<i>Myosotis latifolia</i>	36
<i>Pimpinella dendrotragium</i>	33
<i>Andryala pinnatifida</i>	31
<i>Lolium saxatile</i>	29
<i>Reichardia famarae</i>	29
<i>Pericallis cruenta</i>	29

<i>Crambe scaberrima</i>	28
<i>Crepis canariensis</i>	28
<i>Senecio bollei</i>	28
<i>Ononis christii</i>	27
<i>Minuartia platyphylla</i>	27
<i>Monanthes laxiflora</i>	26
<i>Echium handiense</i>	26
<i>Bystropogon punctatus</i>	26
<i>Helichrysum gossypinum</i>	25
<i>Aeonium aizoon</i>	25
<i>Laurus azorica</i>	24
<i>Hypericum xylosteifolium</i>	23
<i>Geranium reuteri</i>	23
<i>Pericallis webbii</i>	23
<i>Dryopteris oligodonta</i>	22
<i>Polypodium cambricum</i> subsp. <i>macaronesicum</i>	22
<i>Festuca agustinii</i>	21
<i>Aichryson pachycaulon</i>	21
<i>Morella faya</i>	21
<i>Hypericum coadunatum</i>	21
<i>Geranium palmatum</i>	21
<i>Sonchus gummifer</i>	20
<i>Thymus organoides</i>	20
<i>Ilex canariensis</i>	20
<i>Galium scabrum</i>	20
<i>Ferula lancerotensis</i>	20
<i>Genista maderensis</i>	18
<i>Rumex maderensis</i>	18
<i>Aichryson tortuosum</i>	18
<i>Aichryson laxum</i>	18
<i>Aeonium canariense</i>	17
<i>Pericallis aurita</i>	17
<i>Argyranthemum webbii</i>	16
<i>Rhamnus glandulosa</i>	16
<i>Aeonium aureum</i>	16
<i>Pericallis lanata</i>	16
<i>Carlina salicifolia</i>	15

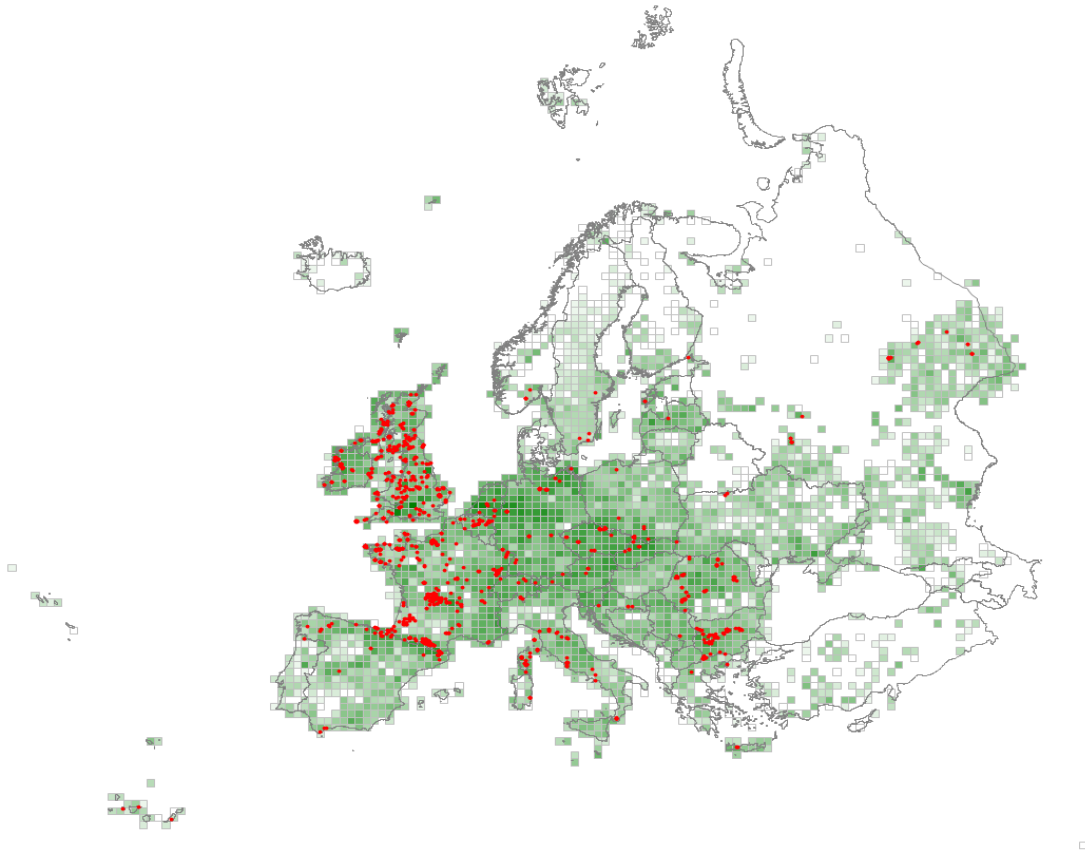
Constant species (percentage frequencies)

<i>Ranunculus cortusifolius</i>	46
<i>Morella faya</i>	30
<i>Erica arborea</i>	30
<i>Andryala pinnatifida</i>	28
<i>Laurus azorica</i>	26
<i>Ilex canariensis</i>	24
<i>Myosotis latifolia</i>	22
<i>Hypericum xylosteifolium</i>	22
<i>Dryopteris oligodonta</i>	22
<i>Galium scabrum</i>	20
<i>Polypodium cambricum</i> subsp. <i>macaronesicum</i>	17
<i>Carlina salicifolia</i>	17
<i>Asplenium adiantum-nigrum</i>	17
<i>Viburnum tinus</i>	15
<i>Rubia peregrina</i>	13
<i>Phyllis nobla</i>	13

<i>Monanthes laxiflora</i>	13
<i>Geranium reuteri</i>	13
<i>Reichardia famarae</i>	11
<i>Pteridium aquilinum</i>	11
<i>Pimpinella dendrotragium</i>	11
<i>Pericallis aurita</i>	11
<i>Davallia canariensis</i>	11
<i>Ageratina adenophora</i>	11

R54 – *Pteridium aquilinum* vegetation

Dense species-poor stands of bracken (*Pteridium aquilinum*), naturally a lowland European forest fern which, when not held in check by dense shade and lacking the traditional management of cutting and trampling by cattle, readily establishes itself as a dominant in non-forest land. It spreads vigorously by rhizome extension and produces a deep litter layer. It is common in many pastoral landscapes that are less traditionally managed than before. It can also dominate in areas of burned forest.



Corresponding alliances in EuroVegChecklist 2016

- <> EPI-01A Epilobion angustifolii Oberd. 1957
- > GER-05H Digitalidi ferrugineae-Pteridion aquilini Biondi et Casavecchia in Biondi et al. 2014
- <> LON-01A Lonicero-Rubion silvatici Tx. et Neumann ex Wittig 1977

Characteristic species combination

Diagnostic species (phi coefficient * 100)	
<i>Pteridium aquilinum</i>	29
Constant species (percentage frequencies)	
<i>Pteridium aquilinum</i>	100

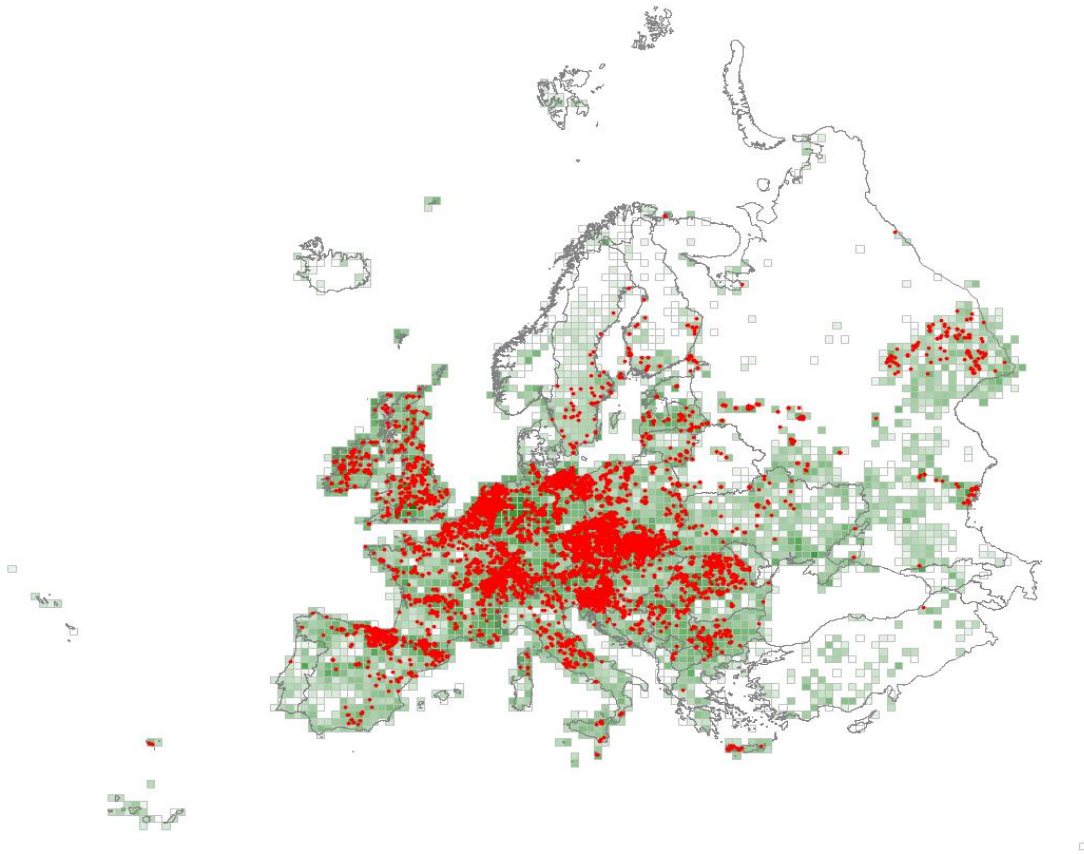
<i>Agrostis capillaris</i>	36
<i>Potentilla erecta</i>	34
<i>Holcus lanatus</i>	22
<i>Anthoxanthum odoratum</i> aggr.	22
<i>Avenella flexuosa</i>	20
<i>Galium saxatile</i>	19
<i>Festuca rubra</i> aggr.	19
<i>Calluna vulgaris</i>	18
<i>Viola riviniana</i>	17
<i>Teucrium scorodonia</i>	17
<i>Molinia caerulea</i> aggr.	15
<i>Holcus mollis</i>	15
<i>Dactylis glomerata</i>	15
<i>Vaccinium myrtillus</i>	14
<i>Rumex acetosa</i>	14
<i>Rubus fruticosus</i> aggr.	14
<i>Pseudoscleropodium purum</i>	13
<i>Poa pratensis</i> aggr.	12
<i>Achillea millefolium</i> aggr.	12
<i>Urtica dioica</i>	11
<i>Luzula campestris</i> aggr.	11
<i>Hypnum cupressiforme</i> aggr.	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pteridium aquilinum</i>	100
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R55 – Lowland moist or wet tall-herb and fern fringe

Tall-herb and fern-dominated communities of moist, sometimes flooded nutrient-rich soils in the lowlands and low mountain areas of Europe, up to the subalpine zone, through the temperate, boreal and submediterranean regions. The relatively species-rich vegetation may be found in river floodplains, along smaller watercourses, in the shade at the edge of forests, often as narrow strips, and, as secondary vegetation after the abandonment of pastures and especially meadows. The species composition is quite diverse, depending on the altitude, geographic distribution and location in the landscape.



Corresponding alliances in EuroVegChecklist 2016

- > EPI-02B *Impatienti noli-tangere-Stachyion sylvaticae* Görs ex Mucina 1993
- <> EPI-02C *Aegopodion podagrariae* Tx. 1967 nom. conserv. propos.
- > EPI-05A *Senecionion fluviatilis* Tx. ex Moor 1958
- > EPI-05B *Archangelicion litoralis* Scamoni et Passarge 1963
- > EPI-05C *Nardosmion laevigatae* Klotz et Köck 1986
- > EPI-05D *Cynancho-Convulvulion sepium* Rivas Goday et Rivas-Mart. ex Rivas-Mart.
- > EPI-05E *Dorycnio recti-Rumicion conglomerati* Gradstein et Smittenberg 1977
- > EPI-05F *Ipomoeo acuminatae-Ageratinion adenophorae* Espírito-Santo et al. 2004
- <> MOL-05E *Conioselinion tatarici* Golub et al. 2003
- > MOL-08A *Filipendulo-Petasition* Br.-Bl. ex Duvigneaud 1949
- > MOL-08B *Rumicion balcanici* Lakušić ex D. Lakušić et al. 2015
- > MOL-08C *Veronico longifoliae-Lysimachion vulgaris* (Passarge 1977) Bal.-Tul. 1981

- > MOL-08D Filipendulion ulmariae Segal ex Westhoff et Den Held 1969
- > MOL-09A Althaeion officinalis Golub et Mirkin in Golub 1995
- > MOL-09B Euphorbion palustris Ageleulov et Golub in Golub 1995
- > MOL-09C Lythro-Euphorbion Mirkin et Naumova 1986

Characteristic species combination

Diagnostic species (phi coefficient * 100)

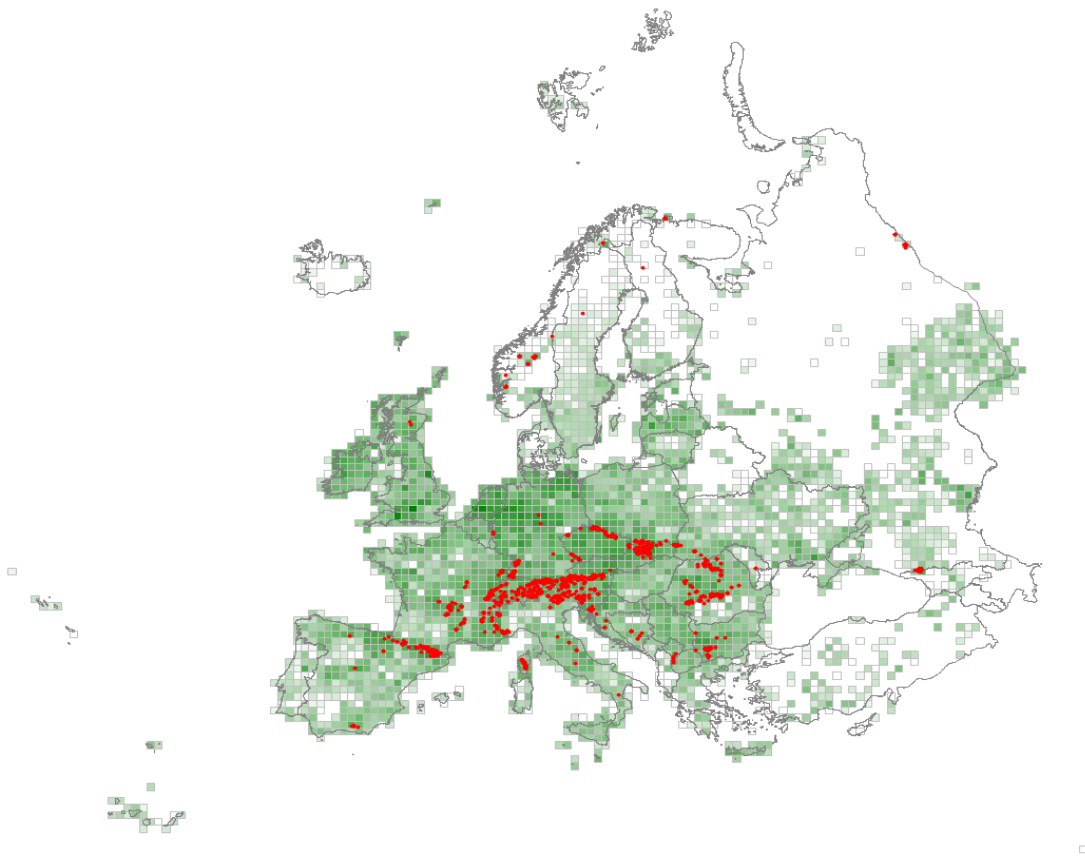
Urtica dioica 16

Constant species (percentage frequencies)

<i>Urtica dioica</i>	58
<i>Poa trivialis</i>	37
<i>Filipendula ulmaria</i>	32
<i>Galium aparine</i>	28
<i>Ranunculus repens</i>	27
<i>Dactylis glomerata</i>	23
<i>Calystegia sepium</i>	21
<i>Phalaroides arundinacea</i>	20
<i>Aegopodium podagraria</i>	20
<i>Agrostis stolonifera</i>	19
<i>Glechoma hederacea</i>	17
<i>Elytrigia repens</i> aggr.	17
<i>Cirsium arvense</i>	17
<i>Heracleum sphondylium</i>	16
<i>Angelica sylvestris</i>	16
<i>Taraxacum</i> sect. <i>Taraxacum</i>	14
<i>Anthriscus sylvestris</i>	14
<i>Rumex obtusifolius</i>	13
<i>Lythrum salicaria</i>	13
<i>Deschampsia cespitosa</i> aggr.	13
<i>Cirsium oleraceum</i>	13
<i>Chaerophyllum hirsutum</i>	13
<i>Alopecurus pratensis</i>	13
<i>Symphytum officinale</i>	12
<i>Rumex acetosa</i>	12
<i>Lathyrus pratensis</i>	12
<i>Holcus lanatus</i>	12
<i>Caltha palustris</i>	12
<i>Vicia cracca</i>	11
<i>Ranunculus acris</i> aggr.	11
<i>Phragmites australis</i>	11
<i>Myosotis scorpioides</i> aggr.	11
<i>Mentha longifolia</i>	11
<i>Lysimachia vulgaris</i>	11
<i>Geranium robertianum</i>	11
<i>Eupatorium cannabinum</i>	11
<i>Epilobium hirsutum</i>	11

R56 – Montane to subalpine moist or wet tall-herb and fern fringe

Tall forb and fern vegetation of moist, fertile soils in relatively cool and humid conditions through high levels of the mountain ranges of Europe, having its optimum in the subalpine zone but also occurring in the Arctic lowlands of Scandinavia. Typically found as strips along streams and on the edges of forests, in the shelter of large rocks, on mountain ledges and under scrub, sometimes also fringing snowbeds where it benefits from protection from winter frosts. The vegetation is often very rich in species and hosts many local and regional endemics, as well as widespread montane plants. Vulnerable to grazing by wild herbivores and stock, but often protected by its remoteness.



Corresponding alliances in EuroVegChecklist 2016

- > MUL-01A *Adenostylion alliariae* Br.-Bl. 1926 nom. conserv. propos.
- > MUL-01B *Dryopterido filicis-maris-Athyrium distentifolii* (Holub ex Sýkora et Štursa 1973) Jeník et al. 1980
- > MUL-01C *Delphinion elati* Hadač in Hadač et al. 1969
- > MUL-01D *Cirsion flavispinae* Quézel 1953
- > MUL-01E *Doronicion corsici* Gamisans 1975
- > MUL-01F *Cirsion appendiculati* Horvat et al. 1937
- > MUL-02A *Calamagrostion villosae* Pawłowski et al. 1928
- > MUL-02B *Trisetion fusci* Krajina 1933
- > MUL-02C *Calamagrostion arundinaceae* (Luquet 1926) Oberd. 1957
- > MUL-03A *Petasition officinalis* Sillinger 1933

- > MUL-03B Arunco-Petasition albi Br.-Bl. et Sutter 1977
- > MUL-03C Senecionion samniti Bonin 1978
- > MUL-04A Rumicion alpini Scharfetter 1938
- > MUL-05A Mulgedion alpini Nordhagen 1943
- > MUL-06A Polemonio acutiflori-Veratrion lobeliani Telyatnikov 2012
- > MUL-07A Triseti sibirici-Aconition septentrionalis Ermakov et al. 2000

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Rumex alpinus</i>	41
<i>Adenostyles alliariae</i>	36
<i>Rumex arifolius</i>	36
<i>Epilobium alpestre</i>	25
<i>Aconitum napellus</i> aggr.	25
<i>Stellaria nemorum</i>	24
<i>Athyrium distentifolium</i>	24
<i>Chaerophyllum hirsutum</i>	23
<i>Lactuca alpina</i>	22
<i>Doronicum austriacum</i>	22
<i>Peucedanum ostruthium</i>	20
<i>Saxifraga rotundifolia</i>	19
<i>Ranunculus plataniifolius</i>	19
<i>Carduus personata</i>	19
<i>Jacobaea alpina</i>	18
<i>Tozzia alpina</i>	17
<i>Veratrum album</i>	17
<i>Aconitum firmum</i>	16
<i>Ranunculus aconitifolius</i>	16
<i>Geranium sylvaticum</i> aggr.	16
<i>Silene dioica</i>	15

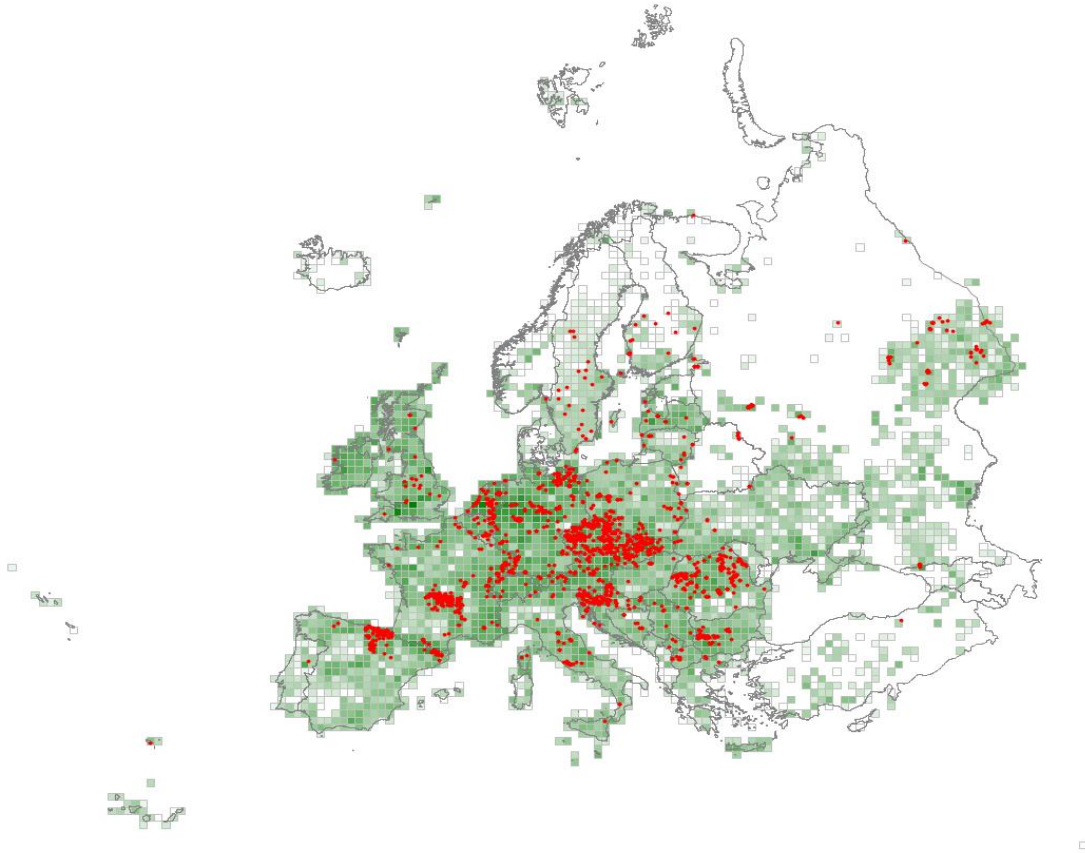
Constant species (percentage frequencies)

<i>Rumex arifolius</i>	47
<i>Adenostyles alliariae</i>	45
<i>Stellaria nemorum</i>	36
<i>Geranium sylvaticum</i> aggr.	36
<i>Deschampsia cespitosa</i> aggr.	35
<i>Viola biflora</i>	31
<i>Chaerophyllum hirsutum</i>	31
<i>Rumex alpinus</i>	27
<i>Senecio nemorensis</i> aggr.	26
<i>Urtica dioica</i>	25
<i>Veratrum album</i>	22
<i>Saxifraga rotundifolia</i>	22
<i>Athyrium distentifolium</i>	22
<i>Rubus idaeus</i>	21
<i>Aconitum napellus</i> aggr.	21
<i>Hypericum maculatum</i> aggr.	20
<i>Silene dioica</i>	19
<i>Oxalis acetosella</i>	18
<i>Lactuca alpina</i>	18
<i>Heracleum sphondylium</i>	18
<i>Peucedanum ostruthium</i>	17

<i>Athyrium filix-femina</i>	17
<i>Milium effusum</i>	16
<i>Solidago virgaurea</i>	15
<i>Ranunculus platanifolius</i>	15
<i>Ligusticum mutellina</i>	15
<i>Doronicum austriacum</i>	15
<i>Epilobium alpestre</i>	14
<i>Bistorta officinalis</i>	14
<i>Aconitum lycoctonum</i>	14
<i>Primula elatior</i>	13
<i>Poa alpina</i>	13
<i>Calamagrostis villosa</i>	13
<i>Veratrum lobelianum</i>	12
<i>Vaccinium myrtillus</i>	12
<i>Silene vulgaris</i>	12
<i>Myosotis sylvatica</i>	12
<i>Luzula sylvatica</i>	12
<i>Homogyne alpina</i>	12
<i>Geum rivale</i>	12
<i>Chrysosplenium alternifolium</i>	12
<i>Alchemilla vulgaris</i> aggr.	12
<i>Thalictrum aquilegifolium</i>	11
<i>Phleum alpinum</i> aggr.	11
<i>Dryopteris filix-mas</i>	11
<i>Carduus personata</i>	11

R57 – Herbaceous forest clearing vegetation

Tall forb and fern-rich as well as low-grown short-lived herblands forming seral vegetation complexes in woodland and forest clearings in various forest zones of Europe.



Corresponding alliances in EuroVegChecklist 2016

- <> EPI-01A Epilobion angustifolii Oberd. 1957
- > EPI-01B Linarion niveae Rivas-Mart. 1964
- > EPI-02A Fragarion vescae Tx. ex von Rochow 1951 nom. conserv. propos.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sambucus ebulus</i>	27
<i>Epilobium angustifolium</i>	17
<i>Urtica dioica</i>	16

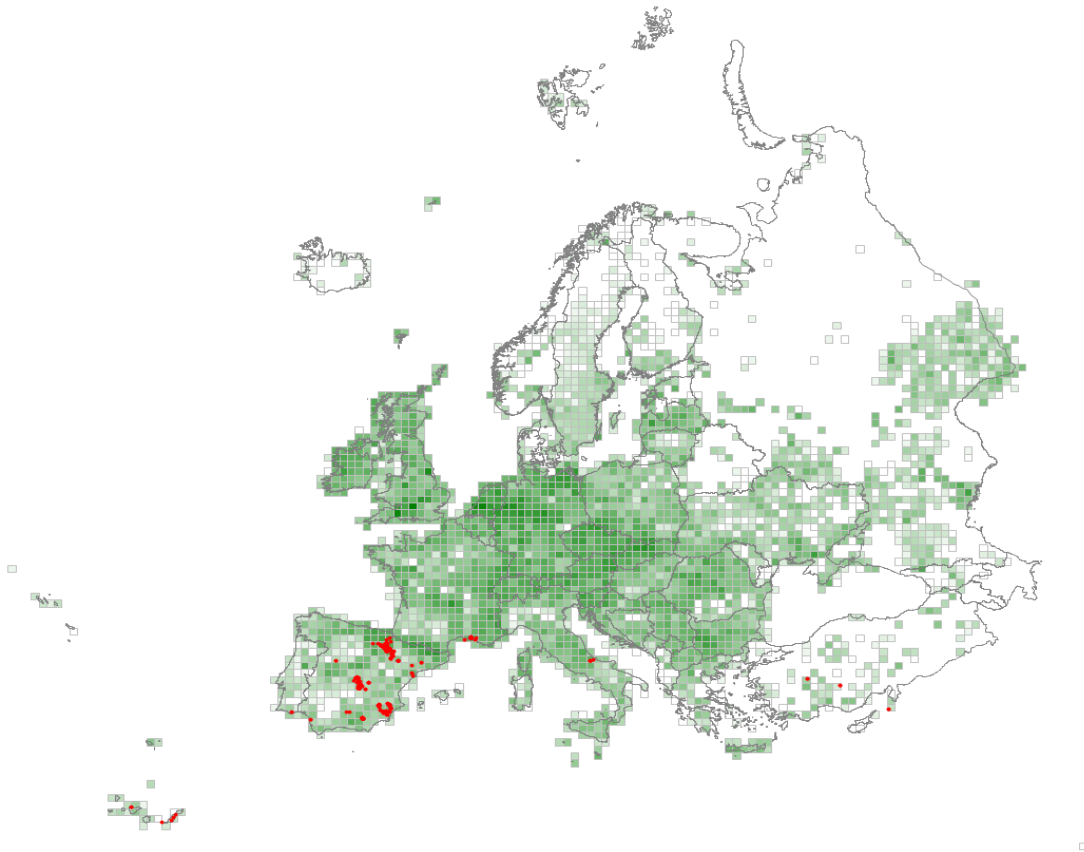
Constant species (percentage frequencies)

<i>Urtica dioica</i>	56
<i>Epilobium angustifolium</i>	34
<i>Rubus idaeus</i>	31
<i>Galium aparine</i>	30

<i>Galeopsis tetrahit</i> aggr.	28
<i>Senecio nemorensis</i> aggr.	23
<i>Geranium robertianum</i>	22
<i>Fragaria vesca</i>	22
<i>Avenella flexuosa</i>	22
<i>Sambucus ebulus</i>	19
<i>Calamagrostis epigejos</i>	19
<i>Poa nemoralis</i>	18
<i>Agrostis capillaris</i>	18
<i>Lactuca muralis</i>	17
<i>Dactylis glomerata</i>	17
<i>Cirsium arvense</i>	16
<i>Rubus fruticosus</i> aggr.	15
<i>Taraxacum</i> sect. <i>Taraxacum</i>	13
<i>Senecio sylvaticus</i>	12
<i>Rumex acetosella</i>	12
<i>Hypericum perforatum</i>	12
<i>Galium mollugo</i> aggr.	12
<i>Epilobium montanum</i>	12
<i>Elytrigia repens</i> aggr.	12
<i>Digitalis purpurea</i>	12
<i>Betula pendula</i>	12
<i>Sorbus aucuparia</i>	11
<i>Oxalis acetosella</i>	11
<i>Lapsana communis</i>	11
<i>Geum urbanum</i>	11
<i>Chelidonium majus</i>	11
<i>Artemisia vulgaris</i>	11

R61 – Mediterranean inland salt steppe

Halophyte vegetation of inland situations in the Mediterranean region where the soils of flats or gentle hollows are permeated by waters laden with soluble salts from underlying substrates, and are then subject to extreme summer drought, with a surface efflorescence of crystalline deposits. The vegetation can be rich in endemics, but the particular species composition depends on the regional climate and local soil conditions, and there is often a distinctive seasonal pattern of growth and zonation around the hollows. In some regions, the vegetation has provided valuable grazing for sheep and goats in summer drought.



Corresponding alliances in EuroVegChecklist 2016

- > FEP-01D *Puccinellion convolutae* Micevski 1965
- > FEP-01E *Puccinellion lagascae* Rivas-Mart. in Rivas-Mart. et M. Costa 1976 corr. Alonso et De la Torre 2004
- > FEP-02A *Halo-Artemision* Pignatti 1953
- > SAG-02A *Frankenion pulverulentae* Rivas-Mart. ex Castroviejo et Porta 1976
- > SAG-02B *Polyogonion subspathacei* Gamisans 1990
- > SAG-02C *Gaudinio-Podospermion cani* S. Brullo et Siracusa 2000
- > SAG-02D *Pholiuro-Spergularion* Pignatti 1952
- > SAG-02E *Mesembryanthemion nodiflori* Nègre 1959
- > SAG-02F *Mesembryanthemion crystallini* Rivas-Mart. et al. 1993
- <> SAL-01A *Salicornion fruticosae* Br.-Bl. 1933
- > SAL-02A *Lygeo-Lepidion cardaminis* Rivas Goday et Rivas-Mart. in Rivas-Mart. et M.

- Costa 1984
- > SAL-02B Lygeo sparti-Limonion furfuracei Rigual 1972
- > SAL-02C Limonion catalaunico-viciosoi Rivas-Mart. et M. Costa 1984
- > SAL-02D Limonion algarvensi-lanceolati J.C. Costa et al. 2012
- > SAL-02E Limonion confusi (Br.-Bl. 1933) Rivas-Mart. et M. Costa 1984
- > SAL-02F Triglochino barrelieri-Limonion glomerati Biondi et al. 2001
- > SAL-03A Limoniastrion monopetali Pignatti 1952
- > SAL-03B Halocnemion cruciati Biondi et al. 2013
- > THE-02C Microcnemion coralloidis Rivas-Mart. et Géhu in Rivas-Mart. 1984

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Suaeda vera</i>	42
<i>Limonium delicatulum</i>	37
<i>Puccinellia caespitosa</i>	35
<i>Limonium supinum</i>	34
<i>Elytrigia curvifolia</i>	33
<i>Sphenopus divaricatus</i>	33
<i>Puccinellia fasciculata</i>	29
<i>Gypsophila tomentosa</i>	29
<i>Sonchus crassifolius</i>	29
<i>Aeluropus littoralis</i>	28
<i>Limonium dichotomum</i>	27
<i>Lygeum spartum</i>	24
<i>Limonium costae</i>	23
<i>Limonium latebracteatum</i>	23
<i>Frankenia pulverulenta</i>	22
<i>Hornungia procumbens</i>	22
<i>Lepidium cardamines</i>	22
<i>Frankenia thymifolia</i>	22
<i>Limonium caesium</i>	21
<i>Microcnemum coralloides</i>	21
<i>Hordeum marinum</i>	20
<i>Limonium tournefortii</i>	20
<i>Limonium eugeniae</i> Sennen	18
<i>Limonium cossonianum</i>	18
<i>Puccinellia tenuifolia</i>	17
<i>Limonium majus</i>	16

Constant species (percentage frequencies)

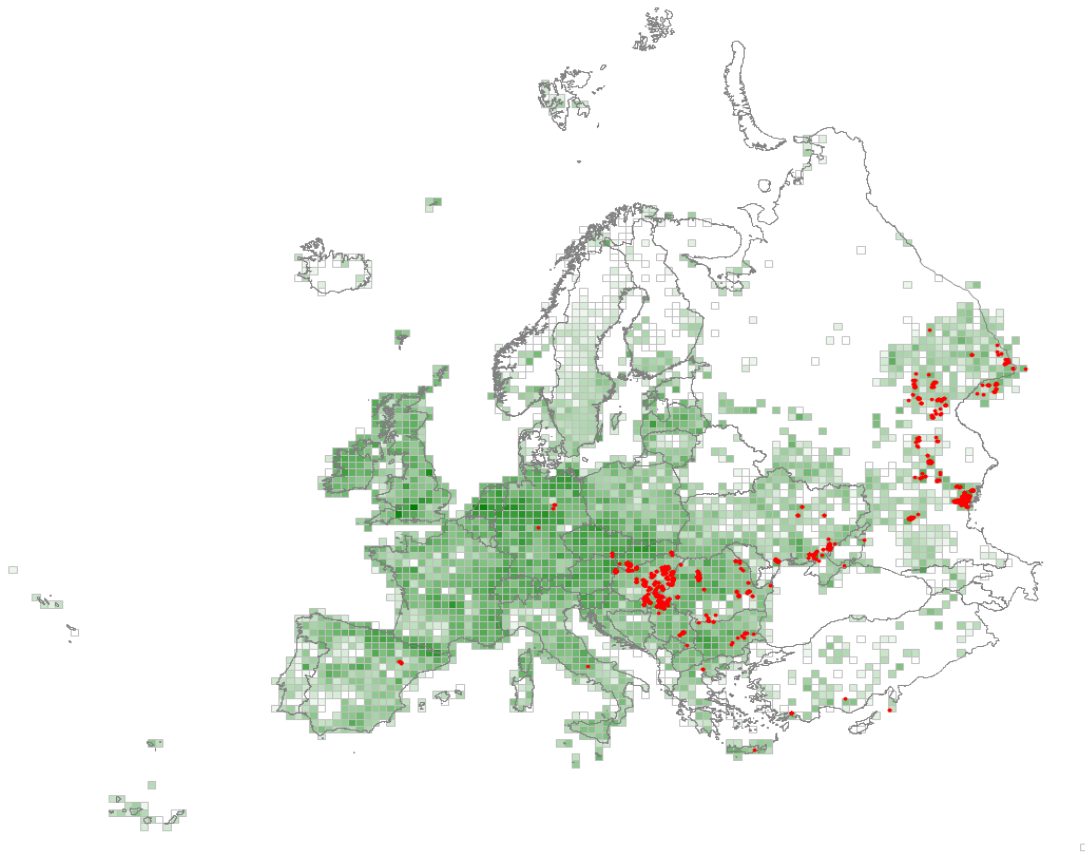
<i>Suaeda vera</i>	51
<i>Aeluropus littoralis</i>	28
<i>Lygeum spartum</i>	24
<i>Sphenopus divaricatus</i>	19
<i>Salicornia europaea</i> aggr.	16
<i>Plantago coronopus</i> aggr.	16
<i>Hordeum marinum</i>	16
<i>Puccinellia caespitosa</i>	14
<i>Limonium delicatulum</i>	14
<i>Plantago maritima</i>	13
<i>Limonium supinum</i>	13
<i>Juncus maritimus</i>	13
<i>Frankenia pulverulenta</i>	12

Elytrigia curvifolia
Spergularia marina

12
11

R62 – Continental inland salt steppe

Salt steppe of the Pannonian and Pontic regions, characteristic of solonetz soils, saturated, even shallow flooded, by soluble carbonates in spring, then drying in summer with surface cracking. According to variations in salinity, slope and erosion by spring floods, the vegetation is a complex mosaic of grasslands and more halophytic herb communities, rich in endemic species and plant communities. Traditionally part of the pastoral landscape of older breeds of cattle.



Corresponding alliances in EuroVegChecklist 2016

- > FEP-01A *Festucion pseudovinae* Soó 1933
- > FEP-01B *Peucedano officinalis-Asterion sedifolii* Borhidi 1996
- > FEP-01C *Puccinellion limosae* Soó 1933
- > FEP-02B *Artemision maritimae* Micevski 1970
- > FEP-02C *Atraphaxo-Capparion Korzhenevskii* 1992
- > FEP-03A *Plantagini salsae-Artemision santonici* Lysenko et Mucina in Lysenko et al. 2011
- > FEP-03B *Limonion sareptani* Golub 1994
- > FEP-03C *Limonion tomentelli* Agafonov et Golub in Golub 1994
- <> FEP-03D *Puccinellion giganteae* Dubyna et Neuhäuslová 2000
- > FEP-03E *Festuco valesiaca-Limonion gmelinii* Mirkin in Golub et V. Solomakha 1988
- > FEP-03F *Diantho guttati-Milion vernalis* Umanets et V. Solomakha 1998
- > THE-02D *Thero-Camphorosmion annuae* Vicherek 1973

Characteristic species combination

Diagnostic species (phi coefficient * 100)

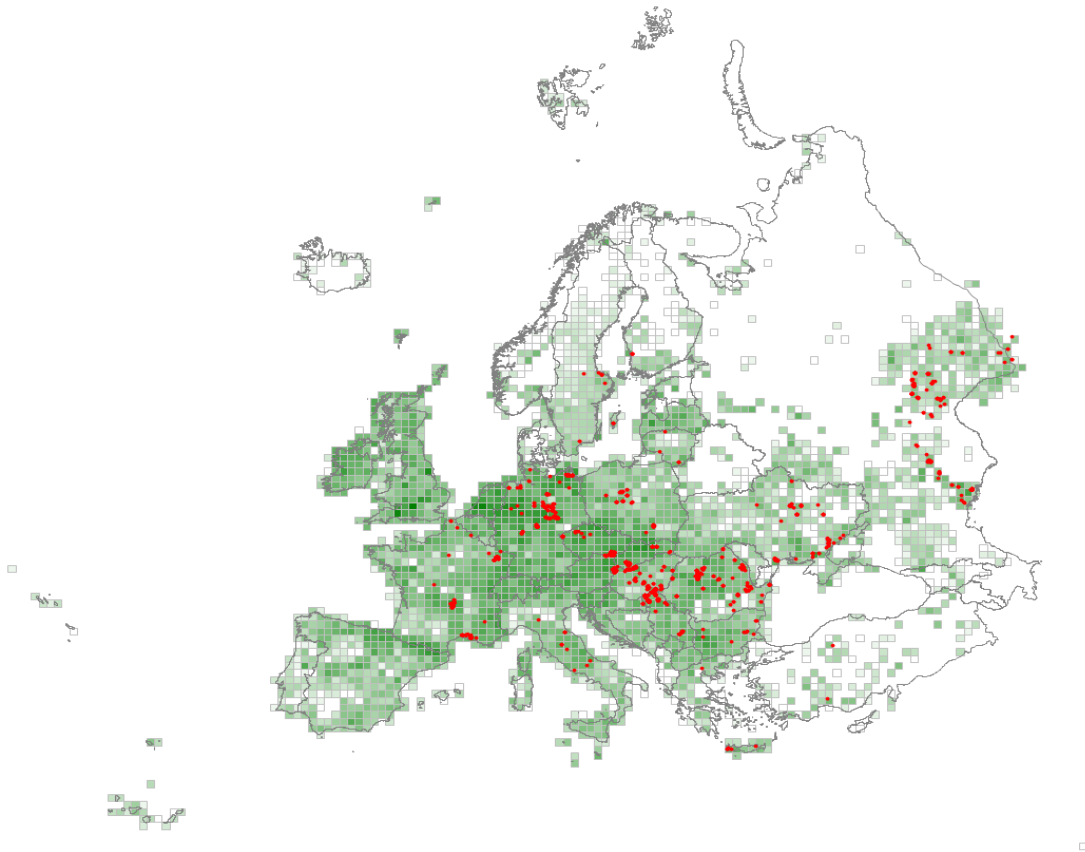
<i>Camphorosma annua</i>	46
<i>Puccinellia distans</i>	34
<i>Plantago tenuiflora</i>	30
<i>Artemisia santonicum</i>	28
<i>Pholiurus pannonicus</i>	27
<i>Limonium gmelinii</i>	27
<i>Podospermum canum</i>	25
<i>Hordeum geniculatum</i>	23
<i>Trifolium angulatum</i>	22
<i>Lepidium cartilagineum</i>	21
<i>Matricaria chamomilla</i>	18
<i>Puccinellia tenuissima</i>	16

Constant species (percentage frequencies)

<i>Puccinellia distans</i>	45
<i>Artemisia santonicum</i>	43
<i>Festuca valesiaca</i> aggr.	28
<i>Limonium gmelinii</i>	25
<i>Camphorosma annua</i>	25
<i>Podospermum canum</i>	21
<i>Matricaria chamomilla</i>	18
<i>Polygonum aviculare</i> aggr.	17
<i>Tripolium pannonicum</i>	16
<i>Plantago maritima</i>	16
<i>Suaeda maritima</i> aggr.	15
<i>Plantago tenuiflora</i>	14
<i>Poa bulbosa</i>	13
<i>Hordeum geniculatum</i>	13
<i>Elytrigia repens</i> aggr.	11

R63 – Temperate inland salt marsh

Inland salt marsh and meadow of temperate and continental regions, characteristic of situations where fossil salt lies close to the surface or where relict seawater is present, resulting in brackish or saline ground and surface water. In more continental regions inland salt pans are more common, where the habitat is found in depressions within a matrix of salt steppes and as sub-halophytic meadows. Elsewhere in Europe, the habitat can be found in association with a variety of salty bedrocks and also on abandoned salt workings. The species composition is very varied according to the regional climate and particular site conditions.



Corresponding alliances in EuroVegChecklist 2016

- > FEP-05A *Juncion gerardi* Wendelberger 1943
- > FEP-05B *Beckmannion eruciformis* Soó 1933
- > FEP-05C *Carici dilutae*-*Juncion gerardi* Lysenko et Mucina 2015
- > FEP-05D *Agrostio stoloniferae*-*Beckmannion eruciformis* Mirkin in Barabash et al. 1989
- > FEP-05E *Cirsion esculenti* Golub 1994
- <> JUN-03A *Festucion maritimae* Christiansen 1927
- <> JUN-03B *Puccinellio maritimae*-*Spergularion salinae* Beeftink 1965
- <> JUN-03C *Armerion maritimae* Br.-Bl. et De Leeuw 1936
- <> MOL-10B *Loto tenuis*-*Trifolion fragiferi* Westhoff et Den Held ex de Foucault 2009
- <> THE-01A *Therosalicornion* Br.-Bl. 1933
- <> THE-02A *Salicornion prostratae* Géhu 1992
- <> THE-02B *Suaedion acuminatae* Golub et Tsoabadze in Golub 1995 corr. Lysenko et

Characteristic species combination

Diagnostic species (phi coefficient * 100)

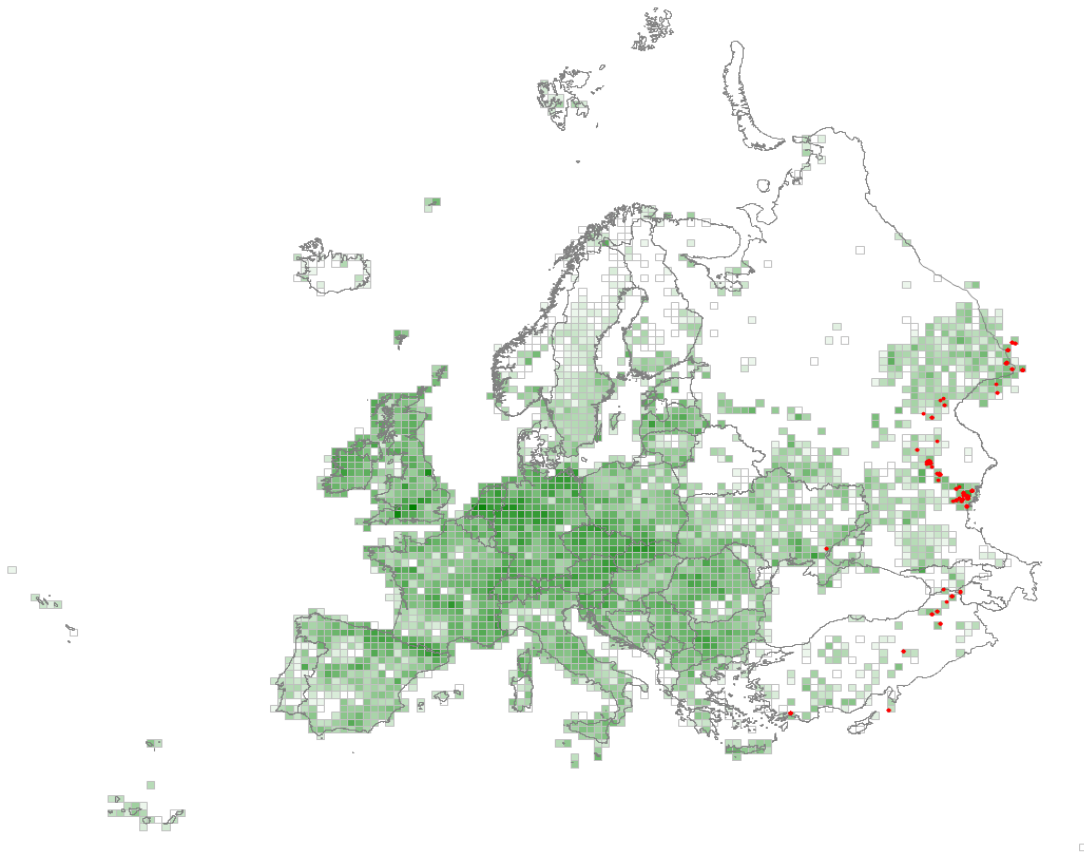
<i>Puccinellia distans</i>	31
<i>Taraxacum besarabicum</i>	30
<i>Tripolium pannonicum</i>	28
<i>Juncus gerardi</i>	23
<i>Scorzonera parviflora</i>	22
<i>Lotus tenuis</i>	20
<i>Triglochin maritima</i>	16
<i>Puccinellia distans</i> aggr.	16
<i>Melilotus dentatus</i>	16

Constant species (percentage frequencies)

<i>Tripolium pannonicum</i>	59
<i>Juncus gerardi</i>	46
<i>Puccinellia distans</i>	41
<i>Triglochin maritima</i>	30
<i>Agrostis stolonifera</i>	30
<i>Plantago maritima</i>	28
<i>Lotus tenuis</i>	26
<i>Salicornia europaea</i> aggr.	24
<i>Phragmites australis</i>	22
<i>Carex distans</i>	20
<i>Bolboschoenus maritimus</i>	18
<i>Atriplex prostrata</i>	18
<i>Taraxacum besarabicum</i>	16
<i>Argentina anserina</i>	16
<i>Trifolium fragiferum</i>	15
<i>Spergularia marina</i>	15
<i>Scorzonera parviflora</i>	15
<i>Glaux maritima</i>	14
<i>Plantago major</i>	13
<i>Spergularia media</i>	12
<i>Elytrigia repens</i> aggr.	12

R64 – Semi-desert salt pan

Azonal, mosaic habitat of halophytic chenopod scrub and saline grassland in the semi-desert zones of South-Eastern Europe. Vegetation is a combination of open annual and perennial halophytic communities and more closed grassland. It occurs on solonchak soils, in poorly drained, saline or hypersaline depressions and on shores of rivers and lakes.



Corresponding alliances in EuroVegChecklist 2016

- > AEL-01A *Elytrigio-Aeluropodion* Ageleulov et Golub in Golub 1995
- > FEP-04A *Artemisio pauciflorae-Camphorosmion monspeliacae* Karpov 2001
- > FEP-04B *Alhagion pseudalhagi* Golub et Czorbazde in Golub 1994
- > KAL-01A *Kalidion caspici* Golub et al. 2001
- > KAL-01B *Climacoptero crassae-Suaedion acuminatae* Golub et Čorbazde 1989 corr. Lysenko et Mucina 2015
- > KAL-02A *Artemisio santonicae-Puccinellion fominii* Shelyag-Sosonko et al. 1989
- > KAL-02B *Camphorosmo-Agropyrion desertorum* Korzhenevsky et Klyukin ex Golub et al. 2006
- <> THE-02A *Salicornion prostratae* Géhu 1992
- <> THE-02B *Suaedion acuminatae* Golub et Tzorbazde in Golub 1995 corr. Lysenko et Mucina 2015
- > THE-02E *Camphorosmo songoricae-Suaedion corniculatae* Freitag et al. 2001

Characteristic species combination

Diagnostic species (phi coefficient * 100)

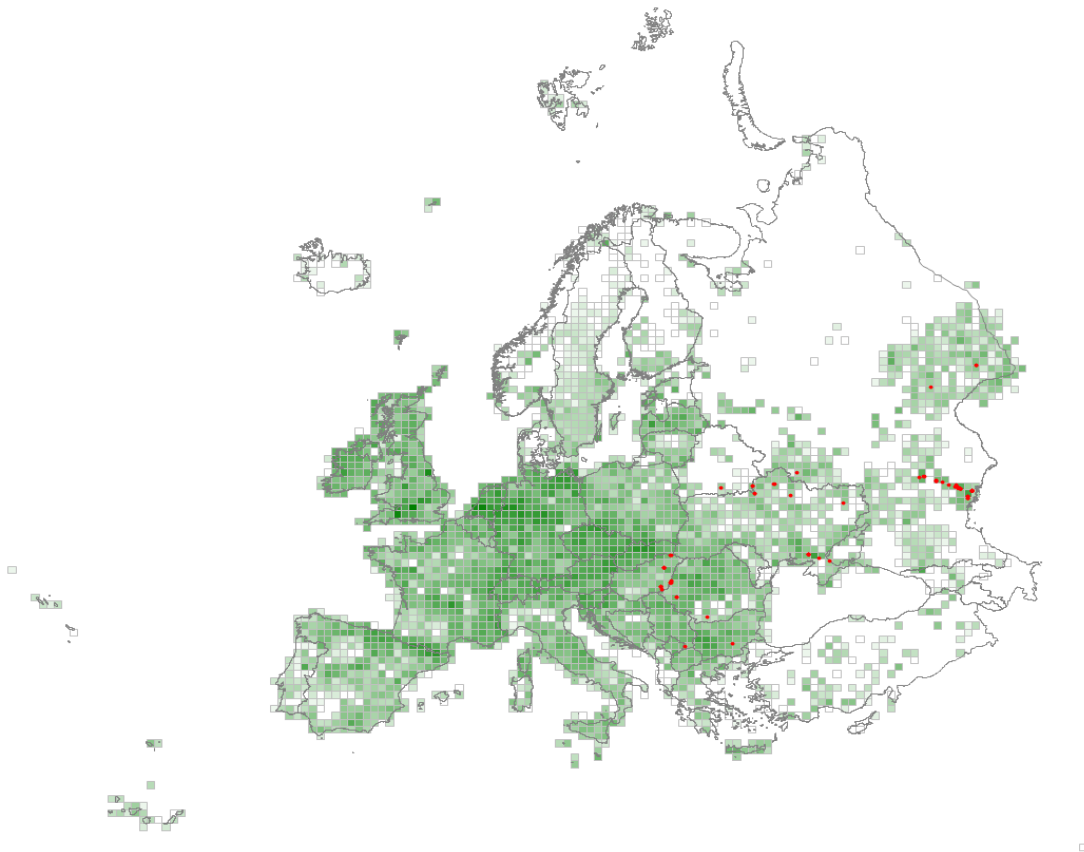
<i>Limonium suffruticosum</i>	50
<i>Halocnemum strobilaceum</i>	41
<i>Halimione verrucifera</i>	35
<i>Atriplex aucheri</i>	33
<i>Limonium gmelinii</i>	30
<i>Puccinellia dolicholepis</i>	27
<i>Artemisia nitrosa</i>	26
<i>Petrosimonia oppositifolia</i>	23
<i>Eremopyrum orientale</i>	22
<i>Atriplex cana</i>	21
<i>Salsola nitraria</i>	18
<i>Ofaiston monandrum</i>	17
<i>Climacoptera crassa</i>	17
<i>Anabasis salsa</i>	17
<i>Eremopyrum triticeum</i>	16
<i>Thlaspi aghricum</i>	16
<i>Minuartia isaurica</i>	15
<i>Cochleria amana</i>	15

Constant species (percentage frequencies)

<i>Halimione verrucifera</i>	29
<i>Atriplex aucheri</i>	29
<i>Limonium suffruticosum</i>	28
<i>Limonium gmelinii</i>	28
<i>Eremopyrum triticeum</i>	27
<i>Halocnemum strobilaceum</i>	25
<i>Eremopyrum orientale</i>	23
<i>Petrosimonia oppositifolia</i>	20
<i>Bassia sedoides</i>	15
<i>Artemisia santonicum</i>	14
<i>Puccinellia dolicholepis</i>	13
<i>Artemisia nitrosa</i>	12
<i>Camphorosma monspeliaca</i>	11

R65 – Continental subsaline alluvial pasture and meadow

Subsaline, perennial grassland of river valleys and other depressions in the steppe, forest-steppe, and semi-desert zones. It occurs on terraces and elevations in river valleys where this grassland is flooded for a short period in some years and on non-alluvial soils that are temporarily wet.



Corresponding alliances in EuroVegChecklist 2016

- > FEP-06A Glycyrrhizion echinatae Golub et Saveleva in Golub 1995
- > FEP-06B Glycyrrhizion korshinskyi Lysenko 2010
- > FEP-06C Glycyrrhizion glabrae Golub et Mirkin in Golub 1995
- <> SIS-01B Cannabion sativae Golub et al. 2012

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Beckmannia eruciformis</i>	61
<i>Rhaponticum repens</i>	44
<i>Dodartia orientalis</i>	44
<i>Lythrum virgatum</i>	31
<i>Inula britannica</i>	28
<i>Glycyrrhiza echinata</i>	28

<i>Eryngium planum</i>	27
<i>Bassia hyssopifolia</i>	24
<i>Glycyrrhiza glabra</i>	20
<i>Myosurus minimus</i>	19
<i>Chaiturus marrubiastrum</i>	19
<i>Gratiola officinalis</i>	18
<i>Ranunculus lateriflorus</i>	18
<i>Rumex stenophyllus</i>	17
<i>Hierochloe repens</i>	17
<i>Achillea salicifolia</i>	17
<i>Euphorbia esula</i>	17
<i>Eleocharis palustris</i>	16

Constant species (percentage frequencies)

<i>Beckmannia eruciformis</i>	44
<i>Rhaponticum repens</i>	41
<i>Dodartia orientalis</i>	38
<i>Elytrigia repens</i> aggr.	35
<i>Inula britannica</i>	29
<i>Eleocharis palustris</i>	26
<i>Glycyrrhiza glabra</i>	24
<i>Agrostis stolonifera</i>	24
<i>Lythrum virgatum</i>	23
<i>Euphorbia esula</i>	19
<i>Eryngium planum</i>	19
<i>Convolvulus arvensis</i>	19
<i>Polygonum aviculare</i> aggr.	16
<i>Glycyrrhiza echinata</i>	15
<i>Bassia hyssopifolia</i>	15
<i>Gratiola officinalis</i>	14
<i>Descurainia sophia</i>	14
<i>Jacobaea vulgaris</i>	13
<i>Carex praecox</i>	13
<i>Bolboschoenus maritimus</i>	13
<i>Asparagus officinalis</i>	13
<i>Aeluropus pungens</i>	13
<i>Mentha pulegium</i>	12
<i>Eremopyrum triticeum</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Beckmannia eruciformis</i>	44
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R71 – Temperate wooded pasture and meadow

[This habitat could not be formally defined in the expert system because it constitutes a mosaic of different habitats.]

A very diverse landscape-scale habitat occurring across the temperate zone of Europe where different traditions of grazing, mowing and silviculture have together created distinctive associations of trees growing among pastures and meadows. Such wood-pastures, wooded steppes, park meadows, grazed orchards, parklands and open hunting forests, variously managed for stock rearing, hay production, coppice and timber products, represent highly distinctive social and economic histories and can express great cultural traditions. Species-rich types occur, including contingents of epiphytic plants growing on veteran trees, but, even where the components are more commonplace, the combinations of floristic and structural elements are striking.

R72 – Hemiboreal and boreal wooded pasture and meadow

[This habitat could not be formally defined in the expert system because it constitutes a mosaic of different habitats.]

Open wooded landscapes of the lowlands, foothills and mountains of the boreal zone, traditionally managed for grazing, hay-making and forest products, mainly by pollarding. Diverse very open canopies of broadleaved and coniferous trees, including veterans sometimes with rich epiphytic cryptogam floras, often with few or no associated shrubs, occur scattered over pasture and meadow vegetation. Long traditions of complex interactions and cultural associations make these landscapes both dynamic and distinctive.

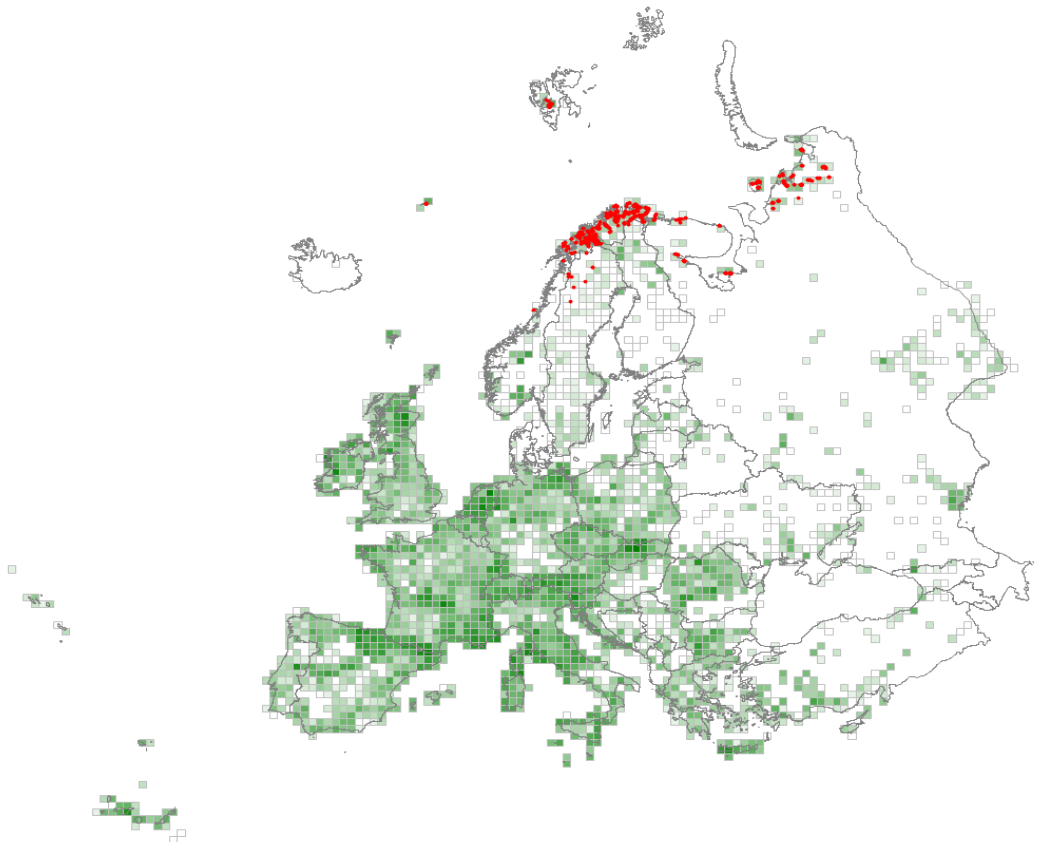
R73 – Mediterranean wooded pasture and meadow

[This habitat could not be formally defined in the expert system because it constitutes a mosaic of different habitats.]

Open wooded landscapes created and maintained through combinations of traditional grazing, hay-making and tree management in the Mediterranean. Variations in the local climate, topography and interventions, and the accumulation of long cultural traditions of use have resulted in a variety of highly distinctive types such as the dehesas of Spain and montados of Portugal. Typically the tree canopy is of evergreen broadleaved trees, variously with veterans, pollards or coppice, often with elements of sclerophyllous scrub beneath, and perennial and annual grasses and herbs in the field layer. In some traditions, there can even be small arable areas.

S11 – Shrub tundra

Tundra with a usually extensive cover of sub-shrubs or dwarf shrubs over herbs, bryophytes and lichens. It occurs in the southern Arctic and subarctic zones, often on permafrost soils. In grazed areas, it occurs in mosaics with grassland.



Corresponding alliances in EuroVegChecklist 2016

- <> KOB-01A Kobresio-Dryadion Nordhagen 1943
- <> KOB-01B Dryado octopetalae-Caricion arctisibiricae Koroleva et Kulyugina in Chytrý et al. 2015
- <> KOB-01C Dryadion integrifoliae Ohba ex Daniëls 1982
- <> LOI-03A Loiseleurio-Arctostaphylion Kalliola ex Nordhagen 1943
- <> LOI-03B Phyllodoco-Vaccinion myrtilli Nordhagen 1943

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Betula nana</i>	32
<i>Empetrum nigrum</i> aggr.	31
<i>Dicranum fuscescens</i>	29
<i>Ptilidium ciliare</i>	26
<i>Barbilophozia hatcheri</i>	25

<i>Cladonia mitis</i>	23
<i>Psoroma hypnorum</i>	23
<i>Nephroma arcticum</i>	23
<i>Vaccinium vitis-idaea</i>	22
<i>Cornus suecica</i>	21
<i>Vaccinium uliginosum</i>	21
<i>Peltigera scabrosa</i>	21
<i>Ochrolechia frigida</i>	21
<i>Cladonia gracilis</i>	21
<i>Arctostaphylos alpinus</i>	20
<i>Pedicularis lapponica</i>	19
<i>Sphaerophorus globosus</i> aggr.	19
<i>Calamagrostis lapponica</i>	19
<i>Cladonia bellidiflora</i>	18
<i>Cladonia coccifera</i> aggr.	18
<i>Cladonia amaurocraea</i>	18
<i>Cetraria nivalis</i>	17
<i>Cladonia rangiferina</i>	17
<i>Cetraria ericetorum</i>	17
<i>Cetraria cucullata</i>	17
<i>Carex bigelowii</i>	17
<i>Cladonia uncialis</i>	17
<i>Dicranum elongatum</i>	16
<i>Stereocaulon paschale</i>	16
<i>Cladonia macroceras</i>	16
<i>Barbilophozia kunzeana</i>	15

Constant species (percentage frequencies)

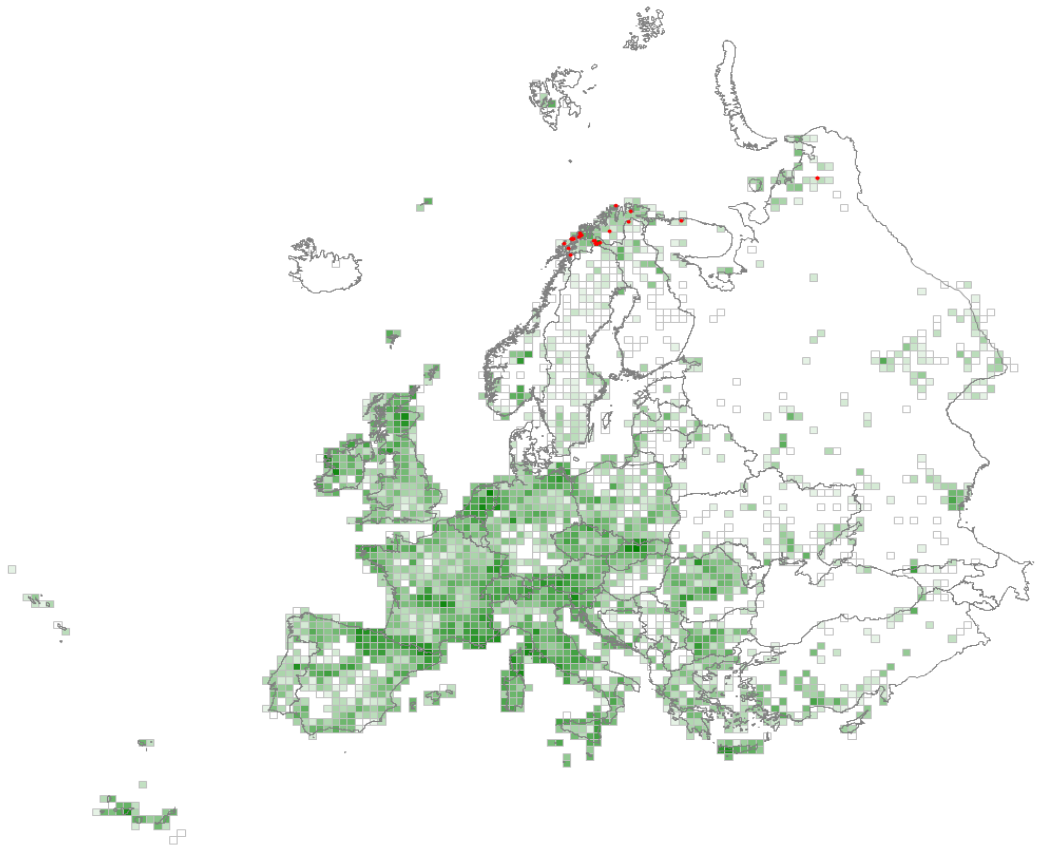
<i>Empetrum nigrum</i> aggr.	94
<i>Vaccinium vitis-idaea</i>	86
<i>Betula nana</i>	61
<i>Vaccinium uliginosum</i>	57
<i>Vaccinium myrtillus</i>	41
<i>Cladonia gracilis</i>	38
<i>Ptilidium ciliare</i>	37
<i>Pleurozium schreberi</i>	36
<i>Avenella flexuosa</i>	36
<i>Dicranum fuscescens</i>	34
<i>Cladonia rangiferina</i>	34
<i>Cladonia uncialis</i>	33
<i>Carex bigelowii</i>	32
<i>Festuca ovina</i>	31
<i>Cladonia mitis</i>	30
<i>Cladonia coccifera</i> aggr.	29
<i>Ochrolechia frigida</i>	26
<i>Dicranum scoparium</i>	24
<i>Cetraria islandica</i>	24
<i>Rubus chamaemorus</i>	23
<i>Cladonia bellidiflora</i>	23
<i>Cetraria nivalis</i>	23
<i>Calamagrostis lapponica</i>	23
<i>Hylocomium splendens</i>	22
<i>Cladonia amaurocraea</i>	22
<i>Sphaerophorus globosus</i> aggr.	21
<i>Linnaea borealis</i>	21

<i>Pedicularis lapponica</i>	20
<i>Dicranum elongatum</i>	20
<i>Nephroma arcticum</i>	19
<i>Cornus suecica</i>	19
<i>Cetraria cucullata</i>	19
<i>Arctostaphylos alpinus</i>	19
<i>Polytrichum strictum</i>	18
<i>Cladonia arbuscula</i> aggr.	18
<i>Cetraria ericetorum</i>	18
<i>Bistorta vivipara</i>	18
<i>Barbilophozia hatcheri</i>	18
<i>Peltigera scabrosa</i>	17
<i>Stereocaulon paschale</i>	16
<i>Sphenolobus minutus</i>	16
<i>Solidago virgaurea</i>	16
<i>Polytrichum commune</i>	16
<i>Pohlia nutans</i>	14
<i>Phyllodoce caerulea</i>	14
<i>Peltigera aphthosa</i>	14
<i>Cladonia crispata</i>	14
<i>Andromeda polifolia</i>	14
<i>Thamnia vermicularis</i>	13
<i>Psoroma hypnorum</i>	13
<i>Trientalis europaea</i>	12
<i>Juncus trifidus</i>	12
<i>Dicranum majus</i>	12
<i>Sanionia uncinata</i>	11
<i>Cladonia macroceras</i>	11
<i>Bryocaulon divergens</i>	11
<i>Alectoria nigricans</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Empetrum nigrum aggr. 65

S12 – Moss and lichen tundra

Tundra of the middle and northern High Arctic zones where permafrost soils, often occurring in the patterned ground, support a frequently sparse cover of bryophytes, lichens and low herbs.



Corresponding alliances in EuroVegChecklist 2016

- > COC-01B Cerastio arctici-Saxifragion cernuae H. Hartmann ex Mucina et Daniëls in Mucina et al. 2016
- <> KOB-01A Kobresio-Dryadion Nordhagen 1943
- <> KOB-01B Dryado octopetalae-Caricion arctisibiricae Koroleva et Kulyugina in Chytrý et al. 2015
- <> KOB-01C Dryadion integrifoliae Ohba ex Daniëls 1982
- <> LOI-03A Loiseleurio-Arctostaphylion Kalliola ex Nordhagen 1943
- <> LOI-03B Phyllodoco-Vaccinion myrtilli Nordhagen 1943

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cetraria ericetorum</i>	71
<i>Stereocaulon paschale</i>	70
<i>Cladonia mitis</i>	61

<i>Pertusaria geminipara</i>	54
<i>Ptilidium ciliare</i>	52
<i>Dicranum fuscescens</i>	50
<i>Cladonia uncialis</i>	49
<i>Racomitrium lanuginosum</i>	45
<i>Cladonia crispata</i>	44
<i>Peltigera scabrosa</i>	37
<i>Ochrolechia frigida</i>	37
<i>Cladonia macrophylla</i>	35
<i>Cladonia macroceras</i>	35
<i>Cladonia bellidiflora</i>	35
<i>Nephroma arcticum</i>	33
<i>Cladonia gracilis</i>	32
<i>Cladonia rangiferina</i>	32
<i>Empetrum nigrum</i> aggr.	32
<i>Cladonia sulphurina</i>	30
<i>Cetraria nivalis</i>	28
<i>Sphaerophorus globosus</i> aggr.	28
<i>Betula nana</i>	28
<i>Vaccinium uliginosum</i>	28
<i>Cladonia coccifera</i> aggr.	27
<i>Tetralophozia setiformis</i>	25
<i>Barbilophozia hatcheri</i>	25
<i>Lophozia wenzelii</i>	25
<i>Ochrolechia lapuensis</i>	24
<i>Sphenolobus minutus</i>	24
<i>Barbilophozia floerkei</i>	23
<i>Polytrichum commune</i>	23
<i>Cetraria aculeata</i>	23
<i>Loiseleuria procumbens</i>	22
<i>Pertusaria bryontha</i>	22
<i>Cetraria odontella</i>	22
<i>Nephroma expallidum</i>	22
<i>Racomitrium microcarpon</i>	22
<i>Cetraria cucullata</i>	20
<i>Tetraplodon mnioides</i>	20
<i>Lophozia longidens</i>	19
<i>Ochrolechia inaequatula</i>	19
<i>Arctostaphylos alpinus</i>	19
<i>Trapeliopsis granulosa</i>	19
<i>Pertusaria dactylina</i>	19
<i>Lycopodium alpinum</i>	19
<i>Barbilophozia kunzeana</i>	18
<i>Stereocaulon alpinum</i>	18
<i>Rubus chamaemorus</i>	18
<i>Lobaria linita</i>	18
<i>Cornus suecica</i>	17
<i>Barbilophozia binstaedii</i>	17
<i>Pertusaria panyrga</i>	17
<i>Cladonia stellaris</i>	17
<i>Cladonia amaurocraea</i>	17
<i>Cetraria islandica</i>	17
<i>Placynthiella oligotropha</i>	16
<i>Juncus trifidus</i>	15
<i>Cladonia deformis</i> aggr.	15

Constant species (percentage frequencies)

<i>Empetrum nigrum</i> aggr.	97
<i>Cladonia uncialis</i>	95
<i>Cladonia mitis</i>	77
<i>Vaccinium uliginosum</i>	74
<i>Ptilidium ciliare</i>	74
<i>Cetraria ericetorum</i>	74
<i>Stereocaulon paschale</i>	69
<i>Racomitrium lanuginosum</i>	64
<i>Cladonia rangiferina</i>	64
<i>Dicranum fuscescens</i>	59
<i>Cladonia gracilis</i>	59
<i>Vaccinium vitis-idaea</i>	56
<i>Betula nana</i>	54
<i>Pleurozium schreberi</i>	51
<i>Polytrichum commune</i>	49
<i>Cladonia crispata</i>	49
<i>Ochrolechia frigida</i>	46
<i>Cladonia coccifera</i> aggr.	44
<i>Cladonia bellidiflora</i>	44
<i>Calluna vulgaris</i>	44
<i>Dicranum scoparium</i>	41
<i>Cetraria nivalis</i>	38
<i>Pertusaria geminipara</i>	36
<i>Cetraria islandica</i>	33
<i>Cetraria aculeata</i>	33
<i>Sphaerophorus globosus</i> aggr.	31
<i>Rubus chamaemorus</i>	31
<i>Peltigera scabrosa</i>	31
<i>Nephroma arcticum</i>	28
<i>Juncus trifidus</i>	28
<i>Cladonia sulphurina</i>	28
<i>Vaccinium myrtillus</i>	26
<i>Sphenolobus minutus</i>	26
<i>Hylocomium splendens</i>	26
<i>Cladonia macrophylla</i>	26
<i>Polytrichum strictum</i>	23
<i>Pohlia nutans</i>	23
<i>Cladonia macroceras</i>	23
<i>Cetraria cucullata</i>	23
<i>Cladonia amaurocraea</i>	21
<i>Andromeda polifolia</i>	21
<i>Polytrichum juniperinum</i>	18
<i>Loiseleuria procumbens</i>	18
<i>Festuca ovina</i>	18
<i>Cladonia stellaris</i>	18
<i>Barbilophozia hatcheri</i>	18
<i>Arctostaphylos alpinus</i>	18
<i>Salix herbacea</i>	15
<i>Pedicularis lapponica</i>	15
<i>Ochrolechia inaequatula</i>	15
<i>Dicranum elongatum</i>	15
<i>Cornus suecica</i>	15
<i>Cladonia arbuscula</i> aggr.	15
<i>Calamagrostis lapponica</i>	15

<i>Barbilophozia floerkei</i>	15
<i>Trapeliopsis granulosa</i>	13
<i>Solidago virgaurea</i>	13
<i>Polytrichum hyperboreum</i>	13
<i>Phyllodoce caerulea</i>	13
<i>Pertusaria dactylina</i>	13
<i>Lycopodium annotinum</i>	13
<i>Lycopodium alpinum</i>	13
<i>Lophozia wenzelii</i>	13
<i>Cladonia pyxidata</i> aggr.	13
<i>Cladonia deformis</i> aggr.	13
<i>Carex bigelowii</i>	13
<i>Avenella flexuosa</i>	13

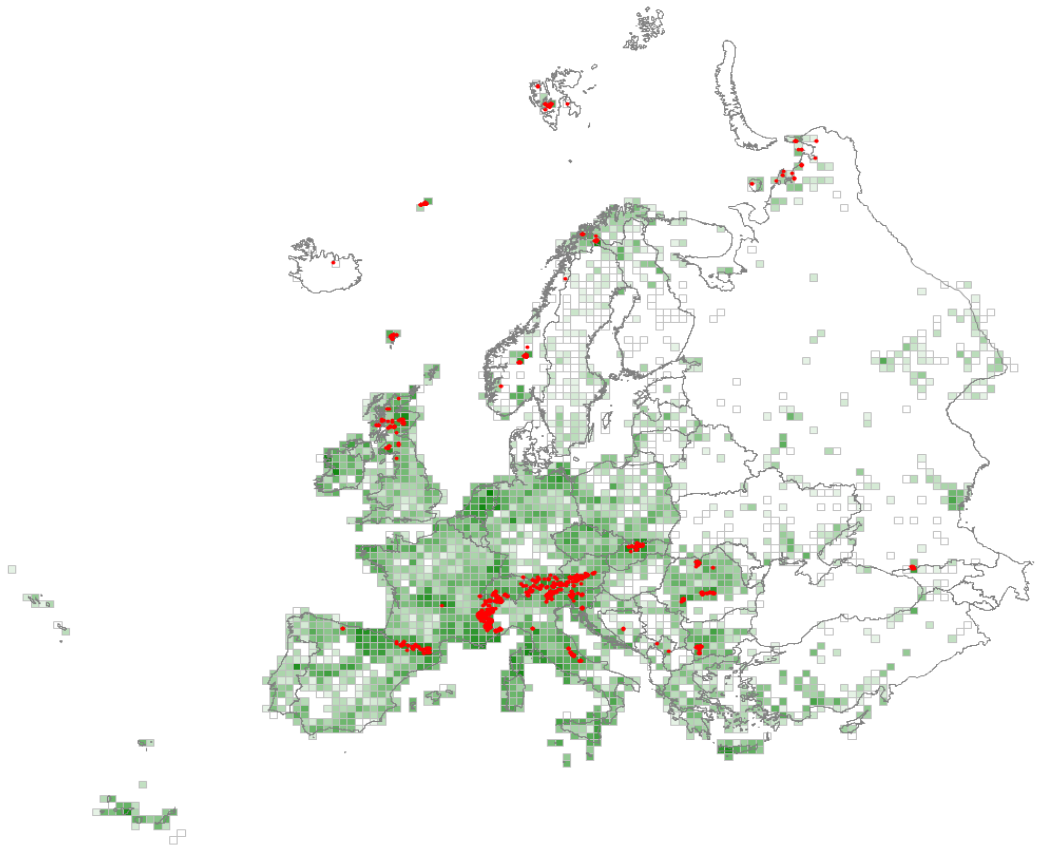
Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Racomitrium lanuginosum</i>	59
<i>Stereocaulon paschale</i>	33

S21 – Subarctic and alpine dwarf *Salix* scrub

Salix-dominated dwarf scrub, often with abundant bryophytes and lichens, on skeletal calcareous or siliceous soils in late snow beds with a short growing-season, occurring in the Arctic and subarctic zones and in the high mountains of temperate Europe, increasingly local and fragmentary to the south.

Remark: This habitat also occurs in the Arctic zone (e.g. Svalbard), which is not reflected in its current name.



Corresponding alliances in EuroVegChecklist 2016

- <> HER-01A Salicion herbaceae Br.-Bl. in Br.-Bl. et Jenny 1926
- <> HER-01B Salici herbaceae-Arabadion caeruleae Englisch 1999
- <> HER-01H Cassiopo-Salicion herbaceae Nordhagen 1943

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Salix retusa</i>	41
<i>Salix herbacea</i>	30
<i>Bistorta vivipara</i>	24
<i>Silene acaulis</i>	23
<i>Salix reticulata</i>	23

<i>Poa alpina</i>	20
<i>Salix serpyllifolia</i>	19
<i>Luzula alpinopilosa</i>	19
<i>Minuartia sedoides</i>	19
<i>Primula minima</i>	18
<i>Kobresia myosuroides</i>	18
<i>Carex parviflora</i>	17
<i>Saxifraga androsacea</i>	17
<i>Myosotis alpestris</i>	16
<i>Carex foetida</i>	16
<i>Bartsia alpina</i>	16
<i>Festuca violacea</i>	15

Constant species (percentage frequencies)

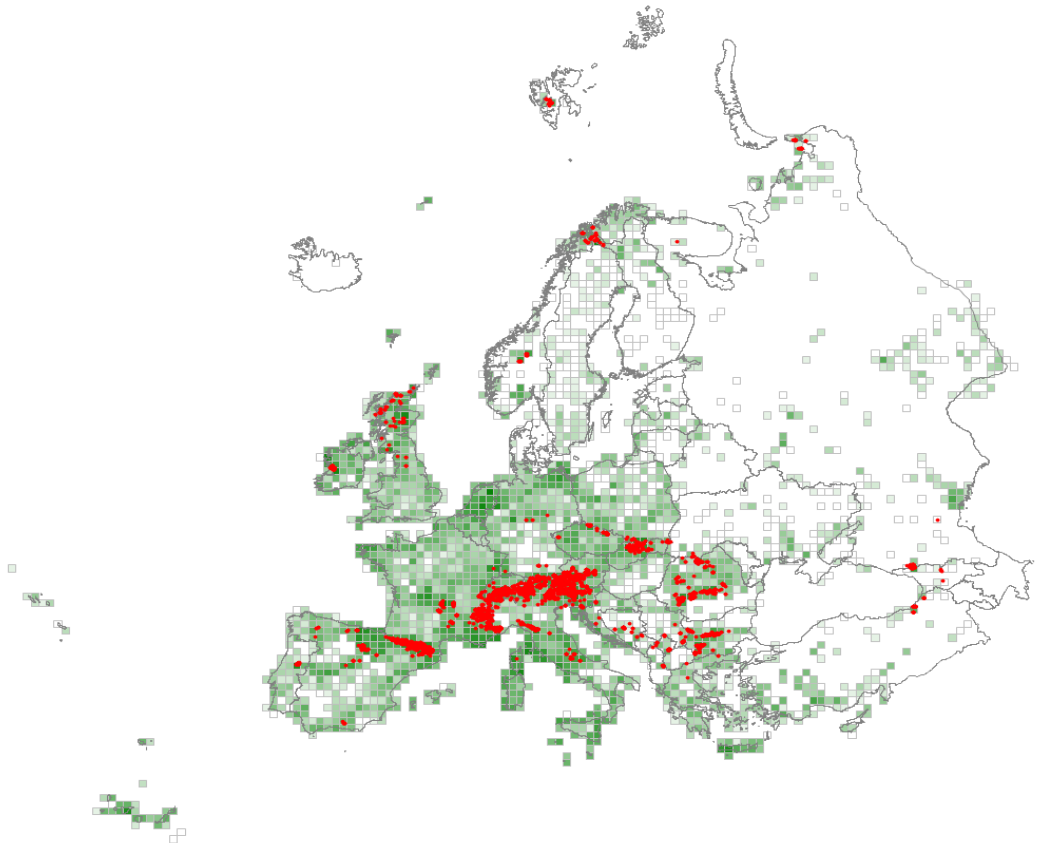
<i>Bistorta vivipara</i>	62
<i>Salix herbacea</i>	56
<i>Poa alpina</i>	44
<i>Salix retusa</i>	41
<i>Silene acaulis</i>	35
<i>Salix reticulata</i>	23
<i>Gnaphalium supinum</i>	23
<i>Bartsia alpina</i>	23
<i>Myosotis alpestris</i>	21
<i>Luzula alpinopilosa</i>	19
<i>Cetraria islandica</i>	17
<i>Veronica alpina</i>	16
<i>Sibbaldia procumbens</i>	16
<i>Saxifraga oppositifolia</i>	16
<i>Minuartia sedoides</i>	16
<i>Campanula scheuchzeri</i>	16
<i>Homogyne alpina</i>	15
<i>Soldanella alpina</i>	14
<i>Sesleria caerulea</i>	14
<i>Primula minima</i>	14
<i>Leucanthemopsis alpina</i>	14
<i>Dryas octopetala</i>	14
<i>Carex sempervirens</i>	14
<i>Gentiana verna</i>	13
<i>Festuca violacea</i>	13
<i>Euphrasia minima</i>	13
<i>Ranunculus alpestris</i>	12
<i>Plantago alpina</i>	12
<i>Ligusticum mutellina</i>	12
<i>Juncus trifidus</i>	12
<i>Festuca quadriflora</i>	12
<i>Anthoxanthum odoratum</i> aggr.	12
<i>Agrostis rupestris</i>	12
<i>Selaginella selaginoides</i>	11
<i>Sedum alpestre</i>	11
<i>Saxifraga androsacea</i>	11
<i>Oreochloa disticha</i>	11
<i>Luzula spicata</i>	11
<i>Kobresia myosuroides</i>	11
<i>Avenella flexuosa</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Salix herbacea</i>	46
<i>Salix retusa</i>	32

S22 – Alpine and subalpine ericoid heath

Dwarf-shrub vegetation dominated by ericoids and other woody species (not juniper or genistoids) occurring in high mountains throughout Europe, varying in dominants and associates according to regional climate, degree of exposure and snow lie, soil reaction, soil depth and moisture.



Corresponding alliances in EuroVegChecklist 2016

- <> KOB-01A Kobresio-Dryadion Nordhagen 1943
- > KOB-03B Salici kazbekensis-Empetrion nigrae Onipchenko 2002
- > LOI-01A Loiseleurio procumbentis-Vaccinion Br.-Bl. in Br.-Bl. et Jenny 1926
- > LOI-01B Rhododendro ferruginei-Vaccinion Br.-Bl. ex Schnyder 1930
- > LOI-01C Vaccinion myrtilli Krajina 1933
- > LOI-01D Rhododendron myrtifolii de Foucault ex Theurillat et Mucina in Mucina et al. 2016
- > LOI-01E Rhododendron caucasicum Onipchenko 2002
- <> LOI-03A Loiseleurio-Arctostaphylion Kalliola ex Nordhagen 1943
- <> LOI-03B Phyllodoce-Vaccinion myrtilli Nordhagen 1943
- > RHO-01A Ericion carnea Rübél ex Grabherr et al. 1993
- > RHO-01B Aquilegio nigricantis-Rhododendron hirsutum Čarni et Mucina 2015
- <> ULI-02D Genisto pilosae-Vaccinion Br.-Bl. 1926
- > ULI-02E Bruckenthalion spiculifoliae Horvat 1949

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Loiseleuria procumbens</i>	24
<i>Dryas octopetala</i>	21
<i>Hieracium alpinum</i>	21
<i>Homogyne alpina</i>	18
<i>Vaccinium uliginosum</i>	17
<i>Rhododendron ferrugineum</i>	17
<i>Scorzoneroides helvetica</i>	16
<i>Helictochloa versicolor</i>	16

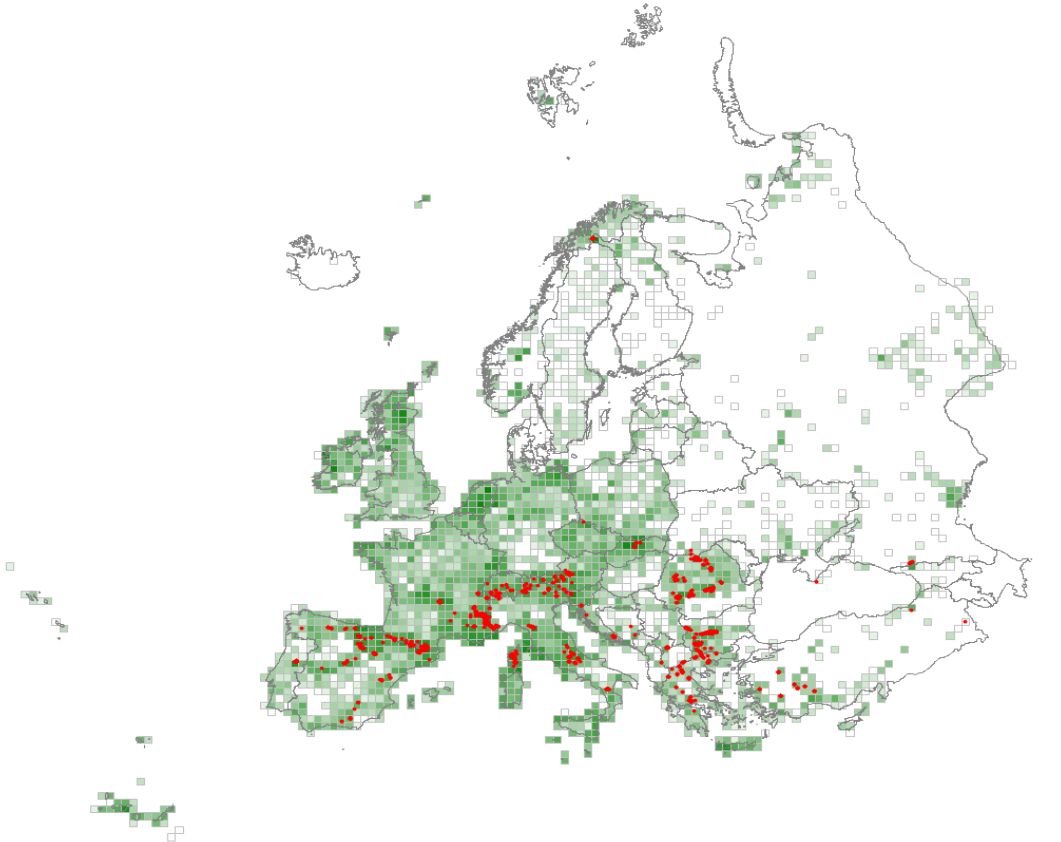
Constant species (percentage frequencies)

<i>Vaccinium myrtillus</i>	54
<i>Vaccinium uliginosum</i>	47
<i>Avenella flexuosa</i>	39
<i>Vaccinium vitis-idaea</i>	38
<i>Homogyne alpina</i>	34
<i>Cetraria islandica</i>	28
<i>Dryas octopetala</i>	27
<i>Calluna vulgaris</i>	27
<i>Anthoxanthum odoratum</i> aggr.	26
<i>Juncus trifidus</i>	23
<i>Bistorta vivipara</i>	23
<i>Nardus stricta</i>	21
<i>Carex sempervirens</i>	21
<i>Sesleria caerulea</i>	20
<i>Loiseleuria procumbens</i>	20
<i>Juniperus communis</i> subsp. <i>nana</i>	20
<i>Rhododendron ferrugineum</i>	19
<i>Festuca rubra</i> aggr.	19
<i>Potentilla aurea</i>	18
<i>Helictochloa versicolor</i>	18
<i>Scorzoneroides helvetica</i>	16
<i>Potentilla erecta</i>	16
<i>Campanula scheuchzeri</i>	16
<i>Solidago virgaurea</i>	15
<i>Hieracium alpinum</i>	14
<i>Festuca airoides</i>	14
<i>Empetrum nigrum</i> aggr.	14
<i>Luzula campestris</i> aggr.	13
<i>Lotus corniculatus</i>	13
<i>Hylocomium splendens</i>	13
<i>Geum montanum</i>	13
<i>Antennaria dioica</i>	13
<i>Agrostis rupestris</i>	13
<i>Thymus praecox</i>	12
<i>Silene acaulis</i>	12
<i>Pulsatilla alpina</i>	12
<i>Phyteuma hemisphaericum</i>	12
<i>Pleurozium schreberi</i>	11
<i>Luzula luzuloides</i>	11
<i>Ligusticum mutellina</i>	11
<i>Dicranum scoparium</i>	11
<i>Cladonia rangiferina</i>	11

<i>Bartsia alpina</i>	11
<i>Anthyllis vulneraria</i>	11

S23 – Alpine and subalpine *Juniperus* scrub

Juniper-dominated vegetation of the montane to subalpine belts of European mountains, occurring as primary vegetation tolerant of both high exposure and snow-lie, but also a secondary derivative of the deforested, long-grazed and eroded ground at high altitudes.



Corresponding alliances in EuroVegChecklist 2016

- > LOI-02A Juniperion nanae Br.-Bl. in Br.-Bl. et al. 1939
- > LOI-02B Daphno oleoidis-Juniperion alpinae Stanisci 1997
- > LOI-02C Aconito nasuti-Juniperion communis Onipchenko 2002
- > SAB-02B Genisto versicoloris-Juniperion hemisphaericae Rivas-Mart. et J.A. Molina in Rivas-Mart. et al. 1999
- > SAB-02C Pruno prostratae-Juniperion sabinae Rivas-Mart. et J.A. Molina in Rivas-Mart. et al. 1999

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Juniperus communis</i> subsp. <i>nana</i>	41
<i>Bruckenthalia spiculifolia</i>	22
<i>Genista depressa</i>	20
<i>Juniperus sabina</i>	19

Constant species (percentage frequencies)

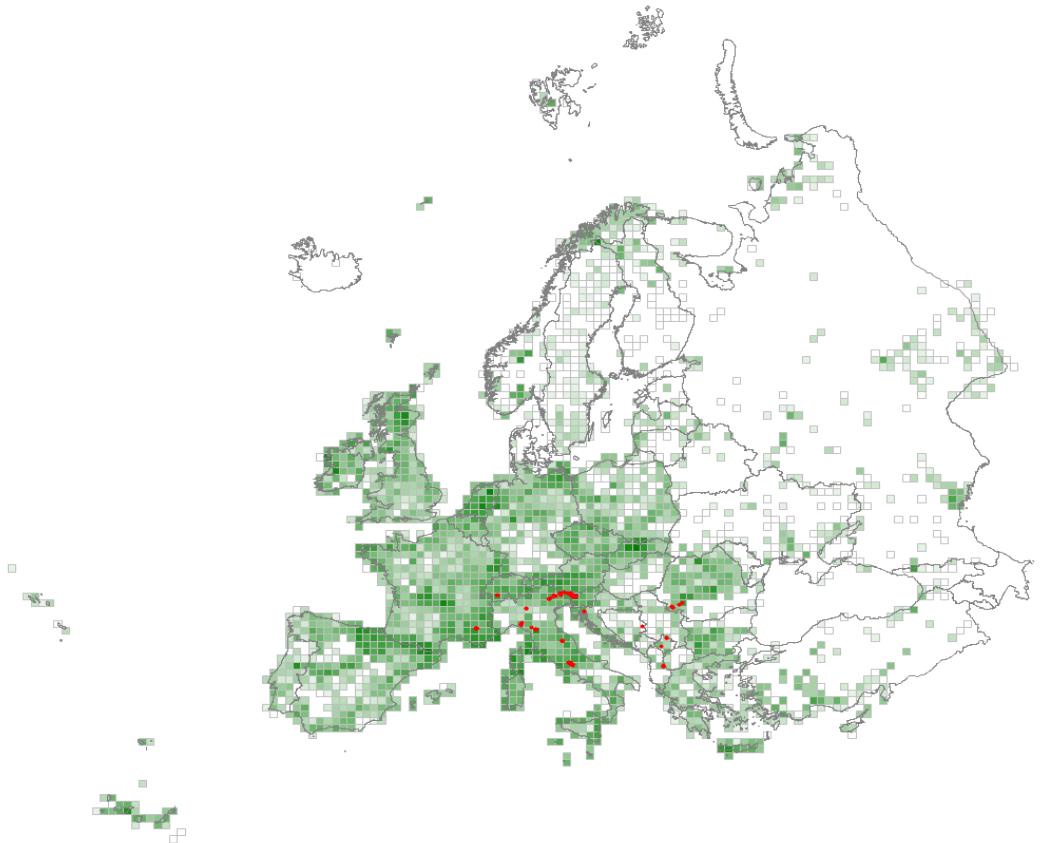
<i>Juniperus communis</i> subsp. <i>nana</i>	91
<i>Avenella flexuosa</i>	42
<i>Vaccinium myrtillus</i>	40
<i>Vaccinium vitis-idaea</i>	26
<i>Nardus stricta</i>	22
<i>Festuca rubra</i> aggr.	22
<i>Vaccinium uliginosum</i>	20
<i>Luzula luzuloides</i>	19
<i>Anthoxanthum odoratum</i> aggr.	18
<i>Thymus praecox</i>	16
<i>Homogyne alpina</i>	16
<i>Bruckenthalia spiculifolia</i>	15
<i>Potentilla aurea</i>	14
<i>Antennaria dioica</i>	14
<i>Helianthemum nummularium</i>	13
<i>Cetraria islandica</i>	13
<i>Luzula campestris</i> aggr.	11
<i>Juniperus sabina</i>	11
<i>Agrostis capillaris</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Juniperus communis</i> subsp. <i>nana</i>	89
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S24 – Subalpine genistoid scrub of the Amphi-Adriatic region

Genistoid heath and scrub of high mountains in Italy and the Balkans, often in primary grassy mosaics at higher altitudes, but also extending below the timberline where wood-cutting and grazing open up the forest cover and sustain the vegetation as an anthropogenic replacement.



Corresponding alliances in EuroVegChecklist 2016

- > RHO-01C *Daphno oleoidis-Genistion radiatae* N. Randelović, Rexhepi et Jovanović ex Mucina et Theurillat in Mucina et al. 2016

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Genista radiata</i>	90
<i>Stachys alopecuros</i>	35
<i>Laserpitium siler</i>	31
<i>Carduus defloratus</i> aggr.	28
<i>Lilium albanicum</i>	26
<i>Dichoropetalum schottii</i>	25
<i>Brachypodium genuense</i>	25
<i>Festuca calva</i>	25

<i>Linum viscosum</i>	25
<i>Bupthalmum salicifolium</i>	25
<i>Cyanus triumfettii</i> aggr.	23
<i>Laserpitium peucedanoides</i>	23
<i>Erica carnea</i>	23
<i>Bromopsis condensata</i>	23
<i>Calamagrostis varia</i>	21
<i>Scabiosa lucida</i>	21
<i>Fourraea alpina</i>	21
<i>Festuca billyi</i>	20
<i>Iris graminea</i>	19
<i>Cirsium erisithales</i>	19
<i>Leucanthemum heterophyllum</i>	19
<i>Dianthus monspessulanus</i>	19
<i>Cynoglossis barrelieri</i>	18
<i>Galium lucidum</i>	18
<i>Prunella grandiflora</i>	18
<i>Lathyrus laevigatus</i>	17
<i>Knautia ressmannii</i>	17
<i>Syringa vulgaris</i>	17
<i>Pedicularis elongata</i>	17
<i>Asperula purpurea</i>	17
<i>Pimpinella alpina</i>	16
<i>Cephalaria laevigata</i>	16
<i>Serratula tinctoria</i>	16
<i>Carlina acaulis</i>	16
<i>Carex macrolepis</i>	16
<i>Linum alpinum</i>	16
<i>Helianthemum nummularium</i>	15
<i>Peucedanum rablense</i>	15

Constant species (percentage frequencies)

<i>Genista radiata</i>	94
<i>Carduus defloratus</i> aggr.	39
<i>Helianthemum nummularium</i>	37
<i>Stachys alopecuros</i>	33
<i>Bromopsis erecta</i>	33
<i>Galium lucidum</i>	31
<i>Calamagrostis varia</i>	31
<i>Teucrium montanum</i>	30
<i>Laserpitium siler</i>	30
<i>Erica carnea</i>	29
<i>Teucrium chamaedrys</i>	28
<i>Sesleria caerulea</i>	28
<i>Bupthalmum salicifolium</i>	28
<i>Lotus corniculatus</i>	25
<i>Carex sempervirens</i>	24
<i>Carex humilis</i>	24
<i>Cerastium arvense</i>	23
<i>Cyanus triumfettii</i> aggr.	22
<i>Carlina acaulis</i>	22
<i>Prunella grandiflora</i>	21
<i>Thymus praecox</i>	20
<i>Stachys recta</i>	20
<i>Sorbus aria</i> aggr.	20

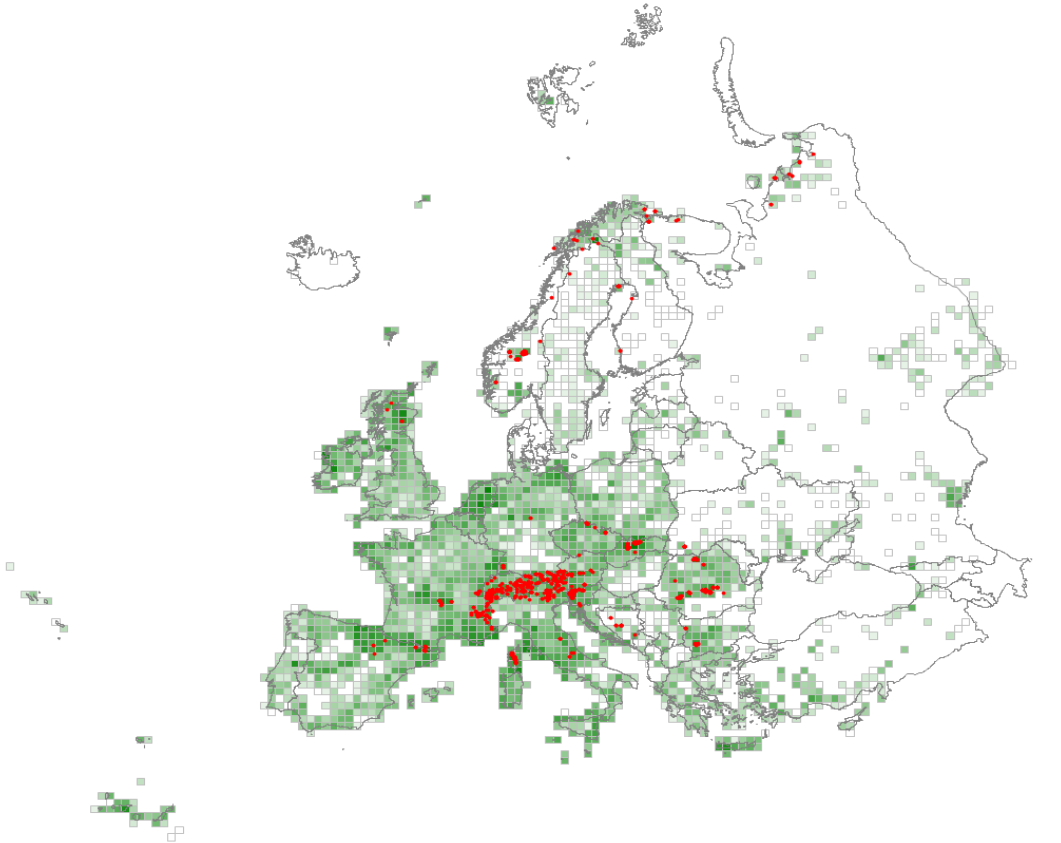
<i>Scabiosa lucida</i>	20
<i>Phyteuma orbiculare</i>	20
<i>Brachypodium genuense</i>	20
<i>Mercurialis perennis</i>	19
<i>Asperula purpurea</i>	19
<i>Centaurea jacea</i>	18
<i>Campanula scheuchzeri</i>	18
<i>Serratula tinctoria</i>	17
<i>Polygonatum odoratum</i>	17
<i>Laserpitium latifolium</i>	17
<i>Gymnadenia conopsea</i>	17
<i>Galium mollugo</i> aggr.	17
<i>Dactylis glomerata</i>	17
<i>Cirsium erisithales</i>	17
<i>Clinopodium alpinum</i>	16
<i>Brachypodium rupestre</i>	16
<i>Brachypodium pinnatum</i>	15
<i>Silene vulgaris</i>	14
<i>Polygala chamaebuxus</i>	14
<i>Laserpitium peucedanoides</i>	14
<i>Hippocrepis comosa</i>	14
<i>Vincetoxicum hirundinaria</i>	13
<i>Seseli libanotis</i>	13
<i>Pimpinella saxifraga</i>	13
<i>Galium anisophyllum</i>	13
<i>Cyclamen purpurascens</i>	13
<i>Scabiosa columbaria</i> aggr.	12
<i>Pulsatilla alpina</i>	12
<i>Linum viscosum</i>	12
<i>Lilium albanicum</i>	12
<i>Galium verum</i>	12
<i>Festuca rubra</i> aggr.	12
<i>Dianthus monspessulanus</i>	12
<i>Carex macrolepis</i>	12
<i>Asperula aristata</i>	12
<i>Thalictrum minus</i>	11
<i>Fourraea alpina</i>	11
<i>Asperula cynanchica</i>	11
<i>Amelanchier ovalis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Genista radiata</i>	94
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S25 – Subalpine and subarctic deciduous scrub

Low scrub, including krummholz, dominated by various deciduous trees and shrubs, on moist but free-draining, sometimes quite fertile, soils on high-mountain slopes throughout Europe, often with long snow-lie and prone to natural disturbance due to avalanche and scree slides, after which it is well able to recover and recolonise. The associated flora can be rich in tall mountain herbs. It can also be found as a secondary succession stage in abandoned subalpine pastures and meadows.



Corresponding alliances in EuroVegChecklist 2016

- > VIR-01A *Alnion viridis* Schnyder 1930
- > VIR-01B *Salicion pentandrae* Br.-Bl. 1967
- > VIR-01C *Salicion helveticae* Rübél ex Theurillat in Theurillat et al. 1995
- > VIR-01D *Salicion silesiaca* Rejmánek et al. 1971
- > VIR-01E *Pruno petraeae-Sorbion aucupariae* Rameau ex Seytre et Bœuf in Bœuf 2011
- > VIR-02A *Seslerio calcariae-Rhamnion fallacis* Dakskobler et al. 2013
- > VIR-02B *Lonicero-Rhamnion fallacis* P. Fukarek 1969
- <> VIR-03A *Salicion phylicifoliae* Dierssen 1992
- > VIR-03B *Salicion callicarpeae* Daniëls in Mucina et al. 2016
- > VIR-03C *Geranio sylvatici-Betulion pumilae* Mucina et Willner ined.
- <> VIR-04A *Rhododendro caucasici-Betulion litwinowii* Onipchenko 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Alnus viridis</i>	51
<i>Adenostyles alliariae</i>	26
<i>Salix helvetica</i>	25
<i>Peucedanum ostruthium</i>	24
<i>Saxifraga rotundifolia</i>	21
<i>Achillea macrophylla</i>	21
<i>Rumex arifolius</i>	21
<i>Salix lapponum</i>	20
<i>Athyrium distentifolium</i>	18
<i>Viola biflora</i>	18
<i>Aconitum napellus</i> aggr.	18
<i>Salix silesiaca</i>	18
<i>Salix waldsteiniana</i>	18
<i>Lactuca alpina</i>	17
<i>Geranium sylvaticum</i> aggr.	17
<i>Stellaria nemorum</i>	17
<i>Veratrum album</i>	16
<i>Salix bicolor</i>	15

Constant species (percentage frequencies)

<i>Alnus viridis</i>	49
<i>Viola biflora</i>	40
<i>Geranium sylvaticum</i> aggr.	39
<i>Vaccinium myrtillus</i>	33
<i>Adenostyles alliariae</i>	32
<i>Solidago virgaurea</i>	31
<i>Deschampsia cespitosa</i> aggr.	31
<i>Rumex arifolius</i>	27
<i>Rubus idaeus</i>	26
<i>Stellaria nemorum</i>	25
<i>Dryopteris carthusiana</i> aggr.	25
<i>Senecio nemorensis</i> aggr.	24
<i>Saxifraga rotundifolia</i>	24
<i>Homogyne alpina</i>	23
<i>Sorbus aucuparia</i>	22
<i>Avenella flexuosa</i>	22
<i>Veratrum album</i>	21
<i>Peucedanum ostruthium</i>	20
<i>Oxalis acetosella</i>	20
<i>Calamagrostis villosa</i>	19
<i>Luzula sylvatica</i>	18
<i>Geum rivale</i>	18
<i>Chaerophyllum hirsutum</i>	18
<i>Hypericum maculatum</i> aggr.	17
<i>Athyrium distentifolium</i>	17
<i>Dryopteris filix-mas</i>	16
<i>Aconitum napellus</i> aggr.	16
<i>Aconitum lycoctonum</i>	16
<i>Picea abies</i>	15
<i>Myosotis sylvatica</i>	15
<i>Lactuca alpina</i>	15
<i>Salix lapponum</i>	14

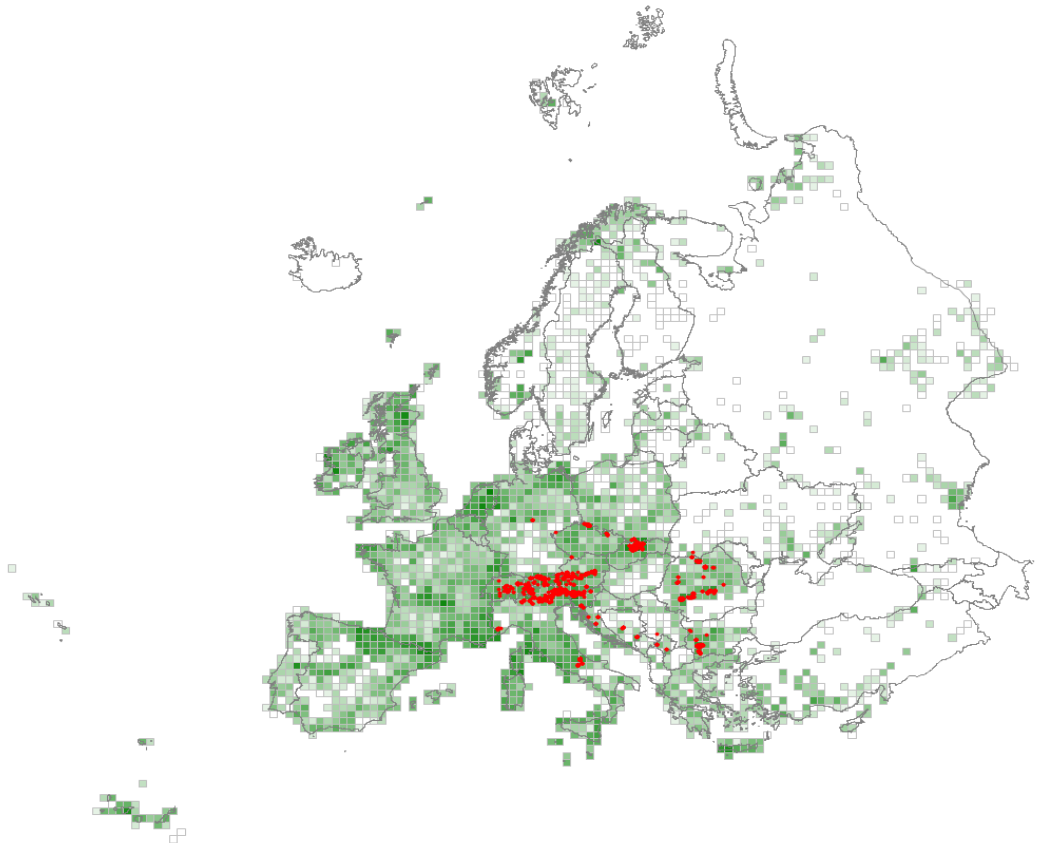
<i>Poa nemoralis</i>	14
<i>Athyrium filix-femina</i>	14
<i>Anthoxanthum odoratum</i> aggr.	14
<i>Valeriana tripteris</i>	13
<i>Thalictrum aquilegifolium</i>	13
<i>Silene vulgaris</i>	13
<i>Salix appendiculata</i>	13
<i>Heracleum sphondylium</i>	13
<i>Rhododendron ferrugineum</i>	12
<i>Primula elatior</i>	12
<i>Polystichum lonchitis</i>	12
<i>Luzula luzuloides</i>	12
<i>Veratrum lobelianum</i>	11
<i>Soldanella alpina</i>	11
<i>Salix silesiaca</i>	11
<i>Rhodiola rosea</i>	11
<i>Polygonatum verticillatum</i>	11
<i>Ligusticum mutellina</i>	11
<i>Geum montanum</i>	11
<i>Bistorta vivipara</i>	11
<i>Bistorta officinalis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Alnus viridis</i>	47
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S26 – Subalpine *Pinus mugo* scrub

Krummholz of dwarf mountain pine (*Pinus mugo*) on mineral soils with long snow-lie above the tree line through the mountains of central and South-Eastern Europe. Woody and herbaceous species and the sometimes abundant bryophyte layer vary according to the base-richness of the soils and ground moisture.



Corresponding alliances in EuroVegChecklist 2016

- > MUG-01A Pinion mugo Pawłowski et al. 1928
- > MUG-01B Erico-Pinion mugo Leibundgut 1948
- > MUG-01C Epipactido atropurpureae-Pinion mugo Stanisci 1997
- > MUG-01D Lonicero borbasianae-Pinion mugo Čarni et Mucina 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinus mugo</i> subsp. <i>mugo</i>	70
<i>Rhododendron hirsutum</i>	30
<i>Homogyne alpina</i>	29
<i>Sorbus chamaemespilus</i>	27
<i>Calamagrostis villosa</i>	25
<i>Erica carnea</i>	21

<i>Daphne striata</i>	19
<i>Vaccinium myrtillus</i>	18
<i>Salix glabra</i>	18
<i>Salix waldsteiniana</i>	16
<i>Vaccinium vitis-idaea</i>	15

Constant species (percentage frequencies)

<i>Pinus mugo</i> subsp. <i>mugo</i>	99
<i>Vaccinium myrtillus</i>	81
<i>Vaccinium vitis-idaea</i>	61
<i>Homogyne alpina</i>	54
<i>Dicranum scoparium</i>	42
<i>Avenella flexuosa</i>	40
<i>Calamagrostis villosa</i>	36
<i>Hylocomium splendens</i>	34
<i>Picea abies</i>	31
<i>Sorbus aucuparia</i>	29
<i>Pleurozium schreberi</i>	29
<i>Juniperus communis</i> subsp. <i>nana</i>	29
<i>Luzula sylvatica</i>	28
<i>Erica carnea</i>	28
<i>Dryopteris carthusiana</i> aggr.	28
<i>Rhododendron hirsutum</i>	27
<i>Oxalis acetosella</i>	26
<i>Sesleria caerulea</i>	24
<i>Cetraria islandica</i>	24
<i>Solidago virgaurea</i>	22
<i>Viola biflora</i>	20
<i>Sorbus chamaemespilus</i>	20
<i>Rhytidiadelphus triquetrus</i>	20
<i>Campanula scheuchzeri</i>	20
<i>Rosa pendulina</i>	19
<i>Hieracium murorum</i>	19
<i>Geranium sylvaticum</i> aggr.	19
<i>Veratrum album</i>	18
<i>Rubus saxatilis</i>	18
<i>Rubus idaeus</i>	17
<i>Phyteuma orbiculare</i>	16
<i>Valeriana tripteris</i>	15
<i>Valeriana montana</i>	15
<i>Rhododendron ferrugineum</i>	15
<i>Luzula luzuloides</i>	15
<i>Galium anisophyllum</i>	15
<i>Calamagrostis varia</i>	15
<i>Bellidiastrum michelii</i>	15
<i>Lycopodium annotinum</i>	14
<i>Athyrium distentifolium</i>	14
<i>Tortella tortuosa</i>	13
<i>Vaccinium uliginosum</i>	12
<i>Senecio nemorensis</i> aggr.	12
<i>Huperzia selago</i>	12
<i>Dryas octopetala</i>	12
<i>Daphne mezereum</i>	12
<i>Salix glabra</i>	11
<i>Salix appendiculata</i>	11

<i>Polygonatum verticillatum</i>	11
<i>Polygala chamaebuxus</i>	11
<i>Lonicera caerulea</i>	11
<i>Clematis alpina</i>	11
<i>Adenostyles alliariae</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus mugo</i> subsp. <i>mugo</i>	99
<i>Vaccinium myrtillus</i>	28

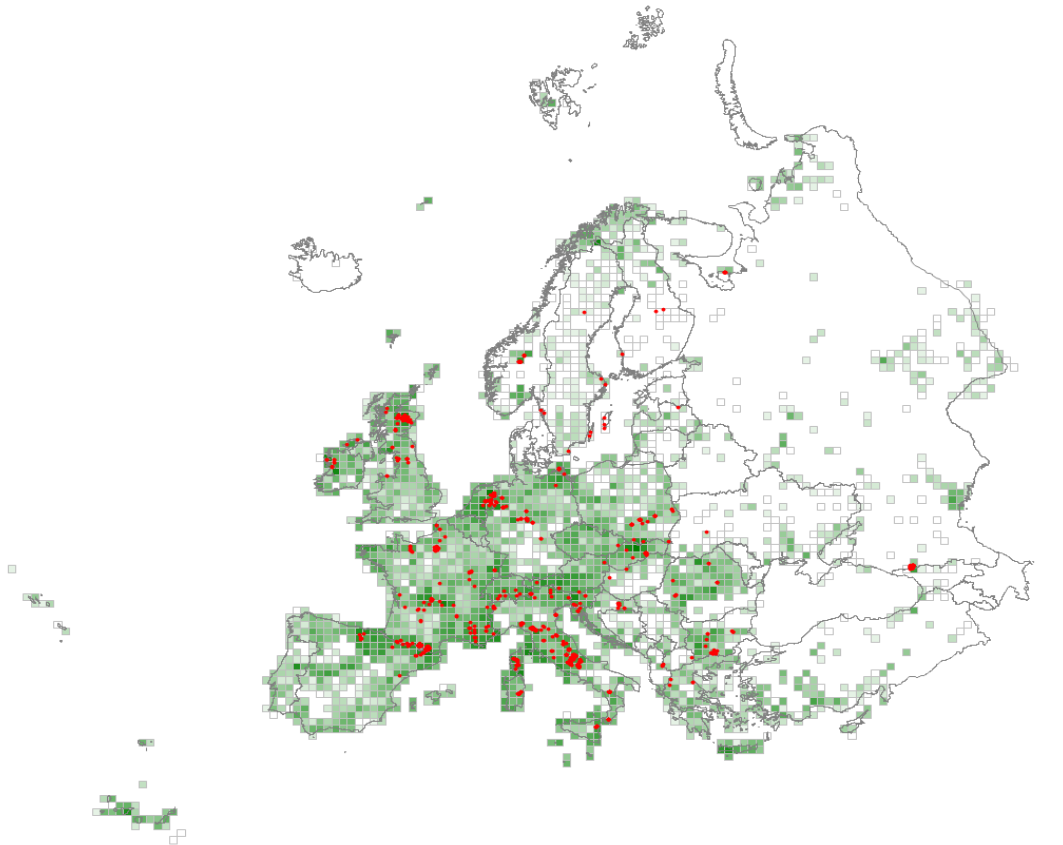
S27 – Krummholz with conifers other than *Pinus mugo*

[This habitat could not be formally defined in the expert system because it is based on vegetation physiognomy that is not reflected by species composition.]

Coniferous krummholz on mineral soils above the tree line dominated by short individuals of *Pinus sylvestris* (especially in Scotland and Norway) or *Picea abies* (especially in Scandinavia).

S31 – Lowland to montane temperate and submediterranean *Juniperus* scrub

Juniperus communis scrub on nutrient-poor sandy and calcareous soils through the temperate and submediterranean lowlands and foothills of Europe. The juniper can be very patchy in occurrence, often related to past land use, and with a striking variety of growth forms, the associated flora being very diverse according to soil base-status, sharing much in common, where the scrub is open, with local calcicolous grasslands or heath.



Corresponding alliances in EuroVegChecklist 2016

- > RHA-011 Brachypodio pinnati-Juniperion communis Mucina in Mucina et al. 2016
- <> SAB-03C Jasmino-Juniperion excelsae Didukh, Vakarenko et Shelyag-Sosonko ex Didukh 1996
- > ULI-03A Vaccinio-Juniperion communis Passarge in Passarge et G. Hofmann 1968

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Juniperus communis</i> subsp. <i>communis</i>	33
<i>Seseli alpinum</i>	21
<i>Campanula collina</i>	20

Constant species (percentage frequencies)

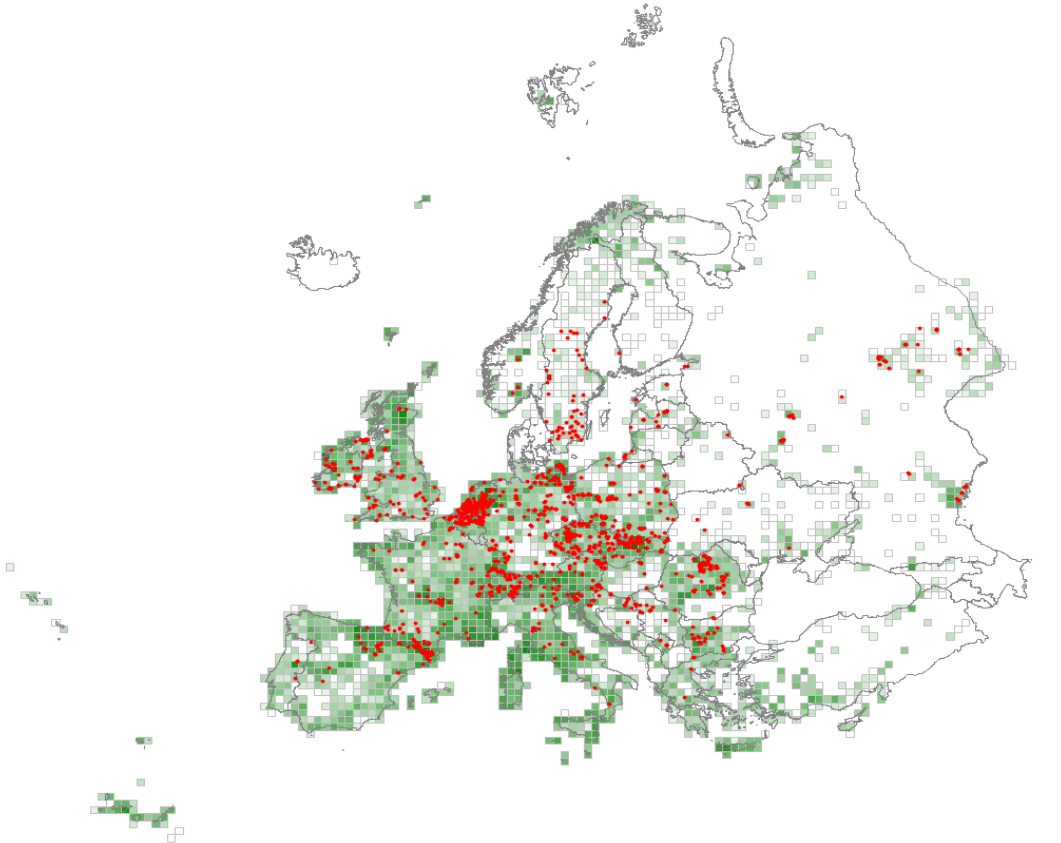
<i>Juniperus communis</i> subsp. <i>communis</i>	100
<i>Avenella flexuosa</i>	30
<i>Vaccinium myrtillus</i>	26
<i>Calluna vulgaris</i>	22
<i>Festuca rubra</i> aggr.	20
<i>Lotus corniculatus</i>	17
<i>Hypnum cupressiforme</i> aggr.	17
<i>Anthoxanthum odoratum</i> aggr.	17
<i>Agrostis capillaris</i>	17
<i>Vaccinium vitis-idaea</i>	16
<i>Festuca ovina</i>	16
<i>Arctostaphylos uva-ursi</i>	16
<i>Rosa canina</i> aggr.	15
<i>Helianthemum nummularium</i>	15
<i>Pleurozium schreberi</i>	14
<i>Dicranum scoparium</i>	14
<i>Bromopsis erecta</i>	14
<i>Potentilla erecta</i>	13
<i>Pilosella officinarum</i>	13
<i>Hylocomium splendens</i>	13
<i>Euphorbia cyparissias</i>	13
<i>Sanguisorba minor</i> aggr.	12
<i>Galium verum</i>	12
<i>Leontodon hispidus</i>	11
<i>Galium saxatile</i>	11
<i>Anthyllis vulneraria</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Juniperus communis</i> subsp. <i>communis</i>	100
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S32 – Temperate *Rubus* scrub

Low *Rubus*-dominated scrub, deciduous or sometimes evergreen, of successions and ecotones in a wide variety of semi-natural landscapes through the Atlantic region and elsewhere in submontane belts Europe where a locally moist climate prevails. *Rubus* is an enormously diverse genus of often apomictic and endemic taxa with associated floras related to soil base-status and moisture.



Corresponding alliances in EuroVegChecklist 2016

- <> LON-01A Lonicero-Rubion silvatici Tx. et Neumann ex Wittig 1977
- > LON-02A Frangulo-Rubion Rivas Goday 1964
- > RHA-01F Pruno-Rubion radulae Weber 1974
- <> RHA-03A Pruno spinosae-Rubion ulmifolii O. de Bolòs 1954
- > RHA-03D Scrophulario glabratae-Rubion ulmifolii Vicente Orellana et al. 2012

Characteristic species combination

Diagnostic species (phi coefficient * 100)

Rubus caesius

Constant species (percentage frequencies)

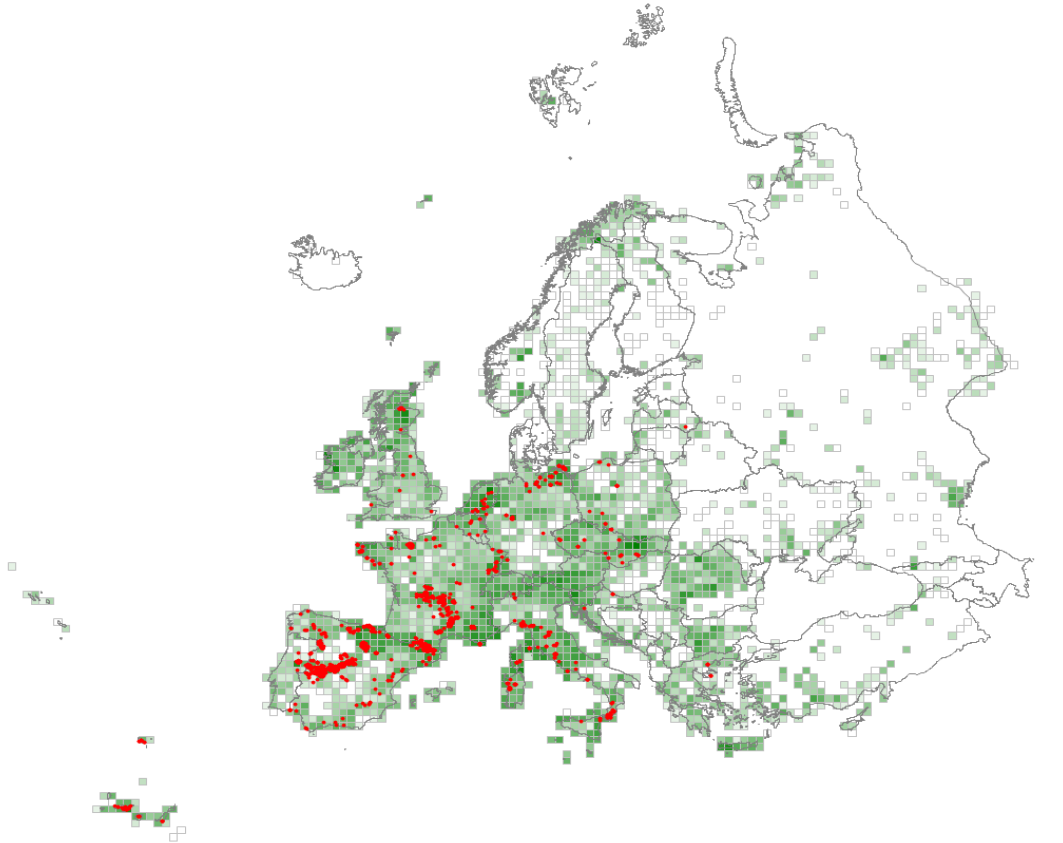
<i>Urtica dioica</i>	44
<i>Rubus fruticosus</i> aggr.	43
<i>Rubus caesius</i>	36
<i>Rubus idaeus</i>	35
<i>Cirsium arvense</i>	21
<i>Galium aparine</i>	20
<i>Dactylis glomerata</i>	20
<i>Elytrigia repens</i> aggr.	19
<i>Arrhenatherum elatius</i>	18
<i>Epilobium angustifolium</i>	16
<i>Agrostis capillaris</i>	15
<i>Poa pratensis</i> aggr.	13
<i>Galium mollugo</i> aggr.	13
<i>Sorbus aucuparia</i>	12
<i>Holcus lanatus</i>	12
<i>Fragaria vesca</i>	12
<i>Dryopteris carthusiana</i> aggr.	12
<i>Calystegia sepium</i>	12
<i>Calamagrostis epigejos</i>	12
<i>Achillea millefolium</i> aggr.	12
<i>Senecio nemorensis</i> aggr.	11
<i>Poa trivialis</i>	11
<i>Deschampsia cespitosa</i> aggr.	11
<i>Athyrium filix-femina</i>	11
<i>Artemisia vulgaris</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Rubus fruticosus</i> aggr.	36
<i>Rubus caesius</i>	35
<i>Rubus idaeus</i>	30

S33 – Lowland to montane temperate and submediterranean genistoid scrub

Low scrub dominated by various woody legumes on mostly sharply-draining, nutrient-poor acidic soils throughout the temperate and submediterranean lowlands and Mediterranean foothills of Europe. To the north the vegetation is usually found in successions or ecotones within pastoral landscapes and is often rather species-poor; further south, the scrub can occur as a more persistent or repeatedly renewed habitat among rocky or unstable hill-slopes with richer associated floras.



Corresponding alliances in EuroVegChecklist 2016

- > CYT-01A *Ulici europaei-Cytision striati* Rivas-Mart. et al. 1991
- > CYT-01B *Genistion floridae* Rivas-Mart. 1974
- > CYT-01C *Cytision multiflori* Rivas-Mart. 1974
- > CYT-01D *Retamion monospermae* Rivas-Mart. et Cantó in Rivas-Mart et al. 2002
- > CYT-01E *Retamion sphaerocarpae* Rivas-Mart. 1981
- > CYT-01F *Adenocarpion decorticantis* (Rivas-Mart. et F. Valle ex F. Valle 1985) Rivas-Mart. et al. 1999
- > CYT-01G *Violo messanensis-Adenocarpion complicati* Mucina in Mucina et al. 2016
- > CYT-02A *Telinion monspessulano-linifoliae* Rivas-Mart. et al. 2002
- > CYT-02B *Genisto spartioidis-Phlomidion almeriensis* Rivas Goday et Rivas-Mart. 1969
- > CYT-02C *Genisto scorpii-Retamion sphaerocarpae* Rivas-Mart. et M. Costa in Rivas-Mart. et al. 2011
- > CYT-02D *Genistion specioso-equisetiformis* Rivas-Mart. et F. Valle in Rivas-Mart. et al.

- 2011
- <> CYT-03A Sarothamnion scoparii Oberd. 1957
 - <> CYT-03C Erico scopariae-Cytision scoparii Mucina in Mucina et al. 2016
 - > RHA-02A Cytision sessilifolii Biondi in Biondi et al. 1989

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cytisus scoparius</i>	31
<i>Cytisus balansae</i>	30
<i>Genista florida</i>	29
<i>Genista cinerascens</i>	27
<i>Cytisus multiflorus</i>	20
<i>Adenocarpus hispanicus</i>	20
<i>Lavandula pedunculata</i>	17

Constant species (percentage frequencies)

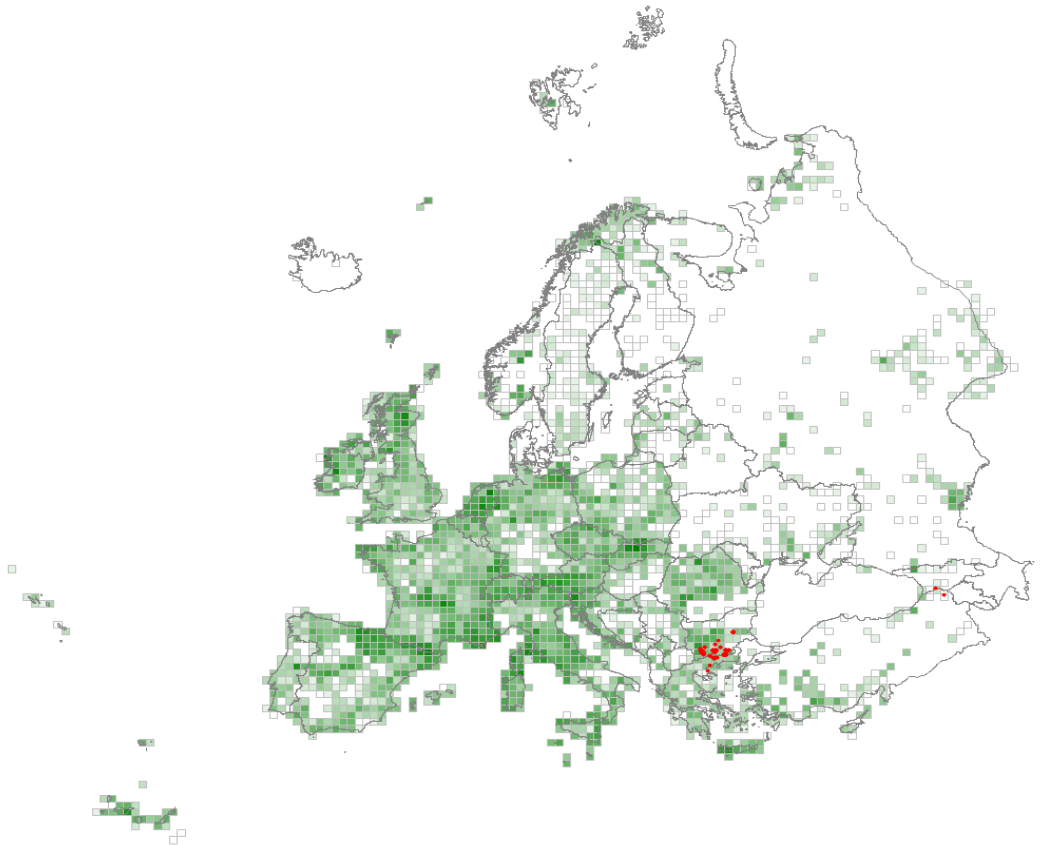
<i>Cytisus scoparius</i>	55
<i>Pteridium aquilinum</i>	32
<i>Cytisus balansae</i>	29
<i>Avenella flexuosa</i>	24
<i>Calluna vulgaris</i>	21
<i>Agrostis capillaris</i>	21
<i>Teucrium scorodonia</i>	18
<i>Genista florida</i>	17
<i>Rumex acetosella</i>	16
<i>Rubus ulmifolius</i>	14
<i>Lavandula pedunculata</i>	14
<i>Erica arborea</i>	14
<i>Genista cinerascens</i>	12
<i>Dactylis glomerata</i>	12
<i>Arrhenatherum elatius</i>	12
<i>Anthoxanthum odoratum</i> aggr.	12
<i>Rosa canina</i> aggr.	11
<i>Festuca rubra</i> aggr.	11
<i>Achillea millefolium</i> aggr.	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Cytisus scoparius</i>	40
<i>Cytisus balansae</i>	25

S34 – Balkan-Anatolian submontane genistoid scrub

Open scrub, dominated by *Genista lydia* endemic to steep rocky slopes and screes, and also degraded forest, in the lowlands and foothills of the south-eastern Balkan Peninsula, on various soils but especially rich on limey substrates where calcicolous grassland species figure strongly among the associated flora.



Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Genista lydia</i>	97
<i>Cruciata pedemontana</i>	49
<i>Romulea linaresii</i>	47
<i>Cladonia foliacea</i>	45
<i>Scabiosa triniifolia</i>	44
<i>Hypericum olympicum</i>	43
<i>Achillea coarctata</i>	42
<i>Centaurea cuneifolia</i>	42
<i>Dianthus pinifolius</i>	41
<i>Minuartia hirsuta</i>	40
<i>Rorippa thracica</i>	39
<i>Dianthus giganteus</i>	39
<i>Onobrychis gracilis</i>	35

<i>Thymus odoratissimus</i> aggr.	34
<i>Potentilla argentea</i>	34
<i>Aira elegantissima</i>	34
<i>Pistorinia hispanica</i>	34
<i>Pilosella hoppeana</i>	33
<i>Sedum grisebachii</i>	33
<i>Genista carinalis</i>	32
<i>Euphrasia liburnica</i>	32
<i>Stachys angustifolia</i>	32
<i>Chrysopogon gryllus</i>	31
<i>Hypericum cerastoides</i>	31
<i>Galium divaricatum</i>	31
<i>Asperula aristata</i>	31
<i>Verbascum humile</i>	30
<i>Trifolium tenuifolium</i>	29
<i>Linaria pelisseriana</i>	29
<i>Teesdalia coronopifolia</i>	29
<i>Centaurea stoebe</i>	28
<i>Filago germanica</i>	28
<i>Ranunculus millefoliatus</i>	28
<i>Phleum montanum</i>	27
<i>Ficaria calthifolia</i>	27
<i>Moenchia mantica</i>	27
<i>Geranium columbinum</i>	26
<i>Orlaya grandiflora</i>	26
<i>Euphrasia pectinata</i>	26
<i>Cerastium brachypetalum</i>	25
<i>Valerianella turgida</i>	25
<i>Erodium botrys</i>	25
<i>Festuca valesiaca</i> aggr.	24
<i>Veronica praecox</i>	24
<i>Verbascum speciosum</i>	24
<i>Verbascum densiflorum</i>	24
<i>Achillea crithmifolia</i>	24
<i>Eryngium campestre</i>	24
<i>Daucus guttatus</i>	23
<i>Anthemis macedonica</i>	23
<i>Ornithogalum sigmoideum</i>	23
<i>Spergula pentandra</i>	22
<i>Myosotis ramosissima</i>	22
<i>Bothriochloa ischaemum</i>	21
<i>Armeria rumelica</i>	21
<i>Prunus cerasifera</i>	21
<i>Thymus atticus</i>	21
<i>Crupina vulgaris</i>	21
<i>Campanula lingulata</i>	21
<i>Dianthus corymbosus</i>	21
<i>Taeniatherum caput-medusae</i>	21
<i>Campanula phrygia</i>	21
<i>Pilosella bauhini</i>	20
<i>Galium flavescens</i>	20
<i>Koeleria nitidula</i>	20
<i>Hypericum montbretii</i>	20
<i>Carduus candicans</i>	20
<i>Trifolium hirtum</i>	20

<i>Thymus longicaulis</i>	20
<i>Viola tricolor</i> aggr.	20
<i>Bromus squarrosus</i>	20
<i>Rosa turcica</i>	20
<i>Potentilla pedata</i>	20
<i>Scleranthus perennis</i>	19
<i>Ornithogalum orthophyllum</i>	19
<i>Silene sendtneri</i>	19
<i>Trifolium strictum</i>	19
<i>Cerastium gracile</i>	19
<i>Hypericum rumeliacum</i>	19
<i>Cerastium rectum</i>	19
<i>Petrorhagia prolifera</i>	19
<i>Trifolium arvense</i>	19
<i>Plantago subulata</i>	19
<i>Cynosurus echinatus</i>	18
<i>Koeleria macrantha</i>	18
<i>Potentilla recta</i>	18
<i>Alyssum minutum</i>	18
<i>Viola kitaibeliana</i>	18
<i>Aegilops triuncialis</i>	18
<i>Thesium ramosum</i>	17
<i>Lomelosia argentea</i>	17
<i>Prospero autumnale</i>	17
<i>Poa bulbosa</i>	17
<i>Sanguisorba minor</i> aggr.	17
<i>Cota tinctoria</i>	17
<i>Silene gallinyi</i>	17
<i>Molineriella minuta</i>	17
<i>Xeranthemum annuum</i>	17
<i>Trifolium setiferum</i>	17
<i>Cytisus austriacus</i>	16
<i>Trifolium campestre</i>	16
<i>Oenanthe pimpinelloides</i>	16
<i>Clinopodium graveolens</i>	16
<i>Caucalis platycarpus</i>	16
<i>Ventenata dubia</i>	16
<i>Sedum stefco</i>	16
<i>Cuscuta approximata</i>	16
<i>Ornithogalum sphaerocarpum</i>	16
<i>Leopoldia tenuiflora</i>	16
<i>Tragopogon dubius</i>	15
<i>Euphorbia myrsinites</i>	15
<i>Crepis setosa</i>	15
<i>Prunella laciniata</i>	15

Constant species (percentage frequencies)

<i>Genista lydia</i>	100
<i>Eryngium campestre</i>	61
<i>Cladonia foliacea</i>	60
<i>Poa bulbosa</i>	58
<i>Festuca valesiaca</i> aggr.	55
<i>Potentilla argentea</i>	52
<i>Sanguisorba minor</i> aggr.	51
<i>Asperula aristata</i>	46

<i>Rumex acetosella</i>	43
<i>Plantago lanceolata</i>	43
<i>Teucrium chamaedrys</i>	42
<i>Cruciata pedemontana</i>	42
<i>Centaurea stoebe</i>	42
<i>Anthoxanthum odoratum</i> aggr.	42
<i>Aira elegantissima</i>	40
<i>Trifolium campestre</i>	39
<i>Pilosella hoppeana</i>	38
<i>Chrysopogon gryllus</i>	38
<i>Trifolium arvense</i>	37
<i>Thymus odoratissimus</i> aggr.	37
<i>Euphorbia cyparissias</i>	36
<i>Bromus squarrosus</i>	33
<i>Thymus longicaulis</i>	32
<i>Scabiosa triniifolia</i>	32
<i>Galium verum</i>	30
<i>Agrostis capillaris</i>	30
<i>Achillea coarctata</i>	30
<i>Galium divaricatum</i>	29
<i>Cynosurus echinatus</i>	29
<i>Cerastium brachypetalum</i>	29
<i>Bothriochloa ischaemum</i>	29
<i>Koeleria macrantha</i>	28
<i>Hypericum perforatum</i>	28
<i>Scleranthus perennis</i>	27
<i>Plantago subulata</i>	27
<i>Hypericum olympicum</i>	27
<i>Euphorbia seguieriana</i>	27
<i>Myosotis ramosissima</i>	26
<i>Dianthus pinifolius</i>	25
<i>Romulea linaresii</i>	24
<i>Moenchia mantica</i>	24
<i>Geranium columbinum</i>	24
<i>Phleum montanum</i>	23
<i>Viola tricolor</i> aggr.	22
<i>Petrorhagia prolifera</i>	22
<i>Minuartia hirsuta</i>	22
<i>Leontodon crispus</i> aggr.	21
<i>Centaurea cuneifolia</i>	21
<i>Teesdalia coronopifolia</i>	20
<i>Luzula campestris</i> aggr.	20
<i>Linaria pelisseriana</i>	20
<i>Filago germanica</i>	20
<i>Chondrilla juncea</i>	20
<i>Sherardia arvensis</i>	19
<i>Rorippa thracica</i>	19
<i>Potentilla recta</i>	19
<i>Poa compressa</i>	19
<i>Pilosella bauhini</i>	19
<i>Orlaya grandiflora</i>	19
<i>Dianthus giganteus</i>	19
<i>Cota tinctoria</i>	19
<i>Vulpia myuros</i>	18
<i>Thesium ramosum</i>	18

<i>Euphrasia pectinata</i>	18
<i>Cerastium pumilum</i>	18
<i>Vicia sativa</i>	17
<i>Tuberaria guttata</i>	17
<i>Trifolium dubium</i>	17
<i>Pyrus communis</i>	17
<i>Juniperus communis</i> subsp. <i>communis</i>	17
<i>Hypochaeris glabra</i>	17
<i>Daucus guttatus</i>	17
<i>Crupina vulgaris</i>	17
<i>Cerastium gracile</i>	17
<i>Taeniatherum caput-medusae</i>	16
<i>Racomitrium canescens</i>	16
<i>Prospero autumnale</i>	16
<i>Lotus corniculatus</i>	16
<i>Geranium molle</i>	16
<i>Carlina corymbosa</i> aggr.	16
<i>Veronica praecox</i>	15
<i>Taraxacum</i> sect. <i>Taraxacum</i>	15
<i>Ranunculus millefoliatus</i>	15
<i>Euphorbia myrsinites</i>	15
<i>Dactylis glomerata</i>	15
<i>Xeranthemum annuum</i>	14
<i>Trifolium tenuifolium</i>	14
<i>Trifolium strictum</i>	14
<i>Tragopogon dubius</i>	14
<i>Rosa canina</i> aggr.	14
<i>Potentilla pedata</i>	14
<i>Medicago minima</i>	14
<i>Lomelosia argentea</i>	14
<i>Hypericum rumeliacum</i>	14
<i>Genista carinalis</i>	14
<i>Euphrasia liburnica</i>	14
<i>Crepis setosa</i>	14
<i>Crepis sancta</i>	14
<i>Bromus hordeaceus</i>	14
<i>Vicia villosa</i>	13
<i>Verbascum densiflorum</i>	13
<i>Trifolium medium</i>	13
<i>Trifolium angustifolium</i>	13
<i>Prunella laciniata</i>	13
<i>Pistorinia hispanica</i>	13
<i>Ornithopus compressus</i>	13
<i>Onobrychis gracilis</i>	13
<i>Oenanthe pimpinelloides</i>	13
<i>Melica ciliata</i> aggr.	13
<i>Linaria genistifolia</i>	13
<i>Juniperus oxycedrus</i> aggr.	13
<i>Galium lucidum</i>	13
<i>Filago arvensis</i>	13
<i>Erysimum diffusum</i>	13
<i>Vulpia ciliata</i>	12
<i>Viola kitaibeliana</i>	12
<i>Vicia lathyroides</i>	12
<i>Veronica verna</i>	12

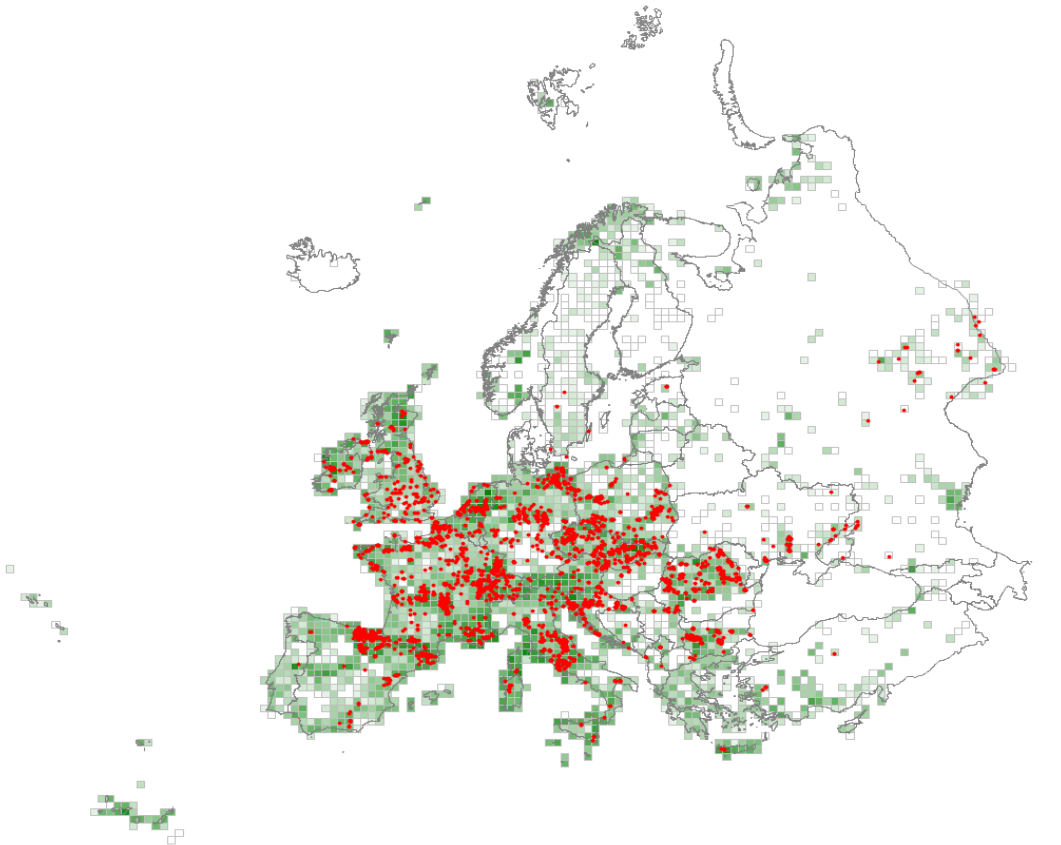
<i>Stachys angustifolia</i>	12
<i>Spergula pentandra</i>	12
<i>Sedum grisebachii</i>	12
<i>Parentucellia latifolia</i>	12
<i>Ornithogalum orthophyllum</i>	12
<i>Myosotis stricta</i>	12
<i>Linum bienne</i>	12
<i>Erodium botrys</i>	12
<i>Draba verna</i> aggr.	12
<i>Astragalus onobrychis</i>	12
<i>Armeria rumelica</i>	12
<i>Anthemis cretica</i>	12
<i>Allium sphaerocephalon</i>	12
<i>Agrostis castellana</i>	12
<i>Vicia cracca</i>	11
<i>Prunus cerasifera</i>	11
<i>Muscari neglectum</i>	11
<i>Koeleria nitidula</i>	11
<i>Hypericum cerastoides</i>	11
<i>Erodium cicutarium</i>	11
<i>Cytisus austriacus</i>	11
<i>Clinopodium graveolens</i>	11
<i>Cichorium intybus</i>	11
<i>Carex caryophylla</i>	11
<i>Campanula lingulata</i>	11
<i>Arrhenatherum elatius</i>	11
<i>Aegilops triuncialis</i>	11
<i>Achillea pannonica</i>	11
<i>Achillea crithmifolia</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Genista lydia</i>	100
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S35 – Temperate and submediterranean thorn scrub

Scrub dominated by a diversity of mostly thorny shrubs, small trees and saplings, in successions and ecotones on mesic soils in a wide variety of semi-natural landscapes through the temperate and submediterranean lowlands of Europe but sometimes extending to higher altitudes, as in the Balkan šibljak. The dominants and associated floras vary widely with differences in regional climate and soils.



Corresponding alliances in EuroVegChecklist 2016

- <> LON-01B *Molinio-Frangulion* Passarge in Passarge et G. Hofmann 1968
- <> RHA-01A *Berberidion vulgaris* Br.-Bl. ex Tx. 1952 nom. conserv. propos.
- <> RHA-01B *Amelanchiero-Buxion* O. de Bolòs et Romo in Romo 1989
- > RHA-01C *Lonicero arboreae-Berberidion hispanicae* O. de Bolòs 1954
- <> RHA-01D *Urtico-Crataegion* Passarge et G. Hofmann 1968
- > RHA-01G *Frangulo alni-Pyrion cordatae* Herrera et al. 1991
- <> RHA-01H *Tamo communis-Viburnion lantanae* (Géhu et al. 1983) *Mucina* in *Mucina* et al. 2016
- > RHA-01K *Lamio purpureae-Acerion tatarici* Fitsailo 2007
- <> RHA-02B *Ilici aquifolii-Crataegion laciniatae* Ubaldi 2011
- > RHA-02C *Fraxino orni-Cotinion* Soó 1960
- <> RHA-02D *Buxo-Syringion* P. Fukarek ex Diklić 1965
- <> RHA-02E *Paliuro-Petterion* P. Fukarek 1962
- > RHA-02F *Rhamno saxatilis-Paliurion spinae-christi* Biondi, Casavecchia, Biscotti et

- Pesaresi in Biondi et al. 2014
- > RHA-02G Eryngio campestris-Paliurion spinae-christi (Jovanović 1985) Matevski et al. 2008
 - <> RHA-02H Berberido creticae-Prunion cocomiliae Bergmeier 1990
 - > RHA-02I Asparago verticillati-Crataegion tauricae Korzhenevskii et Kliukin 1990
 - <> RHA-02J Elytrigio nodosae-Rhuion coriariae Korzhenevskii et Ryff ex Didukh et Mucina 2014
 - > RHA-03B Arundo plinii-Rubion ulmifolii Biondi, Blasi, Casavecchia et Gasparri in Biondi et al. 2014
 - > RHA-03C Rubio periclymeni-Rubion ulmifolii Oberd. ex Rivas-Mart. et al. 1993
 - > RHA-04A Lauro nobilis-Sambucion nigrae Biondi, Blasi, Casavecchia, Galdenzi et Gasparri in Biondi et al. 2014

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Prunus spinosa</i>	28
<i>Rosa canina</i> aggr.	19
<i>Cornus sanguinea</i>	17
<i>Crataegus monogyna</i>	15

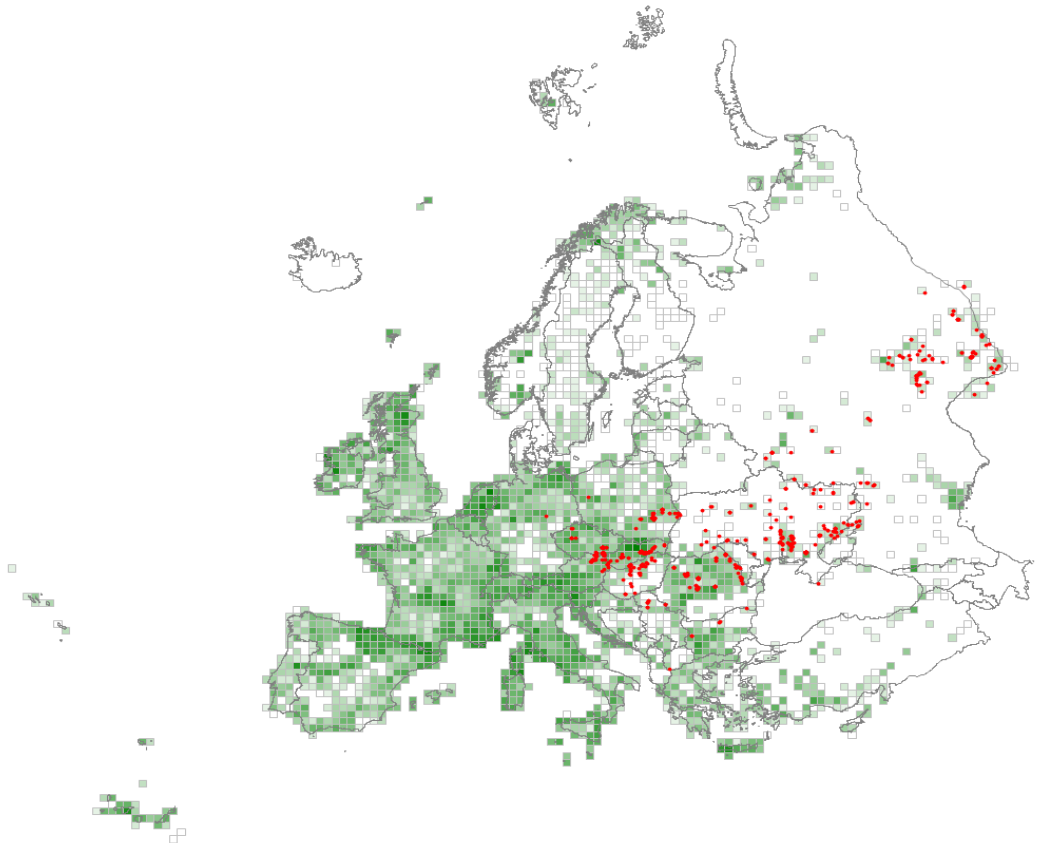
Constant species (percentage frequencies)

<i>Prunus spinosa</i>	61
<i>Crataegus monogyna</i>	50
<i>Rosa canina</i> aggr.	46
<i>Cornus sanguinea</i>	36
<i>Ligustrum vulgare</i>	30
<i>Urtica dioica</i>	27
<i>Galium aparine</i>	23
<i>Sambucus nigra</i>	22
<i>Dactylis glomerata</i>	21
<i>Euonymus europaeus</i>	19
<i>Clematis vitalba</i>	19
<i>Rubus ulmifolius</i>	17
<i>Rubus caesius</i>	17
<i>Hedera helix</i> aggr.	16
<i>Galium mollugo</i> aggr.	16
<i>Rubus fruticosus</i> aggr.	15
<i>Geum urbanum</i>	15
<i>Corylus avellana</i>	15
<i>Rhamnus cathartica</i>	14
<i>Hypericum perforatum</i>	13
<i>Fraxinus excelsior</i>	12
<i>Brachypodium pinnatum</i>	12
<i>Agrimonia eupatoria</i>	12
<i>Achillea millefolium</i> aggr.	12
<i>Viburnum lantana</i>	11
<i>Poa pratensis</i> aggr.	11
<i>Glechoma hederacea</i>	11
<i>Fragaria vesca</i>	11
<i>Euphorbia cyparissias</i>	11
<i>Elytrigia repens</i> aggr.	11
<i>Acer campestre</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Prunus spinosa 38

S36 – Low steppic scrub

Low scrub, dominated by various, often clonal, shrubs frequently forming patches in locally mesic and sheltered situations within the dry grasslands of the steppe zone of Central and Eastern Europe. It can form a persistent natural landscape element or develop after the abandonment of pasturing.



Corresponding alliances in EuroVegChecklist 2016

- > RHA-01J Prunion fruticosae Tx. 1952

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Prunus tenella</i>	50
<i>Prunus fruticosa</i>	50
<i>Spiraea media</i>	33
<i>Caragana frutex</i>	28
<i>Phlomis tuberosa</i>	25
<i>Elytrigia intermedia</i>	22
<i>Cytisus graniticus</i>	22
<i>Salvia nemorosa</i>	22
<i>Fragaria viridis</i>	21

<i>Achillea pannonica</i>	19
<i>Adonis vernalis</i>	17
<i>Bromopsis inermis</i>	17
<i>Galium glaucum</i>	17
<i>Medicago falcata</i>	17
<i>Veronica spicata</i>	17
<i>Galium ruthenicum</i>	16
<i>Falcaria vulgaris</i>	16
<i>Stachys recta</i>	16
<i>Phlomis herba-venti</i>	15
<i>Thalictrum minus</i>	15
<i>Elytrigia stipifolia</i>	15
<i>Aconitum anthora</i>	15

Constant species (percentage frequencies)

<i>Poa pratensis</i> aggr.	41
<i>Teucrium chamaedrys</i>	34
<i>Prunus tenella</i>	34
<i>Festuca valesiaca</i> aggr.	34
<i>Stachys recta</i>	33
<i>Prunus fruticosa</i>	31
<i>Galium verum</i>	31
<i>Medicago falcata</i>	29
<i>Elytrigia repens</i> aggr.	26
<i>Fragaria viridis</i>	25
<i>Thalictrum minus</i>	24
<i>Elytrigia intermedia</i>	23
<i>Hypericum perforatum</i>	22
<i>Euphorbia cyparissias</i>	22
<i>Vincetoxicum hirsutinaria</i>	21
<i>Stipa capillata</i>	20
<i>Securigera varia</i>	20
<i>Filipendula vulgaris</i>	20
<i>Festuca stricta</i> subsp. <i>sulcata</i>	20
<i>Falcaria vulgaris</i>	20
<i>Achillea millefolium</i> aggr.	20
<i>Rosa canina</i> aggr.	19
<i>Bromopsis inermis</i>	19
<i>Salvia nemorosa</i>	18
<i>Eryngium campestre</i>	18
<i>Caragana frutex</i>	18
<i>Veronica spicata</i>	17
<i>Prunus spinosa</i>	17
<i>Phlomis tuberosa</i>	17
<i>Origanum vulgare</i>	17
<i>Hylotelephium maximum</i>	17
<i>Centaurea scabiosa</i>	17
<i>Thymus pulegioides</i>	16
<i>Salvia pratensis</i>	15
<i>Asperula cynanchica</i>	15
<i>Agrimonia eupatoria</i>	15
<i>Achillea pannonica</i>	15
<i>Spiraea media</i>	14
<i>Plantago media</i>	14
<i>Phleum phleoides</i>	14

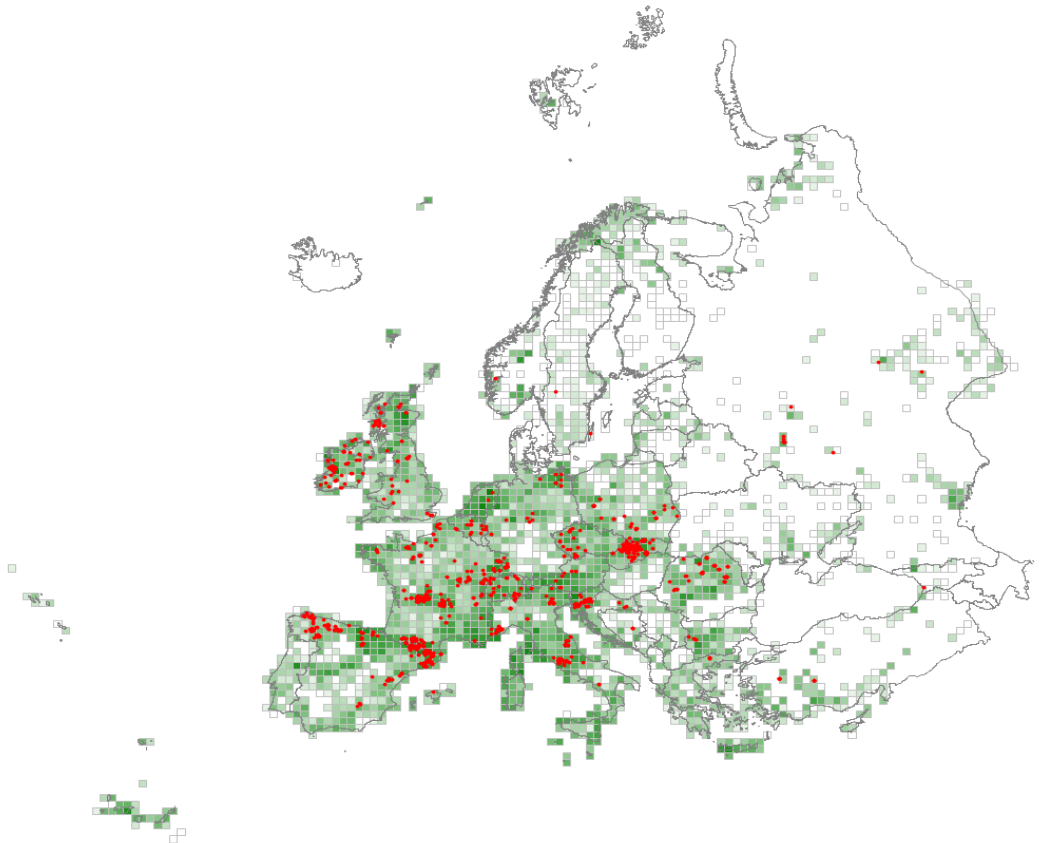
<i>Geranium sanguineum</i>	14
<i>Galium mollugo</i> aggr.	14
<i>Artemisia campestris</i>	14
<i>Galium glaucum</i>	13
<i>Dactylis glomerata</i>	13
<i>Crataegus monogyna</i>	13
<i>Scabiosa ochroleuca</i>	12
<i>Salvia nutans</i>	12
<i>Koeleria macrantha</i>	12
<i>Brachypodium pinnatum</i>	12
<i>Asparagus officinalis</i>	12
<i>Adonis vernalis</i>	12
<i>Phlomis herba-venti</i>	11
<i>Knautia arvensis</i>	11
<i>Galium ruthenicum</i>	11
<i>Euphorbia nicaeensis</i>	11
<i>Centaurea stoebe</i>	11
<i>Campanula sibirica</i>	11
<i>Calamagrostis epigejos</i>	11
<i>Allium flavum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Prunus tenella</i>	29
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S37 – *Corylus avellana* scrub

Scrub dominated by hazel (*Corylus avellana*). Natural occurrences are found on shallow soils along the northern Atlantic seaboard, where they are permanently maintained by exposure to winds, and locally on rocky slopes and cliffs through the continental region. Secondary hazel scrub can develop after by felling of mesic broadleaved forests.



Corresponding alliances in EuroVegChecklist 2016

- <> RHA-01A Berberidion vulgaris Br.-Bl. ex Tx. 1952 nom. conserv. propos.
- <> RHA-01D Urtico-Crataegion Passarge et G. Hofmann 1968
- > RHA-01E Astantio-Corylion avellanae Passarge 1978
- <> RHA-01H Tamo communis-Viburnion lantanae (Géhu et al. 1983) Mucina in Mucina et al. 2016

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Corylus avellana</i>	36
<i>Loeskeobryum brevirostre</i>	32
<i>Lejeunea cavifolia</i>	28
<i>Thamnobryum alopecurum</i>	27
<i>Potentilla sterilis</i>	22

<i>Neckera complanata</i>	17
<i>Eurhynchium striatum</i>	17
<i>Metzgeria furcata</i>	17
<i>Fissidens taxifolius</i>	17
<i>Primula acaulis</i>	16
<i>Crataegus monogyna</i>	15
<i>Didymodon spadiceus</i>	15

Constant species (percentage frequencies)

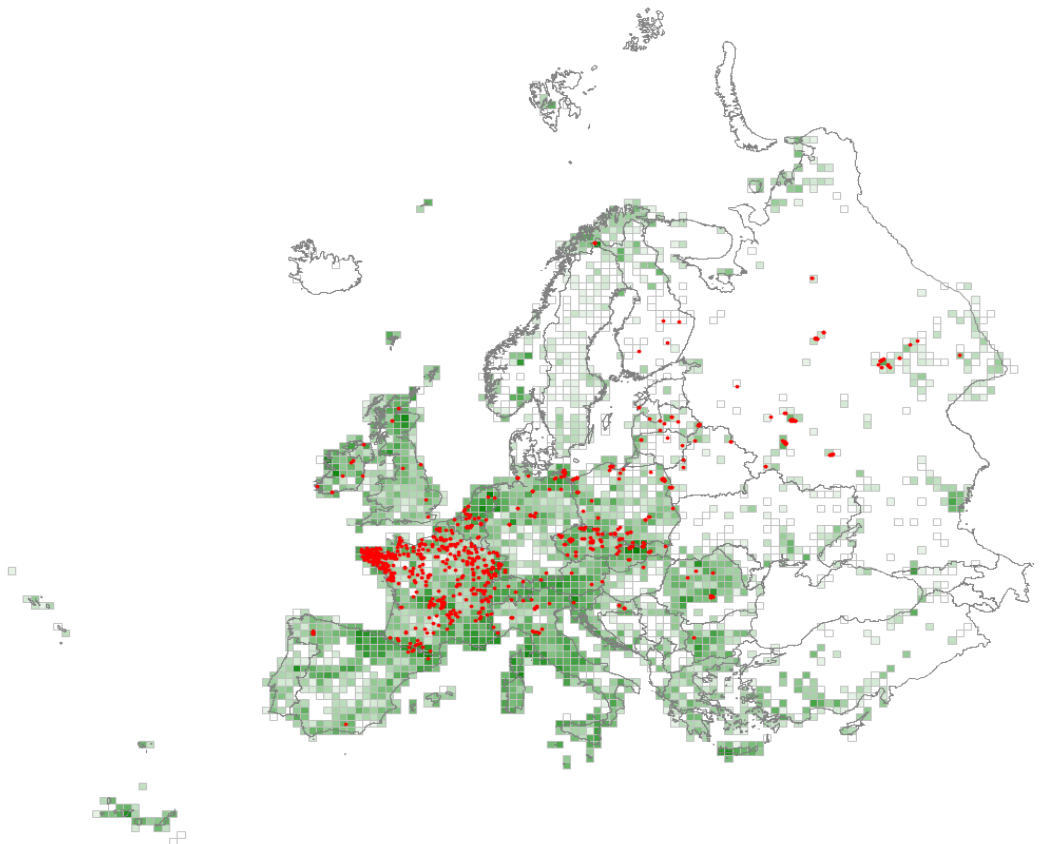
<i>Corylus avellana</i>	100
<i>Crataegus monogyna</i>	49
<i>Hedera helix</i> aggr.	44
<i>Fragaria vesca</i>	35
<i>Rubus fruticosus</i> aggr.	33
<i>Geum urbanum</i>	33
<i>Geranium robertianum</i>	33
<i>Prunus spinosa</i>	32
<i>Brachypodium sylvaticum</i>	29
<i>Oxalis acetosella</i>	28
<i>Dryopteris filix-mas</i>	28
<i>Veronica chamaedrys</i> aggr.	27
<i>Cornus sanguinea</i>	24
<i>Viola riviniana</i>	21
<i>Pteridium aquilinum</i>	21
<i>Plagiomnium undulatum</i>	21
<i>Eurhynchium striatum</i>	21
<i>Urtica dioica</i>	20
<i>Thuidium tamariscinum</i>	20
<i>Primula acaulis</i>	20
<i>Poa nemoralis</i>	20
<i>Lonicera periclymenum</i>	20
<i>Fraxinus excelsior</i>	20
<i>Vicia sepium</i>	19
<i>Potentilla sterilis</i>	19
<i>Carex sylvatica</i>	19
<i>Rosa canina</i> aggr.	18
<i>Mercurialis perennis</i>	18
<i>Lonicera xylosteum</i>	18
<i>Euonymus europaeus</i>	18
<i>Viola reichenbachiana</i>	17
<i>Thamnobryum alopecurum</i>	17
<i>Stellaria holostea</i>	17
<i>Sanicula europaea</i>	17
<i>Rhytidiadelphus triquetrus</i>	16
<i>Kindbergia praelonga</i>	16
<i>Dactylis glomerata</i>	16
<i>Circaea lutetiana</i>	16
<i>Athyrium filix-femina</i>	16
<i>Arum maculatum</i>	16
<i>Viburnum opulus</i>	15
<i>Loeskeobryum brevirostre</i>	15
<i>Fissidens taxifolius</i>	15
<i>Ctenidium molluscum</i>	15
<i>Asarum europaeum</i>	15
<i>Aegopodium podagraria</i>	15

<i>Polystichum setiferum</i>	14
<i>Poa trivialis</i>	14
<i>Plagiochila asplenioides</i>	14
<i>Anemone nemorosa</i>	14
<i>Acer campestre</i>	14
<i>Ligustrum vulgare</i>	13
<i>Lamium galeobdolon</i>	13
<i>Galium aparine</i>	13
<i>Epipactis helleborine</i>	13
<i>Conopodium majus</i>	13
<i>Asplenium scolopendrium</i>	13
<i>Ajuga reptans</i>	13
<i>Sambucus nigra</i>	12
<i>Melica uniflora</i>	12
<i>Lophocolea bidentata</i>	12
<i>Glechoma hederacea</i>	12
<i>Dryopteris carthusiana</i> aggr.	12
<i>Campanula trachelium</i>	12
<i>Viburnum lantana</i>	11
<i>Quercus robur</i>	11
<i>Polygonatum multiflorum</i>	11
<i>Heracleum sphondylium</i>	11
<i>Hepatica nobilis</i>	11
<i>Filipendula ulmaria</i>	11
<i>Epilobium montanum</i>	11
<i>Acer pseudoplatanus</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Corylus avellana 100

S38 – Temperate forest clearing scrub

Often dense scrub of shrubs and small trees invading after natural or anthropogenic clearance in forests of the temperate zone of Europe.



Corresponding alliances in EuroVegChecklist 2016

- <> LON-01B Molinio-Frangulion Passarge in Passarge et G. Hofmann 1968
- > ROB-01A Sambuco-Salicion capreae Tx. et Neumann ex Oberd. 1957

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Salix caprea</i>	51
<i>Betula pendula</i>	17

Constant species (percentage frequencies)

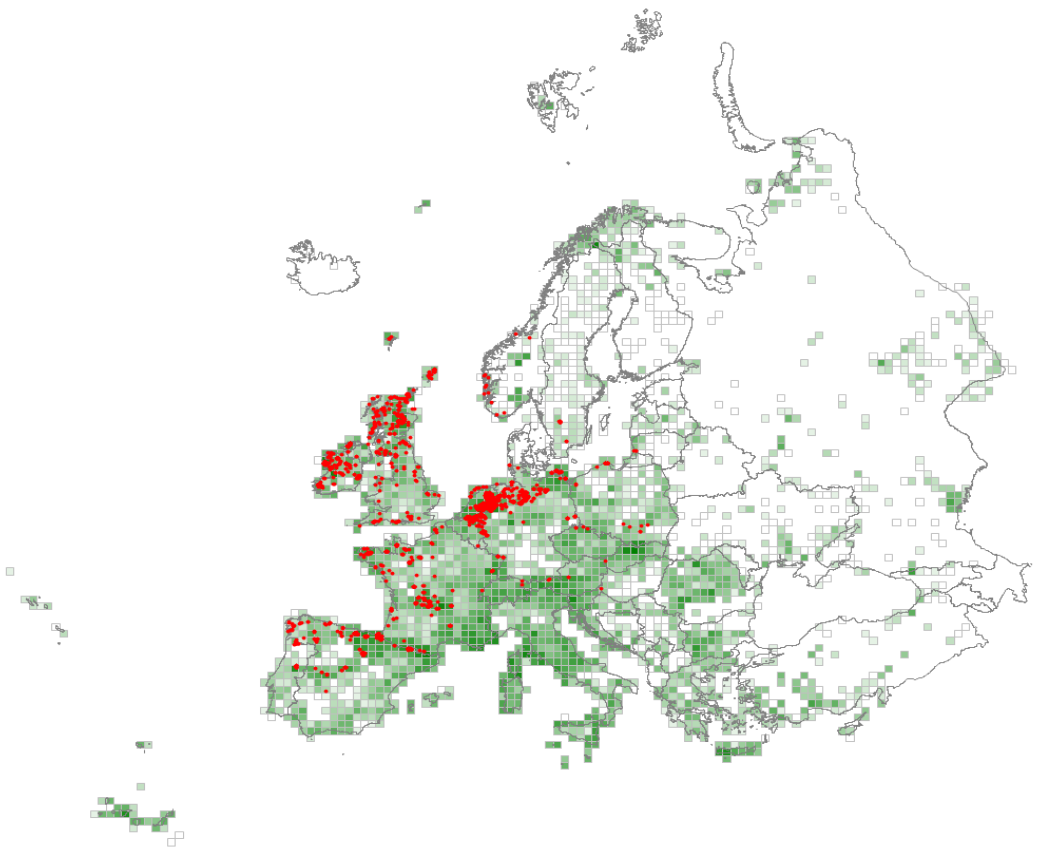
<i>Salix caprea</i>	87
<i>Rubus fruticosus</i> aggr.	50
<i>Urtica dioica</i>	49
<i>Betula pendula</i>	48
<i>Quercus robur</i>	39
<i>Corylus avellana</i>	35

<i>Rubus idaeus</i>	34
<i>Hedera helix</i> aggr.	30
<i>Fraxinus excelsior</i>	30
<i>Fragaria vesca</i>	28
<i>Dryopteris carthusiana</i> aggr.	28
<i>Dactylis glomerata</i>	28
<i>Populus tremula</i>	27
<i>Sorbus aucuparia</i>	26
<i>Epilobium angustifolium</i>	25
<i>Crataegus monogyna</i>	24
<i>Athyrium filix-femina</i>	24
<i>Ranunculus repens</i>	23
<i>Sambucus nigra</i>	22
<i>Dryopteris filix-mas</i>	22
<i>Galium aparine</i>	21
<i>Juncus effusus</i>	20
<i>Geum urbanum</i>	20
<i>Fagus sylvatica</i>	20
<i>Angelica sylvestris</i>	20
<i>Geranium robertianum</i>	19
<i>Epilobium montanum</i>	19
<i>Calamagrostis epigejos</i>	18
<i>Prunus spinosa</i>	17
<i>Picea abies</i>	17
<i>Deschampsia cespitosa</i> aggr.	17
<i>Acer pseudoplatanus</i>	17
<i>Lonicera periclymenum</i>	16
<i>Cirsium arvense</i>	16
<i>Rosa canina</i> aggr.	15
<i>Pteridium aquilinum</i>	15
<i>Poa nemoralis</i>	15
<i>Heracleum sphondylium</i>	15
<i>Eupatorium cannabinum</i>	15
<i>Agrostis capillaris</i>	15
<i>Veronica chamaedrys</i> aggr.	14
<i>Sambucus racemosa</i>	14
<i>Pinus sylvestris</i>	14
<i>Hypericum perforatum</i>	14
<i>Cornus sanguinea</i>	14
<i>Ajuga reptans</i>	14
<i>Oxalis acetosella</i>	13
<i>Frangula alnus</i>	13
<i>Carex sylvatica</i>	13
<i>Senecio nemorensis</i> aggr.	12
<i>Holcus lanatus</i>	12
<i>Galeopsis tetrahit</i> aggr.	12
<i>Carpinus betulus</i>	12
<i>Brachypodium sylvaticum</i>	12
<i>Avenella flexuosa</i>	12
<i>Stellaria holostea</i>	11
<i>Ilex aquifolium</i>	11
<i>Glechoma hederacea</i>	11
<i>Galium mollugo</i> aggr.	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Salix caprea 75

S41 – Wet heath

Heath with prominent *Erica tetralix* on shallow, acid, nutrient-poor peats and peaty mineral soils, kept moist for much of the year and often seasonally waterlogged, through the Atlantic and subatlantic lowlands and foothills of Europe. It typically occurs in wet depressions and seepage areas within dry heaths or as a marginal zone around bogs where drainage of deeper peats can increase its extent. In milder oceanic climates, other *Erica* and *Ulex* spp. occur in richer humid heath. The habitat is frequently influenced by grazing and sod-cutting.



Corresponding alliances in EuroVegChecklist 2016

- <> OXY-01A *Ericion tetralicis* Schwickerath 1933
- <> OXY-01B *Oxycocco-Ericion tetralicis* Nordhagen ex Tx. 1937
- <> ULI-01B *Ulicion Malcuit* 1929
- > ULI-01E *Genistion micrantho-anglicae* Rivas-Mart. 1979

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Erica tetralix</i>	44
<i>Sphagnum compactum</i>	26
<i>Juncus squarrosus</i>	23

<i>Molinia caerulea</i> aggr.	22
<i>Trichophorum cespitosum</i>	22
<i>Calluna vulgaris</i>	21
<i>Campylopus pyriformis</i>	20
<i>Cephalozia connivens</i>	16

Constant species (percentage frequencies)

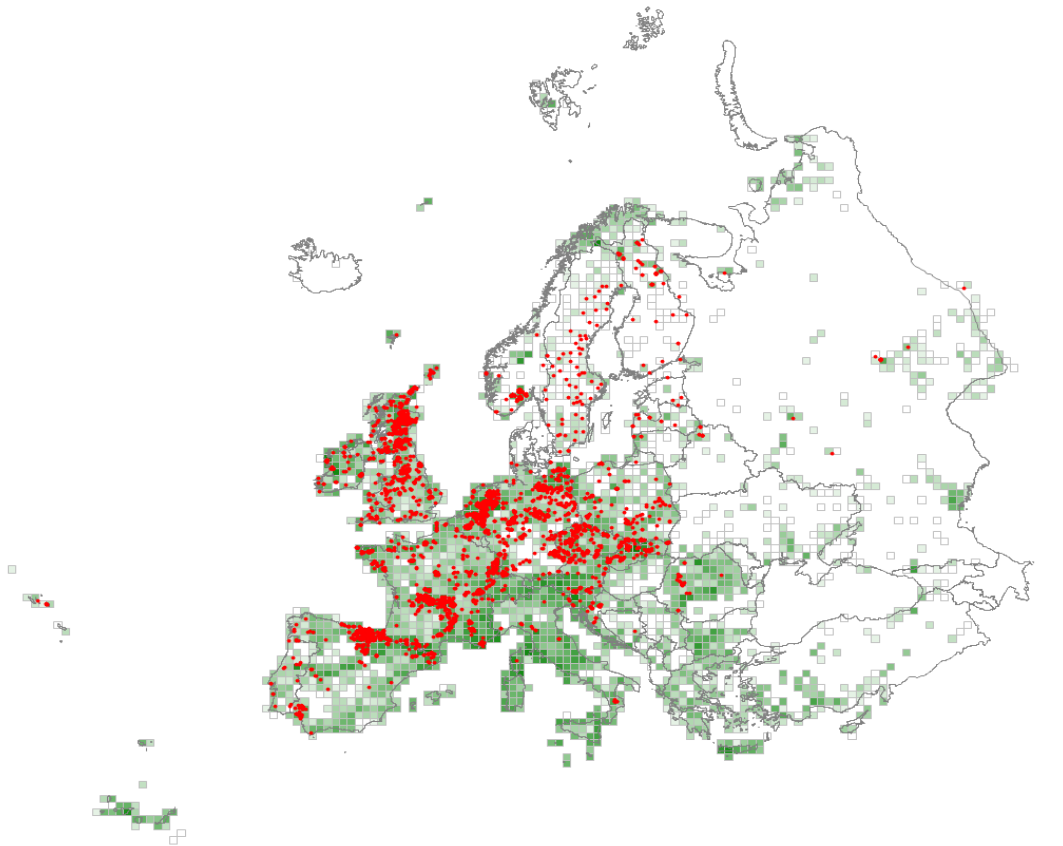
<i>Erica tetralix</i>	91
<i>Calluna vulgaris</i>	84
<i>Molinia caerulea</i> aggr.	80
<i>Trichophorum cespitosum</i>	41
<i>Potentilla erecta</i>	38
<i>Eriophorum angustifolium</i>	36
<i>Hypnum cupressiforme</i> aggr.	34
<i>Juncus squarrosus</i>	28
<i>Drosera rotundifolia</i>	25
<i>Sphagnum compactum</i>	21
<i>Carex panicea</i>	21
<i>Eriophorum vaginatum</i>	19
<i>Narthecium ossifragum</i>	18
<i>Betula pubescens</i>	16
<i>Nardus stricta</i>	15
<i>Cladonia portentosa</i>	15
<i>Rhynchospora alba</i>	14
<i>Pinus sylvestris</i>	14
<i>Dicranum scoparium</i>	14
<i>Pleurozium schreberi</i>	13
<i>Carex nigra</i>	13
<i>Sphagnum tenellum</i>	11
<i>Cephalozia connivens</i>	11
<i>Campylopus pyriformis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Erica tetralix</i>	75
<i>Calluna vulgaris</i>	38

S42 – Dry heath

Heath dominated by various ericaceous sub-shrubs on free-draining, nutrient-poor, acid sands and siliceous soils through the lowlands and foothills of Western and Central Europe, extending northwards in more oceanic situations and into continental regions in precipitation-rich areas at higher altitudes. Very often influenced by grazing and burning and frequently a secondary vegetation type derived by clearance of acidophilous forest and maintained anthropogenically.



Corresponding alliances in EuroVegChecklist 2016

- <> ULI-01A *Ericion cinereae* Böcher 1940
- <> ULI-01B *Ulicion Malcuit* 1929
- > ULI-01C *Daboecion cantabricae* (Dupont ex Rivas-Mart. 1979) Rivas-Mart. et al. in Loidi et al. 1997
- <> ULI-01D *Ericion umbellatae* Br.-Bl. in Br.-Bl. et al. 1952
- > ULI-01F *Stauracanthion boivinii* (Rivas-Mart. 1979) Rivas-Mart. et al. 1999
- <> ULI-02B *Calluno-Geniston pilosae* P. Duvigneaud 1945
- > ULI-02C *Euphorbio-Callunion* Schubert ex Passarge 1964
- <> ULI-02D *Genisto pilosae-Vaccinion* Br.-Bl. 1926

Characteristic species combination

Diagnostic species (phi coefficient * 100)

Calluna vulgaris 20

Constant species (percentage frequencies)

Calluna vulgaris 80

Avenella flexuosa 56

Vaccinium myrtillus 42

Hypnum cupressiforme aggr. 35

Pleurozium schreberi 31

Potentilla erecta 28

Dicranum scoparium 28

Agrostis capillaris 25

Vaccinium vitis-idaea 23

Festuca ovina 20

Galium saxatile 19

Carex pilulifera 19

Genista pilosa 18

Nardus stricta 17

Pinus sylvestris 16

Luzula campestris aggr. 16

Danthonia decumbens 15

Pilosella officinarum 14

Anthoxanthum odoratum aggr. 14

Festuca rubra aggr. 13

Molinia caerulea aggr. 12

Cladonia pyxidata aggr. 12

Rumex acetosella 11

Pteridium aquilinum 11

Hylocomium splendens 11

Erica cinerea 11

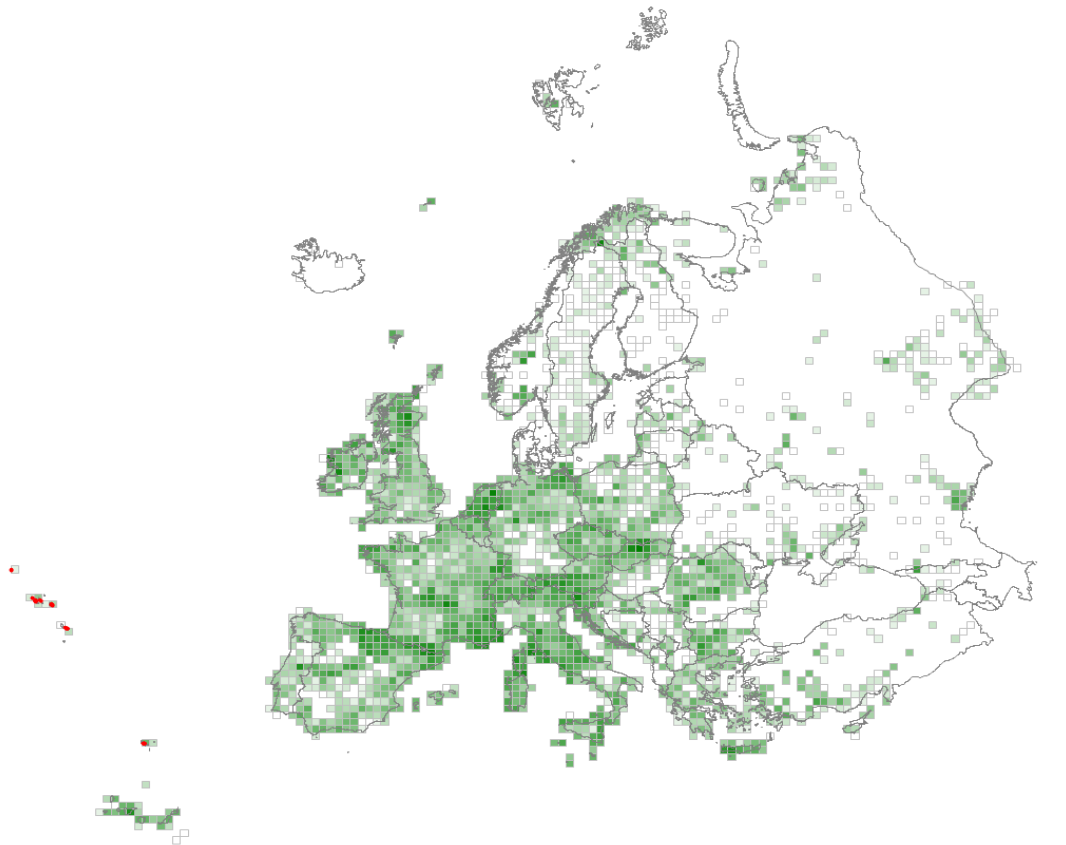
Betula pendula 11

Dominant species (percentage frequencies of occurrences with cover > 25%)

Calluna vulgaris 68

S43 – Macaronesian heath

Shrubby vegetation on thin soils in the Azores, Madeira and Canary Islands, colonising pyroclastic debris, lava, rock outcrops and landslips, sometimes cyclically renewed by further disturbance or seral to a forest. Floristically diverse between and within the archipelagos.



Corresponding alliances in EuroVegChecklist 2016

- <> LAU-01A *Myrico fayae-Ericion arboreae* Oberd. 1965
- <> LAU-01B *Polysticho falcinelli-Ericion arboreae* Rivas-Mart. et al. 2002
- > LAU-01C *Telino canariensis-Adenocarpion foliolosi* Rivas-Mart. et al. 1993
- > LAU-01D *Bystropogono punctati-Telinion maderensis* Capelo et al. 2000
- > ULI-01G *Daboecion azoricae* Lüpnitz 1975

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Thymus caespitius</i>	70
<i>Daboecia azorica</i>	59
<i>Lysimachia azorica</i>	56
<i>Tolpis azorica</i>	51
<i>Luzula elegans</i>	45
<i>Holcus rigidus</i>	44

<i>Leontodon filii</i>	41
<i>Lycopodiella cernua</i>	41
<i>Erica scoparia</i>	40
<i>Vaccinium cylindraceum</i>	39
<i>Huperzia dentata</i>	39
<i>Festuca francoi</i>	37
<i>Blechnum spicant</i>	36
<i>Platanthera micrantha</i>	33
<i>Hypericum foliosum</i>	33
<i>Leontodon rigens</i>	29
<i>Deschampsia foliosa</i>	28
<i>Agrostis castellana</i>	28
<i>Centaureum scilloides</i>	26
<i>Limonium angustebracteatum</i>	22
<i>Huperzia suberecta</i>	20
<i>Hedychium gardnerianum</i>	18
<i>Juniperus brevifolia</i>	17
<i>Calluna vulgaris</i>	16
<i>Lotus pedunculatus</i>	15

Constant species (percentage frequencies)

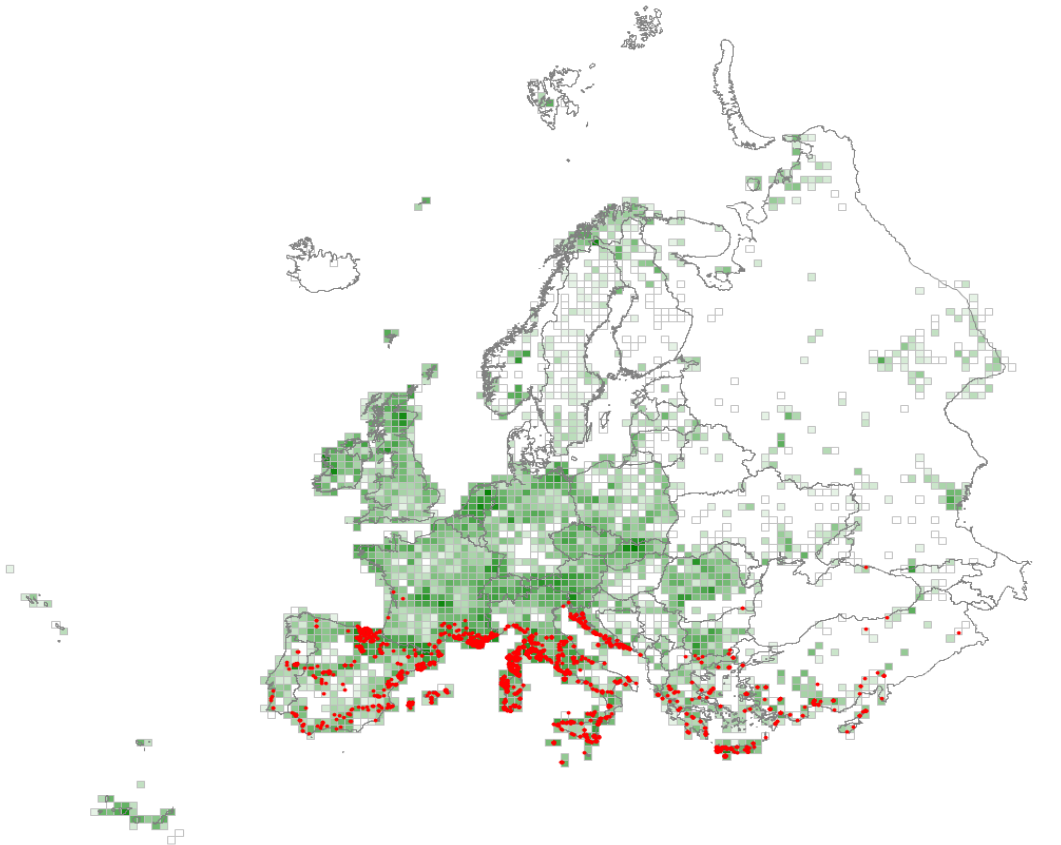
<i>Calluna vulgaris</i>	67
<i>Erica scoparia</i>	65
<i>Thymus caespititius</i>	62
<i>Blechnum spicant</i>	60
<i>Agrostis castellana</i>	52
<i>Potentilla erecta</i>	48
<i>Luzula elegans</i>	44
<i>Holcus rigidus</i>	44
<i>Daboecia azorica</i>	35
<i>Anthoxanthum odoratum</i> aggr.	33
<i>Lysimachia azorica</i>	31
<i>Tolpis azorica</i>	29
<i>Pteridium aquilinum</i>	29
<i>Festuca francoi</i>	29
<i>Vaccinium cylindraceum</i>	27
<i>Huperzia dentata</i>	25
<i>Lotus pedunculatus</i>	23
<i>Hypochaeris radicata</i>	21
<i>Deschampsia foliosa</i>	21
<i>Lycopodiella cernua</i>	17
<i>Leontodon filii</i>	17
<i>Erica arborea</i>	17
<i>Danthonia decumbens</i>	17
<i>Centaureum scilloides</i>	15
<i>Rubia peregrina</i>	12
<i>Platanthera micrantha</i>	12
<i>Leontodon saxatilis</i>	12
<i>Juniperus brevifolia</i>	12
<i>Hypericum foliosum</i>	12
<i>Carex pilulifera</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Calluna vulgaris</i>	62
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S51 – Mediterranean maquis and arborescent matorral

Evergreen sclerophyllous or laurophyllous shrub vegetation forming a dense closed canopy, with or without low emergent trees, on a wide variety of substrates and soils through the thermo- to mesomediterranean belts. May be permanent primary vegetation on xeric sites but is usually derived by the degradation of evergreen deciduous or coniferous forest and much influenced in structure and composition by grazing and fire.



Corresponding alliances in EuroVegChecklist 2016

- > QUI-04A *Ericion arboreae* (Rivas-Mart. ex Rivas-Mart. et al. 1986) Rivas-Mart. 1987
- <> QUI-04C *Asparago albi-Rhamnion oleoidis* Rivas Goday ex Rivas-Mart. 1975
- > QUI-04D *Rhamno lycioidis-Quercion cocciferae* Rivas Goday ex Rivas-Mart. 1975
- <> QUI-04E *Periplocion angustifoliae* Rivas-Mart. 1975
- <> QUI-04H *Oleo-Ceratonion siliquae* Br.-Bl. ex Guinochet et Drouineau 1944
- <> QUI-04L *Cerantonio-Pistacion lentisci* Zohary et Orshan 1959
- > QUI-04M *Pistacio terebinthi-Rhamnion alaterni* Barbero et Quézel 1975

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pistacia lentiscus</i>	21
<i>Myrtus communis</i>	19

<i>Juniperus phoenicea</i>	19
<i>Arbutus unedo</i>	19
<i>Erica arborea</i>	16

Constant species (percentage frequencies)

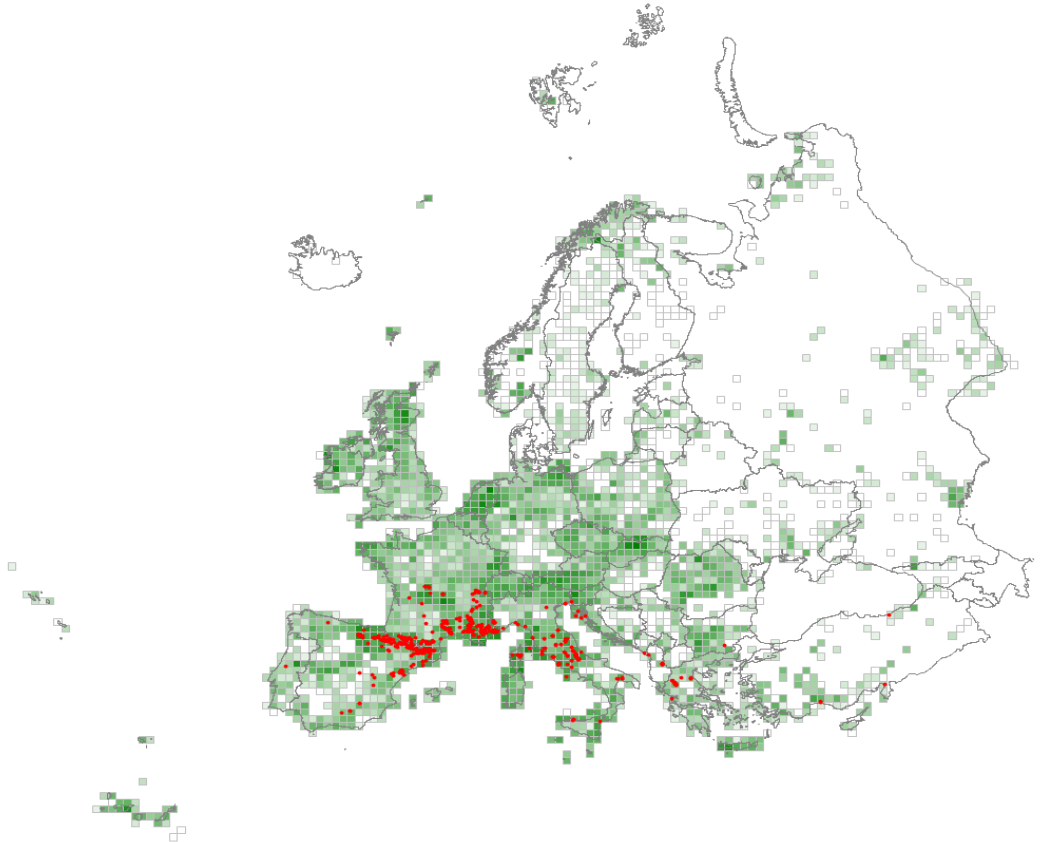
<i>Pistacia lentiscus</i>	55
<i>Erica arborea</i>	41
<i>Rubia peregrina</i>	40
<i>Smilax aspera</i>	35
<i>Asparagus acutifolius</i>	35
<i>Brachypodium retusum</i>	34
<i>Myrtus communis</i>	30
<i>Juniperus phoenicea</i>	30
<i>Arbutus unedo</i>	29
<i>Phillyrea latifolia</i>	26
<i>Juniperus oxycedrus</i> aggr.	26
<i>Phillyrea angustifolia</i>	24
<i>Cistus salviifolius</i>	23
<i>Rhamnus alaternus</i>	22
<i>Quercus ilex</i>	22
<i>Cistus monspeliensis</i>	21
<i>Lonicera implexa</i>	20
<i>Arisarum vulgare</i>	20
<i>Rubus ulmifolius</i>	16
<i>Rosmarinus officinalis</i>	15
<i>Dactylis glomerata</i>	15
<i>Cistus creticus</i>	15
<i>Calicotome villosa</i>	14
<i>Prasium majus</i>	13
<i>Olea europaea</i>	13
<i>Clematis flammula</i>	13
<i>Dioscorea communis</i>	12
<i>Pulicaria odora</i>	11
<i>Daphne gnidium</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Erica arborea</i>	26
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S52 – Submediterranean pseudomaquis

Mixed deciduous-evergreen scrub of shallow, rocky, mostly calcareous soils in the lowlands and foothills of Southern Europe. Usually derived by forest degradation and much affected in structure and composition by grazing, fire and logging.



Corresponding alliances in EuroVegChecklist 2016

- <> RHA-01B Amelanchiero-Buxion O. de Bolòs et Romo in Romo 1989
- <> RHA-02B Ilici aquifolii-Crataegion laciniatae Ubaldi 2011
- <> RHA-02D Buxo-Syringion P. Fukarek ex Diklić 1965
- <> RHA-02E Paliuro-Petterion P. Fukarek 1962
- <> RHA-02H Berberido creticae-Prunion cocomiliae Bergmeier 1990
- <> RHA-02J Elytrigio nodosae-Rhuion coriariae Korzhenevskii et Ryff ex Didukh et Mucina 2014

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Buxus sempervirens</i>	49
<i>Amelanchier ovalis</i>	22

Constant species (percentage frequencies)

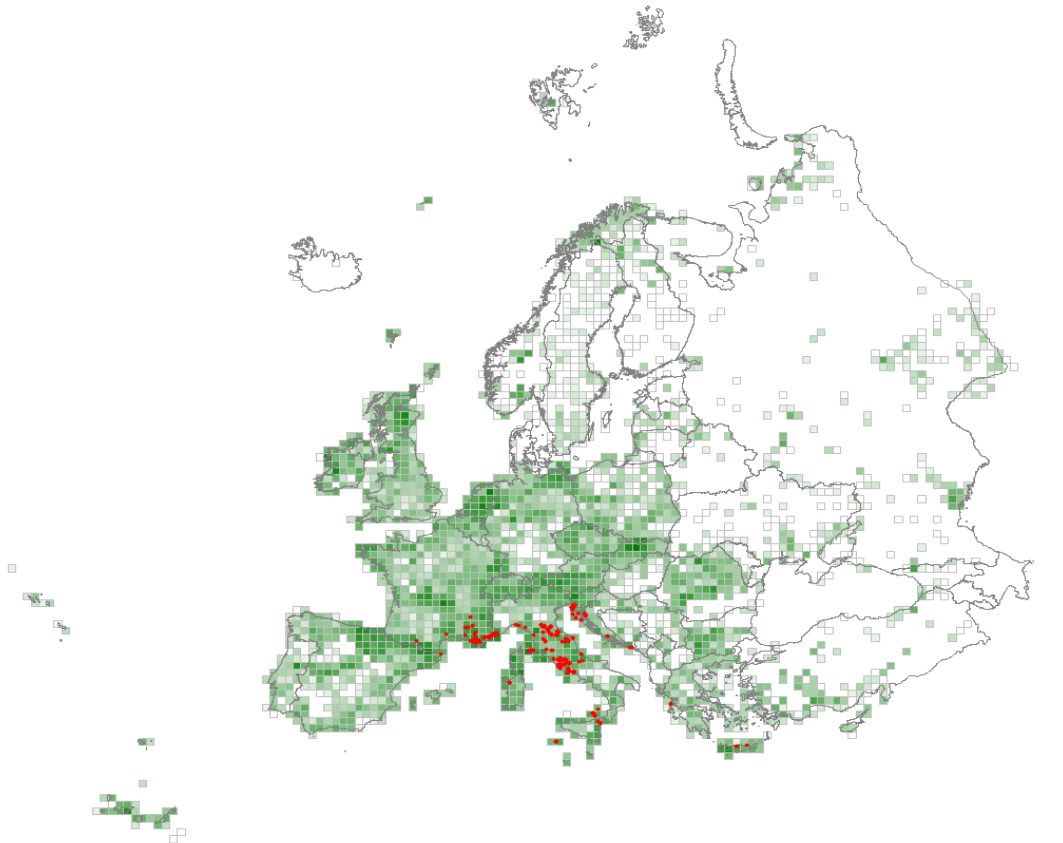
<i>Buxus sempervirens</i>	85
<i>Teucrium chamaedrys</i>	41
<i>Amelanchier ovalis</i>	39
<i>Juniperus communis</i> subsp. <i>communis</i>	33
<i>Quercus pubescens</i>	29
<i>Thymus vulgaris</i>	26
<i>Hepatica nobilis</i>	24
<i>Rubia peregrina</i>	23
<i>Crataegus monogyna</i>	23
<i>Carex humilis</i>	21
<i>Primula veris</i>	20
<i>Bromopsis erecta</i>	19
<i>Pinus sylvestris</i>	18
<i>Genista scorpius</i>	18
<i>Corylus avellana</i>	18
<i>Rosa canina</i> aggr.	16
<i>Hedera helix</i> aggr.	16
<i>Carex halleriana</i>	16
<i>Juniperus oxycedrus</i> aggr.	15
<i>Helianthemum nummularium</i>	15
<i>Fragaria vesca</i>	15
<i>Coronilla minima</i>	15
<i>Lonicera xylosteum</i>	14
<i>Lavandula angustifolia</i>	14
<i>Hippocrepis emerus</i>	14
<i>Helleborus foetidus</i>	14
<i>Rhamnus saxatilis</i>	13
<i>Quercus ilex</i>	13
<i>Prunus spinosa</i>	13
<i>Dactylis glomerata</i>	13
<i>Cytisophyllum sessilifolium</i>	13
<i>Cruciata glabra</i>	13
<i>Aphyllanthes monspeliensis</i>	13
<i>Sorbus aria</i> aggr.	12
<i>Koeleria vallesiana</i>	12
<i>Helictochloa pratensis</i>	12
<i>Genista hispanica</i>	12
<i>Fraxinus ornus</i>	12
<i>Festuca ovina</i>	12
<i>Asparagus acutifolius</i>	12
<i>Vincetoxicum hirundinaria</i>	11
<i>Viburnum lantana</i>	11
<i>Silene nutans</i>	11
<i>Rubus ulmifolius</i>	11
<i>Hieracium murorum</i>	11
<i>Brachypodium rupestre</i>	11
<i>Brachypodium pinnatum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Buxus sempervirens</i>	84
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S53 – *Spartium junceum* scrub

Secondary scrub dominated by Spanish broom (*Spartium junceum*), typical of disturbed, open, sunny situations on a wide variety of soils through the Mediterranean, where its rapid establishment is favoured by post-fire seed germination, aggressive rooting, nitrogen-fixation and unpalatability.



Corresponding alliances in EuroVegChecklist 2016

- <> CYT-03A Sarothamnion scoparii Oberd. 1957
- <> CYT-03B Cytision oromediterraneo-scoparii Rivas-Mart. et al. 2002
- <> CYT-03C Erico scopariae-Cytision scoparii Mucina in Mucina et al. 2016

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Spartium junceum</i>	64
<i>Rubus ulmifolius</i>	20
<i>Clematis vitalba</i>	17
<i>Brachypodium rupestre</i>	16

Constant species (percentage frequencies)

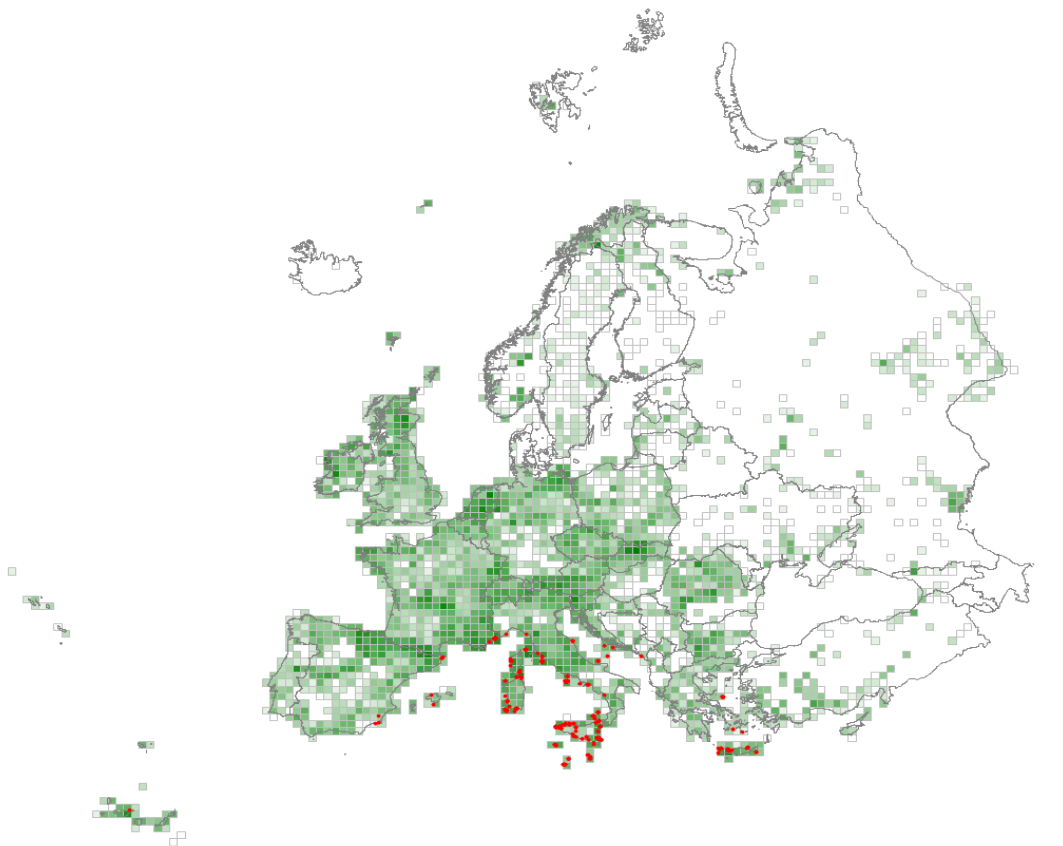
<i>Spartium junceum</i>	100
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<i>Rubus ulmifolius</i>	57
<i>Dactylis glomerata</i>	44
<i>Clematis vitalba</i>	36
<i>Asparagus acutifolius</i>	35
<i>Rubia peregrina</i>	32
<i>Crataegus monogyna</i>	32
<i>Rosa canina</i> aggr.	27
<i>Quercus pubescens</i>	27
<i>Daucus carota</i>	27
<i>Brachypodium rupestre</i>	26
<i>Sanguisorba minor</i> aggr.	24
<i>Teucrium chamaedrys</i>	23
<i>Bromopsis erecta</i>	23
<i>Prunus spinosa</i>	22
<i>Fraxinus ornus</i>	21
<i>Dittrichia viscosa</i>	21
<i>Clematis flammula</i>	21
<i>Dorycnium pentaphyllum</i>	20
<i>Bituminaria bituminosa</i>	20
<i>Cornus sanguinea</i>	19
<i>Dorycnium hirsutum</i>	17
<i>Carex flacca</i>	17
<i>Ulmus minor</i>	16
<i>Rhamnus alaternus</i>	16
<i>Foeniculum vulgare</i>	16
<i>Pistacia lentiscus</i>	15
<i>Rosa sempervirens</i>	14
<i>Juniperus communis</i> subsp. <i>communis</i>	14
<i>Helichrysum italicum</i>	14
<i>Carlina corymbosa</i> aggr.	14
<i>Lonicera etrusca</i>	13
<i>Hypericum perforatum</i>	13
<i>Hippocrepis emerus</i>	13
<i>Eryngium campestre</i>	13
<i>Brachypodium phoenicoides</i>	13
<i>Blackstonia perfoliata</i>	13
<i>Picris hieracioides</i>	12
<i>Juniperus oxycedrus</i> aggr.	12
<i>Galium mollugo</i> aggr.	12
<i>Lotus corniculatus</i>	11
<i>Centaureum erythraea</i>	11
<i>Brachypodium retusum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Spartium junceum 100

S54 – Thermomediterranean arid scrub

Scrub with a usually low and rather open cover of shrubs with sub-shrubs, dwarf shrubs and herbs between, on dry soils of varied composition in the thermomediterranean belt, and of very diverse local composition. Primary and permanent in more arid and exposed situations, but can be successional to a forest and often much affected by grazing.



Corresponding alliances in EuroVegChecklist 2016

- <> QUI-04C Asparago albi-Rhamnion oleoidis Rivas Goday ex Rivas-Mart. 1975
- <> QUI-04E Periplocion angustifoliae Rivas-Mart. 1975
- > QUI-04K Phlomido fruticosae-Euphorbion dendroidis Mucina et Dimopoulos in Mucina et al. 2016

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Euphorbia dendroides</i>	61
<i>Teucrium fruticans</i>	36
<i>Genista ephedroides</i>	36
<i>Prasium majus</i>	29
<i>Pistacia lentiscus</i>	25
<i>Olea europaea</i>	25

<i>Ampelodesmos mauritanicus</i>	24
<i>Ruta chalepensis</i>	24
<i>Arisarum vulgare</i>	23
<i>Chamaerops humilis</i>	23
<i>Asparagus albus</i>	23
<i>Drimia pancracion</i>	22
<i>Hyparrhenia hirta</i>	21
<i>Erica multiflora</i>	21
<i>Asphodelus ramosus</i>	20
<i>Cachrys libanotis</i>	19
<i>Euphorbia papillaris</i>	18
<i>Ferula communis</i> aggr.	18
<i>Micromeria graeca</i>	17
<i>Asparagus acutifolius</i>	17
<i>Teucrium flavum</i>	16
<i>Lomelosia cretica</i>	16
<i>Carlina sicula</i>	16

Constant species (percentage frequencies)

<i>Euphorbia dendroides</i>	76
<i>Pistacia lentiscus</i>	65
<i>Asparagus acutifolius</i>	45
<i>Prasium majus</i>	44
<i>Arisarum vulgare</i>	40
<i>Hyparrhenia hirta</i>	39
<i>Olea europaea</i>	37
<i>Brachypodium retusum</i>	35
<i>Asphodelus ramosus</i>	34
<i>Teucrium fruticans</i>	33
<i>Dactylis glomerata</i>	33
<i>Rubia peregrina</i>	29
<i>Bituminaria bituminosa</i>	27
<i>Smilax aspera</i>	26
<i>Ampelodesmos mauritanicus</i>	22
<i>Chamaerops humilis</i>	21
<i>Erica multiflora</i>	20
<i>Asparagus albus</i>	20
<i>Reichardia picroides</i>	19
<i>Phagnalon saxatile</i>	19
<i>Micromeria graeca</i>	19
<i>Phillyrea latifolia</i>	18
<i>Periploca angustifolia</i>	18
<i>Myrtus communis</i>	18
<i>Calicotome villosa</i>	18
<i>Ruta chalepensis</i>	16
<i>Rhamnus alaternus</i>	16
<i>Genista ephedroides</i>	16
<i>Cistus salviifolius</i>	16
<i>Cistus monspeliensis</i>	16
<i>Teucrium flavum</i>	15
<i>Rosmarinus officinalis</i>	15
<i>Ferula communis</i> aggr.	14
<i>Piptatherum miliaceum</i>	12
<i>Lonicera implexa</i>	12
<i>Drimia pancracion</i>	12

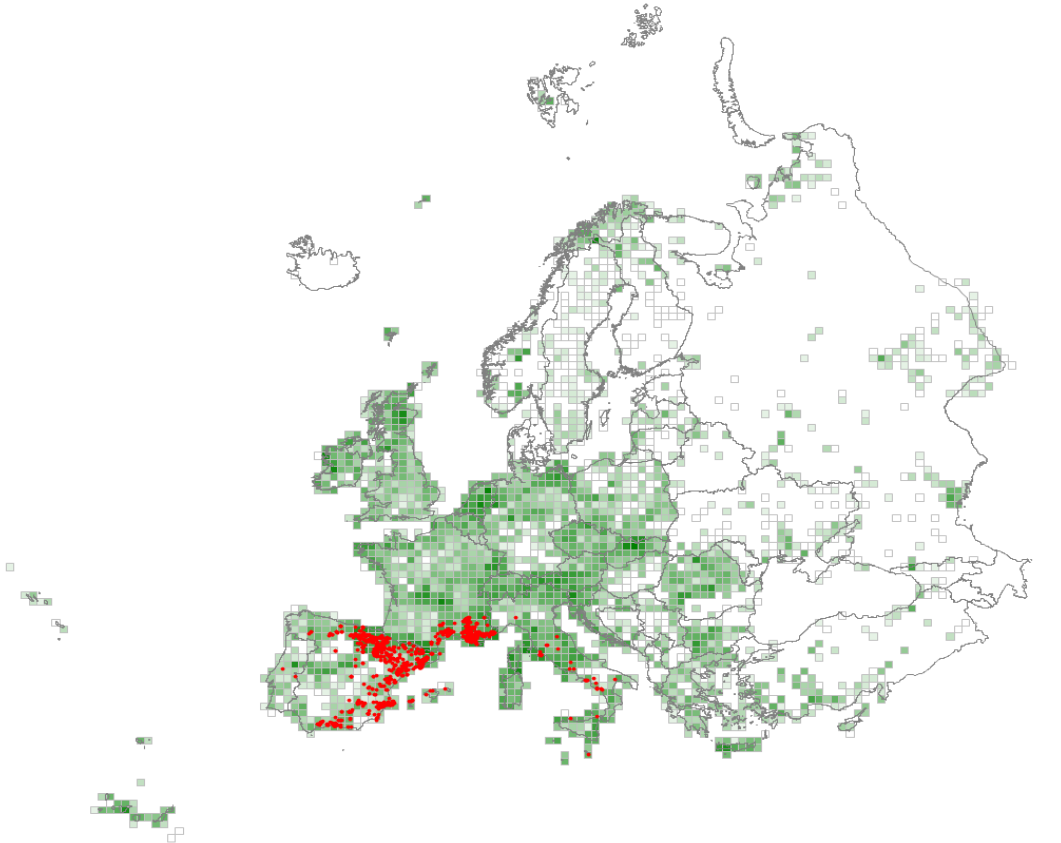
<i>Lavandula stoechas</i>	11
<i>Hypochaeris achyrophorus</i>	11
<i>Daucus carota</i>	11
<i>Ceratonia siliqua</i>	11
<i>Briza maxima</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Euphorbia dendroides</i>	61
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S61 – Western basiphilous garrigue

Sub-shrub vegetation dominated by nanophanerophytes and chamaephytes on thin, base-rich soils through the western thermo- to mesomediterranean belts. Its species composition is very diverse in response to differences in local climate and soils. On rocky slopes, it can be permanent vegetation but is often derived from forest clearance and is much affected by grazing and fire.



Corresponding alliances in EuroVegChecklist 2016

- > ONO-01C *Plantagini discoloris-Thymion mastigophori* Molina et Izco 1989
- > ONO-01D *Seselio granatensis-Festucion hystricis* Rivas-Mart. in Rivas-Mart. et al. 2011
- > ONO-02E *Genistion lobelii* Molinier 1934
- > ONO-02H *Lavandulo angustifoliae-Genistion cinereae* Barbero et al. 1974
- > ROS-01A *Lavandulo latifoliae-Genistion boissieri* Rivas Goday et Rivas-Mart. 1969
- > ROS-01B *Eryngio trifidi-Ulicion erinacei* Rothmaler 1943
- > ROS-01C *Ulici densi-Thymion sylvestris* (Capelo et al. 1993) J.C. Costa et al. 2009
- > ROS-01D *Sideritido incanae-Salvion lavandulifoliae* (Rivas Goday et Rivas-Mart. 1969) Izco et Molina 1989
- > ROS-01E *Helianthemo italici-Aphyllanthion monspeliensis* Díez Garretas et al. 1998
- <> ROS-01F *Rosmarinion officinalis* Molinier 1934
- > ROS-01G *Hypericion ericoidis* Esteve ex M. Costa et Peris 1985
- <> ROS-01H *Hypericion balearici* O. de Bolòs et Molinier 1958

- > ROS-011 Cisto cretici-Genistion corsicae Arrigoni et Di Tommaso 1991
- > ROS-01J Polygalo-Seslerion insularis Arrigoni ex Arrigoni et Di Tommaso 1986
- > ROS-04A Thymo-Sideritidion leucanthae O. de Bolòs 1957
- > ROS-04B Anthyllido terniflorae-Salsolion papillosae Rivas Goday et Esteve 1968
- > ROS-04C Sideritidion bourgaeanae Peinado et Martínez-Parras in Peinado et al. 1992
- <> ROS-05A Andryalion agardhii Rivas-Mart. ex Rivas Goday et Mayor 1966
- > ROS-05B Lavandulion lanatae (Martínez-Parras et al. 1984) Rivas-Mart. et al. 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Coris monspeliensis</i>	35
<i>Lavandula latifolia</i>	33
<i>Thymus vulgaris</i>	32
<i>Staehelina dubia</i>	32
<i>Aphyllanthes monspeliensis</i>	31
<i>Fumana ericifolia</i>	31
<i>Genista scorpius</i>	29
<i>Globularia alypum</i>	29
<i>Rosmarinus officinalis</i>	29
<i>Argyrobium zanonii</i>	28
<i>Helictochloa bromoides</i>	27
<i>Rhaponticum coniferum</i>	26
<i>Erica multiflora</i>	25
<i>Ononis minutissima</i>	25
<i>Fumana thymifolia</i>	25
<i>Fumana ericoides</i>	22
<i>Lithodora fruticosa</i>	22
<i>Hippocrepis scorpioides</i>	22
<i>Pinus halepensis</i>	22
<i>Bupleurum fruticosum</i>	21
<i>Helianthemum marifolium</i>	21
<i>Cistus albidus</i>	21
<i>Stipa juncea</i>	21
<i>Orobanche latisquama</i>	21
<i>Koeleria vallesiana</i>	21
<i>Coronilla minima</i>	20
<i>Brachypodium retusum</i>	20
<i>Stipa offneri</i>	20
<i>Linum suffruticosum</i> aggr.	19
<i>Helichrysum stoechas</i>	19
<i>Ulex parviflorus</i>	18
<i>Dorycnium pentaphyllum</i>	18
<i>Atractylis humilis</i>	18
<i>Carex halleriana</i>	18
<i>Centaurea linifolia</i>	17
<i>Cistus clusii</i>	17
<i>Helianthemum italicum</i>	16
<i>Quercus coccifera</i>	16
<i>Polygala rupestris</i>	16
<i>Thymelaea tinctoria</i>	16
<i>Convolvulus lanuginosus</i>	15
<i>Helianthemum violaceum</i>	15

Constant species (percentage frequencies)

<i>Thymus vulgaris</i>	68
<i>Rosmarinus officinalis</i>	52
<i>Brachypodium retusum</i>	52
<i>Aphyllanthes monspeliensis</i>	45
<i>Genista scorpius</i>	42
<i>Koeleria vallesiana</i>	41
<i>Lavandula latifolia</i>	37
<i>Dorycnium pentaphyllum</i>	37
<i>Pinus halepensis</i>	36
<i>Teucrium polium</i> aggr.	35
<i>Helictochloa bromoides</i>	35
<i>Coris monspeliensis</i>	35
<i>Helichrysum stoechas</i>	33
<i>Fumana ericifolia</i>	32
<i>Juniperus oxycedrus</i> aggr.	30
<i>Coronilla minima</i>	30
<i>Argyrolobium zanonii</i>	30
<i>Staehelina dubia</i>	28
<i>Carex halleriana</i>	28
<i>Fumana thymifolia</i>	27
<i>Ononis minutissima</i>	26
<i>Quercus coccifera</i>	25
<i>Erica multiflora</i>	24
<i>Linum suffruticosum</i> aggr.	23
<i>Fumana ericoides</i>	22
<i>Eryngium campestre</i>	22
<i>Teucrium chamaedrys</i>	21
<i>Rhaponticum coniferum</i>	21
<i>Cistus albidus</i>	20
<i>Carex humilis</i>	19
<i>Sedum sediforme</i>	18
<i>Globularia alypum</i>	17
<i>Bupleurum fruticosum</i>	17
<i>Bromopsis erecta</i>	17
<i>Helianthemum italicum</i>	16
<i>Asperula cynanchica</i>	15
<i>Ulex parviflorus</i>	14
<i>Pistacia lentiscus</i>	14
<i>Lithodora fruticosa</i>	14
<i>Helianthemum apenninum</i>	14
<i>Festuca rubra</i> aggr.	14
<i>Anthyllis vulneraria</i>	14
<i>Genista hispanica</i>	13
<i>Fumana procumbens</i>	13
<i>Dactylis glomerata</i>	13
<i>Buxus sempervirens</i>	13
<i>Atractylis humilis</i>	13
<i>Stipa offneri</i>	12
<i>Rubia peregrina</i>	12
<i>Quercus ilex</i>	12
<i>Pilosella officinarum</i>	12
<i>Brachypodium phoenicoides</i>	12
<i>Phillyrea angustifolia</i>	11
<i>Juniperus phoenicea</i>	11

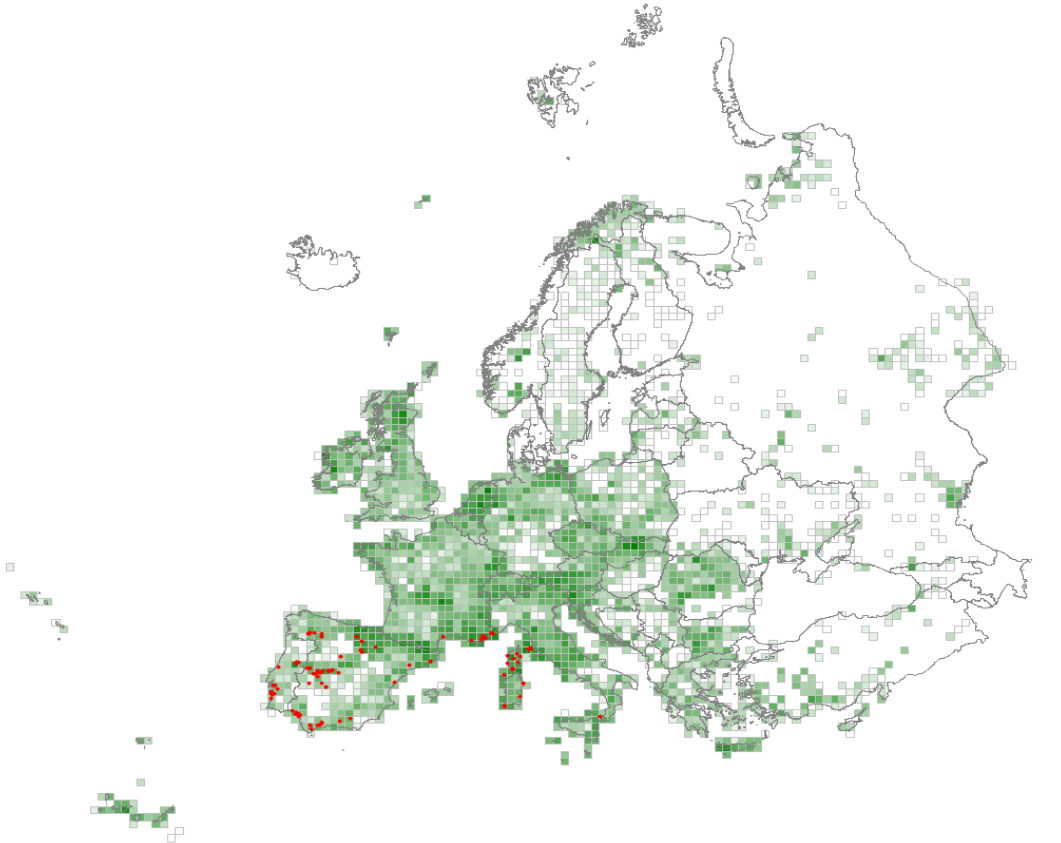
<i>Helianthemum canum</i>	11
<i>Globularia vulgaris</i>	11
<i>Galium corrudifolium</i>	11
<i>Astragalus monspessulanus</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Rosmarinus officinalis</i>	28
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S62 – Western acidophilous garrigue

Sub-shrub vegetation dominated by nanophanerophytes on thin, acidic soils, developed on hard silicate bedrock or soft sand, through the western thermo- to lower supramediterranean belts. Its species composition is very diverse in response to differences in local climate and soils. On rocky slopes, it can be permanent vegetation but is often derived from forest clearance or abandonment of farm fields and is much affected by grazing and fire.



Corresponding alliances in EuroVegChecklist 2016

- > LAV-01A *Cistion laurifolii* Rivas Goday in Rivas Goday et al. 1956
- > LAV-01B *Staehelino-Ulicion baetici* Rivas Goday et Rivas-Mart. 1969
- > LAV-01C *Ulici argentei-Cistion ladaniferi* Br.-Bl. et al. 1964
- <> LAV-01D *Quercion fruticosae* Rothmaler 1954
- > LAV-01E *Cistion ladaniferi* Br.-Bl. ex A. Bolòs et O. Bolòs in A. Bolòs 1950
- > LAV-01F *Calicotomo villosae-Genistion tyrrhenae* Biondi 2000
- > LAV-01G *Teucrium mari* (Gamisans et Muracciole 1984) Biondi et Mossa 1992
- > LAV-01H *Armerio sardoae-Genistion salzmännii* Arrigoni 1986
- <> LAV-02A *Coremation albi* Rothmaler 1943
- <> ULI-01D *Ericion umbellatae* Br.-Bl. in Br.-Bl. et al. 1952

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cytinus hypocistis</i>	52
<i>Cistus ladanifer</i>	46
<i>Cistus halimifolius</i>	42
<i>Lavandula pedunculata</i>	36
<i>Erica australis</i>	36
<i>Lavandula stoechas</i>	33
<i>Cistus calycinus</i>	31
<i>Ulex genistoides</i>	28
<i>Genista hirsuta</i>	27
<i>Cistus ocymoides</i>	27
<i>Thymus mastichina</i>	26
<i>Thapsia villosa</i>	24
<i>Tuberaria lignosa</i>	24
<i>Cistus crispus</i>	23
<i>Erica umbellata</i>	23
<i>Erophaca baetica</i>	23
<i>Helichrysum italicum</i>	22
<i>Cistus salviifolius</i>	22
<i>Calicotome spinosa</i>	21
<i>Thymus albicans</i>	20
<i>Ulex parviflorus</i>	19
<i>Thymus capitellatus</i>	19
<i>Cistus populifolius</i>	19
<i>Daphne gnidium</i>	19
<i>Armeria velutina</i>	18
<i>Genista tridentata</i>	18
<i>Hypericum linarifolium</i>	16
<i>Genista triacanthos</i>	16
<i>Valerianella eriocarpa</i>	15
<i>Cytisus multiflorus</i>	15
<i>Tuberaria guttata</i>	15

Constant species (percentage frequencies)

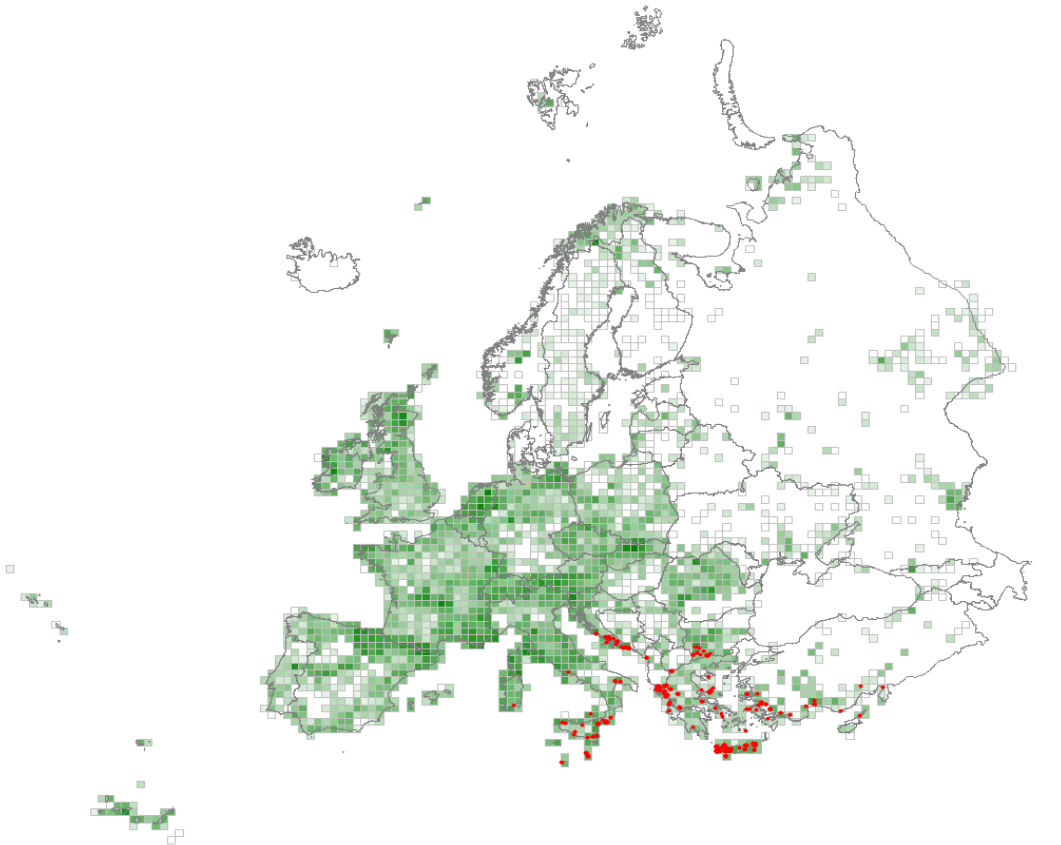
<i>Helichrysum italicum</i>	43
<i>Cytinus hypocistis</i>	42
<i>Cistus salviifolius</i>	41
<i>Lavandula stoechas</i>	40
<i>Cistus ladanifer</i>	30
<i>Pistacia lentiscus</i>	29
<i>Lavandula pedunculata</i>	29
<i>Daphne gnidium</i>	27
<i>Dactylis glomerata</i>	27
<i>Cistus halimifolius</i>	27
<i>Erica australis</i>	24
<i>Tuberaria guttata</i>	23
<i>Rosmarinus officinalis</i>	23
<i>Cistus monspeliensis</i>	22
<i>Brachypodium retusum</i>	22
<i>Juniperus oxycedrus</i> aggr.	21
<i>Erica arborea</i>	21
<i>Phillyrea angustifolia</i>	19
<i>Carlina corymbosa</i> aggr.	19

<i>Thymus mastichina</i>	18
<i>Calicotome spinosa</i>	18
<i>Rubia peregrina</i>	17
<i>Briza maxima</i>	17
<i>Thapsia villosa</i>	16
<i>Pinus pinea</i>	16
<i>Pinus halepensis</i>	16
<i>Calluna vulgaris</i>	16
<i>Arbutus unedo</i>	16
<i>Ulex parviflorus</i>	15
<i>Pinus pinaster</i>	15
<i>Asparagus acutifolius</i>	15
<i>Erica umbellata</i>	13
<i>Cistus albidus</i>	13
<i>Thymus vulgaris</i>	12
<i>Quercus rotundifolia</i>	12
<i>Osyris alba</i>	12
<i>Juniperus phoenicea</i>	12
<i>Crucianella angustifolia</i>	12
<i>Cistus calycinus</i>	12
<i>Asterolinon linum-stellatum</i>	12
<i>Aira caryophyllea</i>	12
<i>Sanguisorba minor</i> aggr.	11
<i>Quercus suber</i>	11
<i>Helichrysum stoechas</i>	11
<i>Bituminaria bituminosa</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Cistus ladanifer 26

S63 – Eastern garrigue

Low, mostly evergreen sclerophyllous scrub on diverse soils occurring through the Eastern Mediterranean meso-, thermo- and occasionally supramediterranean belts, including the regions around the southern seaboard of the Black Sea. The habitat is derived from forest degradation and usually maintained by grazing and fire. Vegetation structure and composition vary greatly with local climate and human impacts.



Corresponding alliances in EuroVegChecklist 2016

- > ROS-06A Cisto cretici-Ericion manipuliflorae Horvatić 1958
- > ROS-06B Cisto eriocephali-Ericion multiflorae Biondi 2000
- <> ROS-06C Micromerion Oberd. 1954
- > ROS-06D Dorycnio-Coridothymion capitati (Oberd. 1954) S. Brullo et al. 1997

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Erica manipuliflora</i>	43
<i>Phlomis fruticosa</i>	34
<i>Thymbra capitata</i>	31
<i>Anisantha fasciculata</i>	31
<i>Phagnalon rupestre</i>	30

<i>Teucrium microphyllum</i>	29
<i>Filago aegaea</i>	27
<i>Calicotome villosa</i>	27
<i>Fumana arabica</i>	27
<i>Allium rubrovittatum</i>	26
<i>Drimia maritima</i> aggr.	26
<i>Valantia hispida</i>	26
<i>Genista acanthoclada</i>	25
<i>Cuscuta palaestina</i> aggr.	24
<i>Crucianella latifolia</i>	24
<i>Muscari spreizenhoferi</i>	24
<i>Asperula rigida</i>	23
<i>Biscutella didyma</i>	22
<i>Leontodon tuberosus</i>	22
<i>Ononis reclinata</i>	22
<i>Crepis neglecta</i> aggr.	22
<i>Cistus parviflorus</i>	21
<i>Satureja thymbra</i>	21
<i>Daucus involucratus</i>	21
<i>Sarcopoterium spinosum</i>	20
<i>Lagoecia cuminoides</i>	20
<i>Thesium humile</i>	20
<i>Urospermum picroides</i>	20
<i>Cistus creticus</i>	20
<i>Linum strictum</i> aggr.	19
<i>Gastridium phleoides</i>	19
<i>Medicago coronata</i>	19
<i>Galium murale</i>	19
<i>Galium setaceum</i>	19
<i>Bupleurum gracile</i>	19
<i>Carlina graeca</i>	18
<i>Fumana thymifolia</i>	18
<i>Hieracium heterogynum</i>	18
<i>Bromus intermedius</i>	18
<i>Atractylis cancellata</i>	18
<i>Tordylium apulum</i>	17
<i>Asparagus aphyllus</i>	17
<i>Polygala venulosa</i>	17
<i>Hypochaeris achyrophorus</i>	17
<i>Micromeria juliana</i>	16
<i>Catapodium rigidum</i>	16
<i>Scorpiurus muricatus</i>	16
<i>Trifolium infamia-ponertii</i>	16
<i>Picris rhagadioloides</i>	16
<i>Piptatherum coerulescens</i>	15

Constant species (percentage frequencies)

<i>Dactylis glomerata</i>	45
<i>Thymbra capitata</i>	40
<i>Drimia maritima</i> aggr.	38
<i>Calicotome villosa</i>	37
<i>Brachypodium retusum</i>	36
<i>Erica manipuliflora</i>	34
<i>Trifolium campestre</i>	31
<i>Cistus creticus</i>	31

<i>Anagallis arvensis</i>	31
<i>Phlomis fruticosa</i>	30
<i>Phagnalon rupestre</i>	30
<i>Linum strictum</i> aggr.	29
<i>Leontodon tuberosus</i>	29
<i>Catapodium rigidum</i>	28
<i>Sarcopoterium spinosum</i>	26
<i>Hypochaeris achyrophorus</i>	25
<i>Asphodelus ramosus</i>	25
<i>Anisantha fasciculata</i>	25
<i>Pistacia lentiscus</i>	24
<i>Valantia hispida</i>	23
<i>Briza maxima</i>	23
<i>Trifolium scabrum</i>	22
<i>Teucrium polium</i> aggr.	22
<i>Sherardia arvensis</i>	22
<i>Galium murale</i>	22
<i>Crucianella latifolia</i>	22
<i>Urospermum picroides</i>	21
<i>Crepis neglecta</i> aggr.	21
<i>Cistus salviifolius</i>	21
<i>Avena barbata</i>	21
<i>Asparagus aphyllus</i>	21
<i>Trachynia distachya</i>	20
<i>Fumana thymifolia</i>	20
<i>Teucrium microphyllum</i>	19
<i>Genista acanthoclada</i>	19
<i>Rostraria cristata</i>	18
<i>Olea europaea</i>	18
<i>Lagoecia cuminoides</i>	18
<i>Hyparrhenia hirta</i>	18
<i>Asparagus acutifolius</i>	18
<i>Tordylium apulum</i>	17
<i>Ononis reclinata</i>	17
<i>Allium rubrovittatum</i>	17
<i>Fumana arabica</i>	16
<i>Filago aegaea</i>	16
<i>Carlina corymbosa</i> aggr.	16
<i>Asterolinon linum-stellatum</i>	16
<i>Arisarum vulgare</i>	16
<i>Scorpiurus muricatus</i>	15
<i>Satureja thymbra</i>	15
<i>Piptatherum coerulescens</i>	15
<i>Phillyrea latifolia</i>	15
<i>Biscutella didyma</i>	15
<i>Trifolium stellatum</i>	14
<i>Sonchus bulbosus</i>	14
<i>Quercus coccifera</i>	14
<i>Poa bulbosa</i>	14
<i>Muscari spreizenhoferi</i>	14
<i>Daucus involucratus</i>	14
<i>Bromus intermedius</i>	14
<i>Asperula rigida</i>	14
<i>Medicago coronata</i>	13
<i>Hedypnois rhagadioloides</i>	13

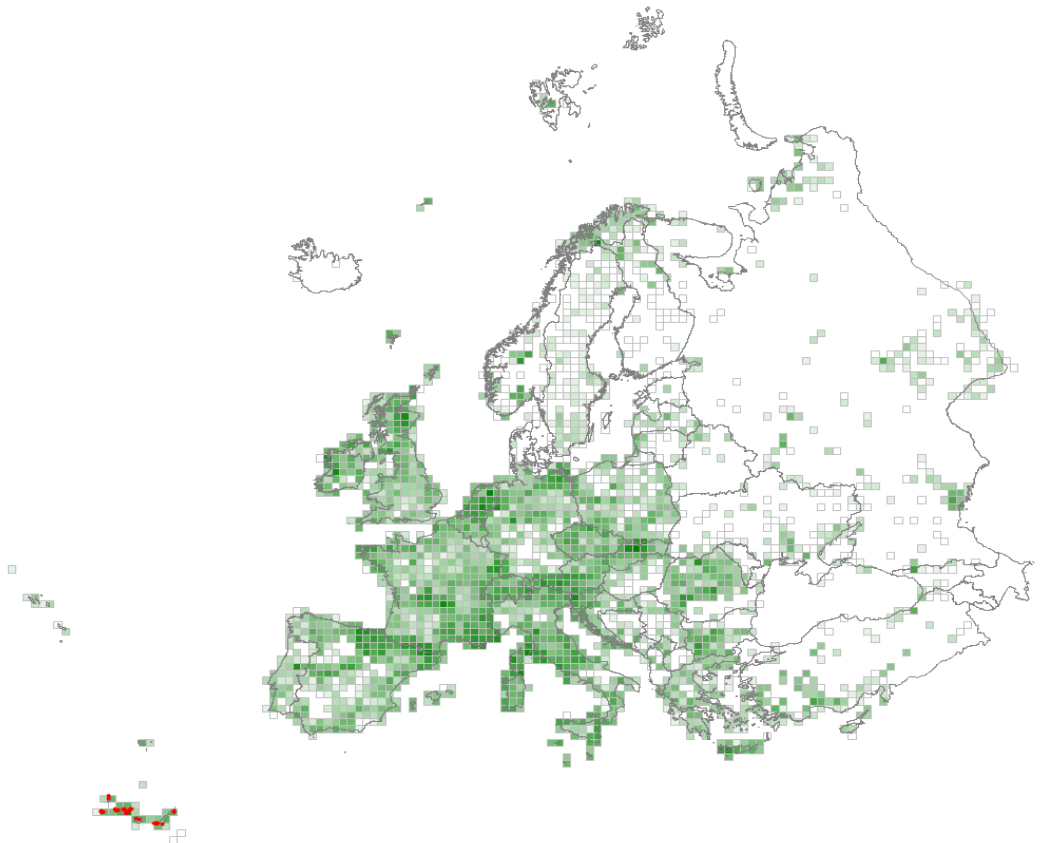
<i>Euphorbia peplus</i>	13
<i>Cuscuta palaestina</i> aggr.	13
<i>Valantia muralis</i>	12
<i>Juniperus oxycedrus</i> aggr.	12
<i>Helichrysum stoechas</i>	12
<i>Cynosurus echinatus</i>	12
<i>Carlina graeca</i>	12
<i>Bituminaria bituminosa</i>	12
<i>Anthyllis vulneraria</i>	12
<i>Sideritis romana</i>	11
<i>Scandix pecten-veneris</i> aggr.	11
<i>Psilurus incurvus</i>	11
<i>Prasium majus</i>	11
<i>Pallenis spinosa</i>	11
<i>Micromeria juliana</i>	11
<i>Galium setaceum</i>	11
<i>Centaurium tenuiflorum</i>	11
<i>Atractylis cancellata</i>	11
<i>Asphodeline lutea</i>	11
<i>Achnatherum bromoides</i> aggr.	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Erica manipuliflora</i>	29
<i>Phlomis fruticosa</i>	26

S64 – Macaronesian garrigue

Low shrub vegetation with an open canopy, of the Canary Islands, Azores and Madeira.



Corresponding alliances in EuroVegChecklist 2016

- > OLE-02A Cisto canariensis-Micromerion hyssopifoliae Pérez de Paz et al. 1990 corr. Rivas-Mart. in Rivas-Mart. 2011
- > OLE-02B Soncho ustulati-Artemision argenteae Capelo et al. 2000

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Micromeria hyssopifolia</i>	65
<i>Pericallis lanata</i>	35
<i>Cistus monspeliensis</i>	32
<i>Echium decaisnei</i>	31
<i>Cistus symphytifolius</i>	31
<i>Asteriscus sericeus</i>	28
<i>Aeonium holochrysum</i>	28
<i>Euphorbia regis-jubae</i>	26
<i>Echium virescens</i>	26
<i>Artemisia thuscula</i>	25

<i>Rumex lunaria</i>	25
<i>Asphodelus aestivus</i>	22
<i>Ononis pendula</i>	21
<i>Rubia fruticosa</i>	19
<i>Argyranthemum frutescens</i>	19
<i>Lobularia canariensis</i>	19
<i>Cytisus proliferus</i>	19
<i>Echium hierrense</i>	19
<i>Aeonium urbicum</i>	18
<i>Kleinia neriifolia</i>	18
<i>Hypericum reflexum</i>	17
<i>Carlina salicifolia</i>	17
<i>Trisetaria loeflingiana</i>	17
<i>Argyranthemum foeniculaceum</i>	17
<i>Polycarpaea divaricata</i>	17
<i>Tolpis laciniata</i>	17
<i>Allosorus guanchicus</i>	15
<i>Pterocephalus dumetorus</i>	15
<i>Aichryson bethencourtianum</i>	15

Constant species (percentage frequencies)

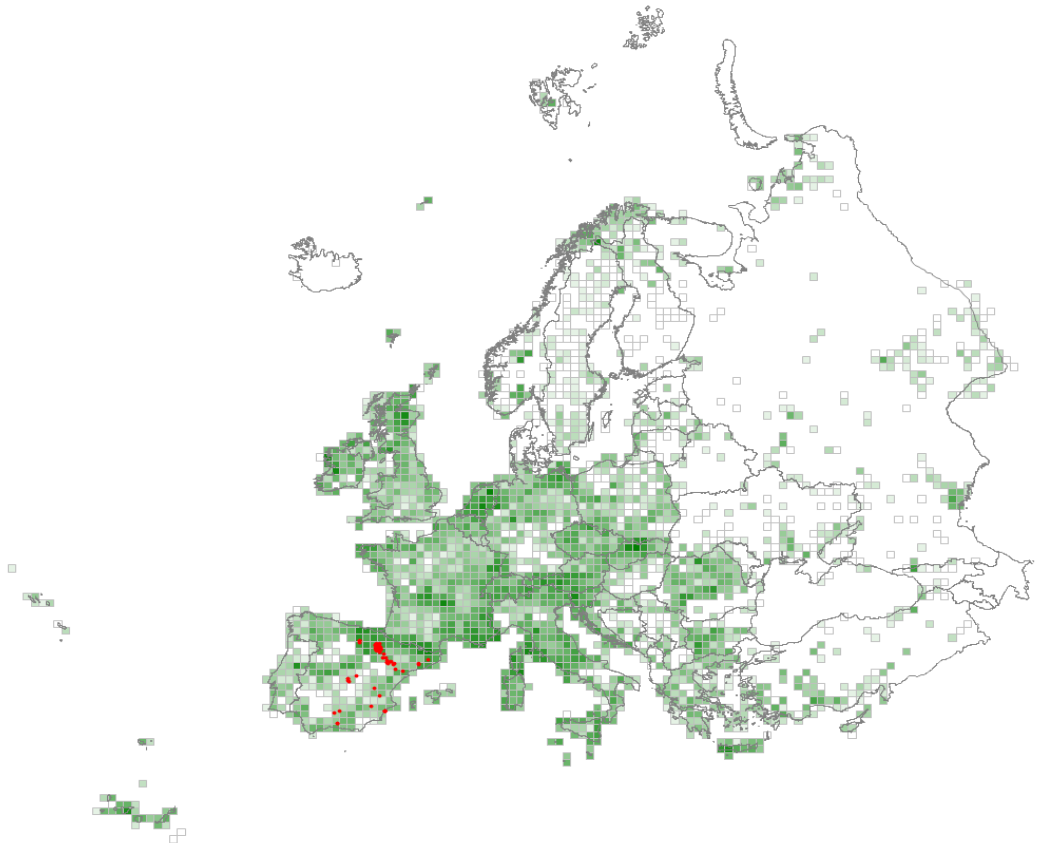
<i>Micromeria hyssopifolia</i>	68
<i>Cistus monspeliensis</i>	63
<i>Cistus symphytifolius</i>	34
<i>Euphorbia regis-jubae</i>	32
<i>Asphodelus aestivus</i>	29
<i>Hyparrhenia hirta</i>	28
<i>Bituminaria bituminosa</i>	26
<i>Cytisus proliferus</i>	23
<i>Dittrichia viscosa</i>	22
<i>Pericallis lanata</i>	20
<i>Kleinia neriifolia</i>	20
<i>Carlina salicifolia</i>	20
<i>Rubia fruticosa</i>	18
<i>Rumex lunaria</i>	16
<i>Echium virescens</i>	16
<i>Argyranthemum frutescens</i>	16
<i>Aeonium holochrysum</i>	16
<i>Micromeria varia</i>	15
<i>Echium decaisnei</i>	15
<i>Pteridium aquilinum</i>	14
<i>Pinus canariensis</i>	14
<i>Phagnalon saxatile</i>	14
<i>Artemisia thuscula</i>	14
<i>Trachynia distachya</i>	13
<i>Launaea arborescens</i>	13
<i>Erica arborea</i>	13
<i>Hypericum reflexum</i>	11
<i>Globularia salicina</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Cistus monspeliensis</i>	57
<i>Micromeria hyssopifolia</i>	40

S65 – Mediterranean gypsum scrub

Open chamaephyte scrub with a lichen crust and rainy-spring annual herb flora, on gypsum-rich substrates in areas with a dry to semi-arid mediterranean climate in the Iberian Peninsula. The extreme climatic and edaphic conditions maintain the habitat as naturally stable, but it can bear some light grazing.



Corresponding alliances in EuroVegChecklist 2016

- > ROS-03A *Lepidion subulati* Bellot et Rivas Goday in Rivas Goday et al. 1957
- > ROS-03B *Thymo-Teucrium verticillati* Rivas Goday in Rivas Goday et al. 1957

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Helianthemum syriacum</i>	77
<i>Helianthemum squamatum</i>	76
<i>Herniaria fruticosa</i>	75
<i>Ononis tridentata</i>	72
<i>Gypsophila struthium</i>	48
<i>Launaea pumila</i>	47
<i>Lepidium subulatum</i>	46
<i>Plantago albicans</i>	42

<i>Reseda stricta</i>	42
<i>Atractylis humilis</i>	34
<i>Stipa parviflora</i>	33
<i>Thymus vulgaris</i>	31
<i>Odontites longiflora</i>	30
<i>Fumana ericoides</i>	29
<i>Genista scorpius</i>	27
<i>Rosmarinus officinalis</i>	27
<i>Lygeum spartum</i>	27
<i>Thymus zygis</i>	26
<i>Helichrysum stoechas</i>	26
<i>Launaea fragilis</i>	24
<i>Anthyllis terniflora</i>	24
<i>Teucrium carolipau</i>	23
<i>Coris monspeliensis</i>	22
<i>Limonium furfuraceum</i>	22
<i>Sedum sediforme</i>	21
<i>Koeleria vallesiana</i>	21
<i>Jacobaea auricula</i>	20
<i>Brachypodium retusum</i>	20
<i>Helianthemum cinereum</i>	19
<i>Helianthemum hirtum</i>	19
<i>Hedysarum boveanum</i>	19
<i>Cistus clusii</i>	18
<i>Matthiola fruticulosa</i>	18
<i>Santolina chamaecyparissus</i> aggr.	17
<i>Pallenis maritima</i>	17
<i>Linum suffruticosum</i> aggr.	16
<i>Centaurea aspera</i>	16
<i>Macrochloa tenacissima</i>	15
<i>Limonium viciosi</i>	15

Constant species (percentage frequencies)

<i>Helianthemum syriacum</i>	73
<i>Thymus vulgaris</i>	66
<i>Herniaria fruticosa</i>	63
<i>Helianthemum squamatum</i>	61
<i>Ononis tridentata</i>	53
<i>Brachypodium retusum</i>	53
<i>Rosmarinus officinalis</i>	49
<i>Helichrysum stoechas</i>	45
<i>Koeleria vallesiana</i>	42
<i>Genista scorpius</i>	39
<i>Plantago albicans</i>	35
<i>Teucrium polium</i> aggr.	33
<i>Sedum sediforme</i>	33
<i>Fumana ericoides</i>	28
<i>Lygeum spartum</i>	27
<i>Gypsophila struthium</i>	26
<i>Launaea pumila</i>	25
<i>Atractylis humilis</i>	24
<i>Lepidium subulatum</i>	23
<i>Coris monspeliensis</i>	23
<i>Reseda stricta</i>	21
<i>Linum suffruticosum</i> aggr.	20

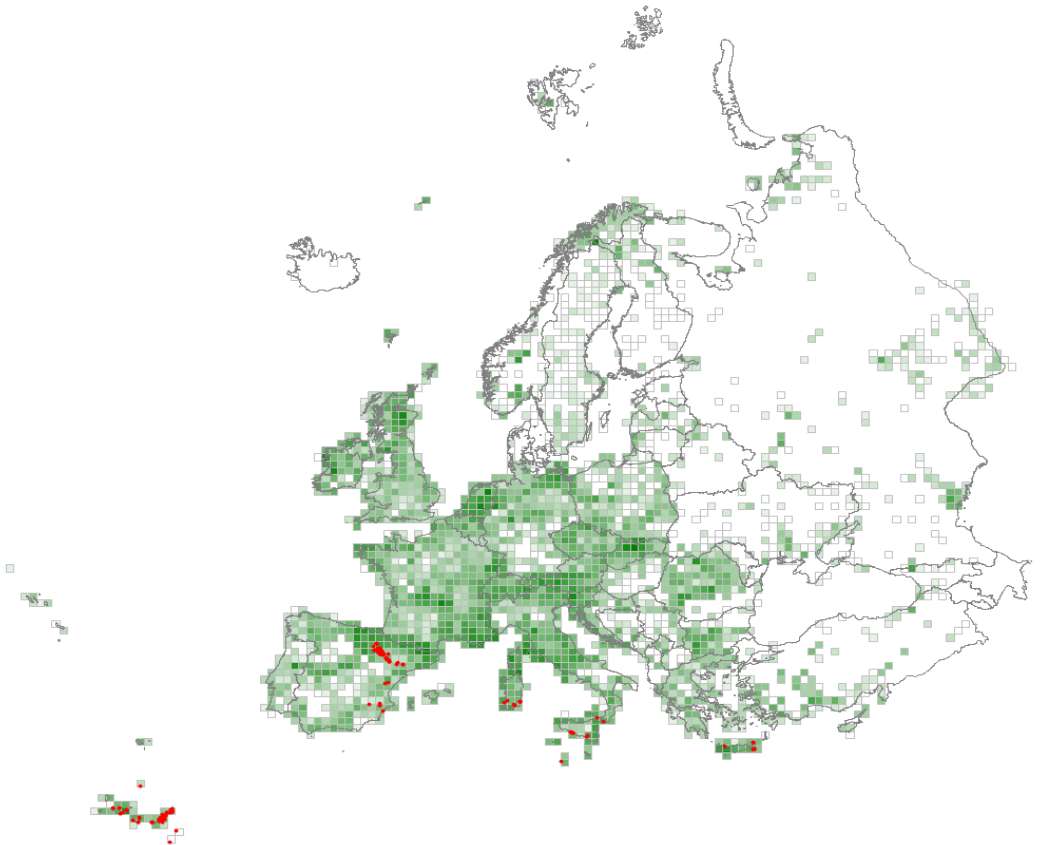
<i>Dactylis glomerata</i>	20
<i>Stipa parviflora</i>	18
<i>Thymus zygis</i>	17
<i>Odontites longiflora</i>	15
<i>Launaea fragilis</i>	15
<i>Santolina chamaecyparissus</i> aggr.	14
<i>Helictochloa bromoides</i>	13
<i>Helianthemum cinereum</i>	13
<i>Sedum album</i>	11
<i>Helianthemum canum</i>	11
<i>Artemisia herba-alba</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Ononis tridentata</i>	33
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S66 – Mediterranean halo-nitrophilous scrub

Perennial coastal scrub dominated by nitrophilous and salt-tolerant species in often artificially-disturbed places through the semi-arid infra- and thermomediterranean belts. In coastal situations, the sea-borne salt and concentration of birds have a major influence on the high levels of soil nutrients and high levels of salt deposition.



Corresponding alliances in EuroVegChecklist 2016

- > PEG-01A *Salsolo vermiculatae*-*Peganion harmalae* Br.-Bl. et O. de Bolòs 1954
- > PEG-01B *Haloxylon-Atriplicion* Rivas Goday et Rivas-Mart. ex Rigual 1972
- > PEG-01C *Salsolo oppositifoliae*-*Suaedion fruticosae* Rigual 1972
- > PEG-01D *Lycio europaei*-*Ipomoeion purpureae* O. de Bolòs ex Mucina in Mucina et al. 2016
- > PEG-01E *Artemision arborescentis* Géhu et al. 1986
- > PEG-01F *Atriplici halimi*-*Suaedion verae* Géhu et al. ex Bergmeier et Dimopoulos 2003
- > PEG-01G *Medicagini citrinae*-*Lavaterion arborea* O. de Bolòs et Vigo in O. de Bolòs et al. 1984
- > PEG-02A *Artemisio glutinosae*-*Santolinion rosmarinifoliae* M. Costa 1975
- > PEG-02B *Santolinion pectinato-canescens* Peinado et Martínez-Parras 1984
- > PEG-03A *Chenoleion tomentosae* Sunding 1972
- > PEG-04A *Artemisio thusculae*-*Rumicion lunariae* Rivas-Mart. et al. 1993
- > PEG-04B *Launaeo arborescentis*-*Schizogynion sericeae* Rivas-Mart. et al. 1993
- > PEG-04C *Argyranthemum succulentum*-*Calendulion maderensis* Capelo et al. 2000

> PEG-04D Nicotiano glaucae-Ricinion communis Rivas-Mart. et al. 1999

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Salsola vermiculata</i>	56
<i>Artemisia herba-alba</i>	42
<i>Bassia tomentosa</i>	30
<i>Suaeda vermiculata</i>	26
<i>Atriplex halimus</i>	24
<i>Anisantha rubens</i>	22
<i>Suaeda ifniensis</i>	21
<i>Delphinium gracile</i>	20
<i>Salsola tetrandra</i>	19
<i>Centaurea melitensis</i>	18
<i>Asphodelus fistulosus</i>	18
<i>Marrubium alysson</i>	18
<i>Bupleurum semicompositum</i>	18
<i>Lycium intricatum</i>	18
<i>Artemisia arborescens</i>	17
<i>Salsola aegaea</i>	17
<i>Launaea arborescens</i>	17
<i>Camphorosma monspeliaca</i>	16
<i>Filago pyramidata</i>	15
<i>Lygeum spartum</i>	15

Constant species (percentage frequencies)

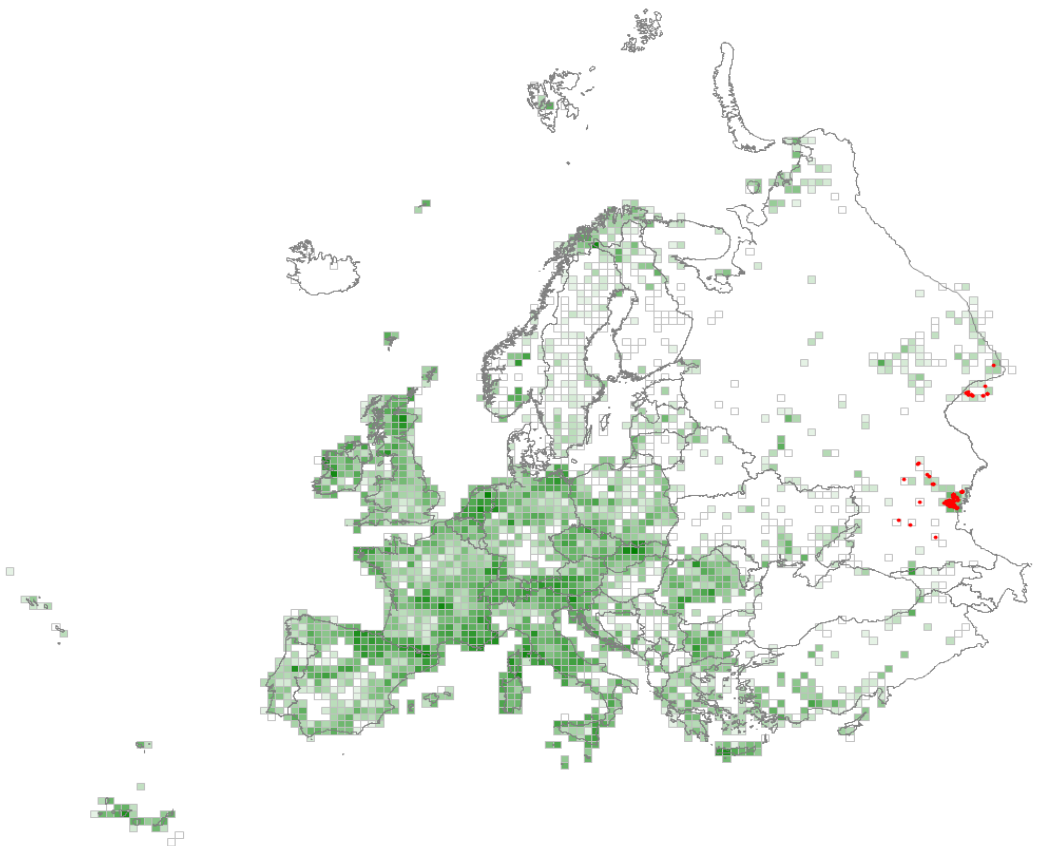
<i>Salsola vermiculata</i>	50
<i>Artemisia herba-alba</i>	33
<i>Launaea arborescens</i>	21
<i>Lycium intricatum</i>	19
<i>Anisantha rubens</i>	19
<i>Suaeda vera</i>	18
<i>Bassia tomentosa</i>	17
<i>Eryngium campestre</i>	16
<i>Camphorosma monspeliaca</i>	16
<i>Atriplex halimus</i>	16
<i>Plantago lagopus</i>	15
<i>Lygeum spartum</i>	15
<i>Filago pyramidata</i>	15
<i>Rostraria cristata</i>	14
<i>Dactylis glomerata</i>	14
<i>Hordeum murinum</i>	13
<i>Catapodium rigidum</i>	13
<i>Suaeda vermiculata</i>	12
<i>Frankenia laevis</i>	12
<i>Bupleurum semicompositum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Salsola vermiculata</i>	26
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S67 – Aralo-Caspian semi-desert

Zonal scrub on loamy and sandy-loamy, often subsaline soils of the semi-deserts of the Caucasus foothills, South-Eastern European Russia and Kazakhstan. The open vegetation is dominated by species of *Artemisia* and other sub-halophytic shrubs (e.g. *Petrosimonia* spp. and *Salsola* spp.). In the Caspian lowland, this habitat reaches its north-western distribution limit, having its main distribution in the desert regions surrounding the Caspian Sea, in the basin that used to support Aral Lake, and further into central Asia.



Corresponding alliances in EuroVegChecklist 2016

- > LER-01A Artemision lerchianae Golub 1994
- > LER-01B Anabasio aphyllae-Artemisio pauciflorae Lysenko in Lysenko et Mucina 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Medicago orthoceras</i>	63
<i>Artemisia lerchiana</i>	58
<i>Ceratocarpus arenarius</i>	52
<i>Eremopyrum orientale</i>	50
<i>Agropyron fragile</i>	46

<i>Alyssum turkestanicum</i>	42
<i>Ceratocephala falcata</i>	40
<i>Medicago medicaginoides</i>	40
<i>Meniocus linifolius</i>	39
<i>Eremopyrum triticeum</i>	35
<i>Anabasis aphylla</i>	34
<i>Neotorularia contortuplicata</i>	33
<i>Erodium hoefftianum</i>	33
<i>Xanthoria parietina</i>	29
<i>Alhagi maurorum</i>	28
<i>Xanthoparmelia camtschadalis</i>	27
<i>Nonea caspica</i>	27
<i>Salsola dendroides</i>	27
<i>Silene cyri</i>	26
<i>Xanthoparmelia rysssolea</i>	25
<i>Bassia prostrata</i>	25
<i>Tragopogon ruber</i>	25
<i>Androsace maxima</i>	23
<i>Holosteum umbellatum</i>	23
<i>Caloplaca lobulata</i>	22
<i>Petrosimonia oppositifolia</i>	21
<i>Senecio glaucus</i>	21
<i>Artemisia taurica</i>	20
<i>Petrosimonia brachiata</i>	20
<i>Bromus squarrosus</i>	20
<i>Physcia adscendens</i>	20
<i>Climacoptera brachiata</i>	20
<i>Chorispora tenella</i>	19
<i>Artemisia scoparia</i>	19
<i>Camphorosma monspeliaca</i>	19
<i>Diplotomma alboatrum</i>	19
<i>Tulipa sylvestris</i>	19
<i>Iris scariosa</i>	19
<i>Poa bulbosa</i>	18
<i>Climacoptera crassa</i>	18
<i>Lecanora hagenii</i>	18
<i>Descurainia sophia</i>	17
<i>Lepidium perfoliatum</i>	17
<i>Lappula marginata</i>	17
<i>Lappula patula</i>	16
<i>Atriplex tatarica</i>	16
<i>Salsola kali aggr.</i>	16
<i>Tulipa biflora</i>	16
<i>Tripleurospermum parviflorum</i>	16
<i>Rinodina exigua</i>	16

Constant species (percentage frequencies)

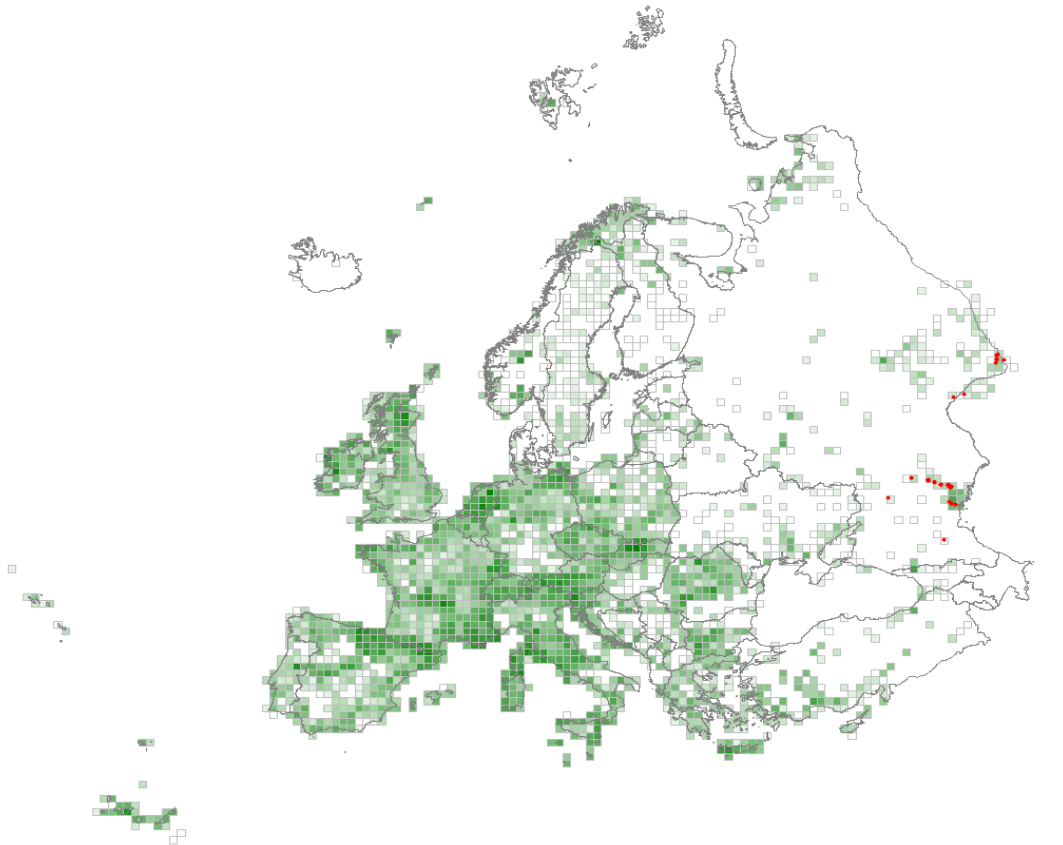
<i>Artemisia lerchiana</i>	76
<i>Alyssum turkestanicum</i>	68
<i>Poa bulbosa</i>	62
<i>Eremopyrum triticeum</i>	56
<i>Ceratocarpus arenarius</i>	53
<i>Medicago orthoceras</i>	52
<i>Eremopyrum orientale</i>	51
<i>Meniocus linifolius</i>	36

<i>Ceratocephala falcata</i>	36
<i>Bromus squarrosus</i>	33
<i>Agropyron fragile</i>	33
<i>Alhagi maurorum</i>	31
<i>Salsola kali</i> aggr.	29
<i>Bassia prostrata</i>	28
<i>Holosteum umbellatum</i>	25
<i>Descurainia sophia</i>	25
<i>Anisantha tectorum</i>	22
<i>Atriplex tatarica</i>	21
<i>Medicago medicaginoides</i>	19
<i>Camphorosma monspeliaca</i>	19
<i>Androsace maxima</i>	19
<i>Petrosimonia oppositifolia</i>	18
<i>Syntrichia ruralis</i> aggr.	16
<i>Anabasis aphylla</i>	16
<i>Xanthoria parietina</i>	14
<i>Xanthoparmelia camtschadalis</i>	14
<i>Neotorularia contortuplicata</i>	14
<i>Lepidium perfoliatum</i>	14
<i>Erodium hoefftianum</i>	14
<i>Artemisia taurica</i>	14
<i>Salsola dendroides</i>	12
<i>Petrosimonia brachiata</i>	12
<i>Chorispora tenella</i>	12
<i>Tulipa sylvestris</i>	11
<i>Carduus uncinatus</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Artemisia lerchiana 54

S68 – Semi-desert sand dune with sparse scrub

Open perennial vegetation of halophytic shrubs, e.g. *Artemisia* spp., *Haloxylon* spp., *Salsola* spp. and *Tamarix* spp., and annuals on wind-blown drifting or stabilised dunes and sandy soils in the semi-desert region of the Caspian lowlands. If overgrazed, this habitat can change into shifting dunes (barkhans) devoid of vegetation.



Corresponding alliances in EuroVegChecklist 2016

- <> DIG-01G *Tamarici ramosissimae*-*Salsolion australis* Golub 1994
- > LER-02A *Euphorbion seguieranae* Golub 1994

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Eremopyrum triticeum</i>	52
<i>Artemisia austriaca</i>	47
<i>Sibbaldianthe bifurca</i>	47
<i>Alyssum turkestanicum</i>	45
<i>Rhaponticum repens</i>	35
<i>Tragopogon podolicus</i>	34
<i>Amaranthus albus</i>	31

<i>Atriplex tatarica</i>	30
<i>Carex melanostachya</i>	30
<i>Descurainia sophia</i>	28
<i>Euphorbia esula</i>	28
<i>Ceratocarpus arenarius</i>	26
<i>Lappula squarrosa</i>	26
<i>Glycyrrhiza glabra</i>	25
<i>Ceratocephala falcata</i>	24
<i>Carduus uncinatus</i>	24
<i>Bassia sedoides</i>	22
<i>Dodartia orientalis</i>	21
<i>Salsola kali</i> aggr.	20
<i>Cannabis sativa</i>	19
<i>Chorispora tenella</i>	18
<i>Artemisia arenaria</i>	17
<i>Carex stenophylla</i>	17
<i>Convolvulus arvensis</i>	17
<i>Hordeum brevisubulatum</i>	17
<i>Bromopsis inermis</i>	17
<i>Peganum harmala</i>	16

Constant species (percentage frequencies)

<i>Eremopyrum triticeum</i>	82
<i>Artemisia austriaca</i>	73
<i>Alyssum turkestanicum</i>	73
<i>Convolvulus arvensis</i>	45
<i>Elytrigia repens</i> aggr.	42
<i>Descurainia sophia</i>	40
<i>Atriplex tatarica</i>	38
<i>Salsola kali</i> aggr.	35
<i>Polygonum aviculare</i> aggr.	35
<i>Sibbaldianthe bifurca</i>	33
<i>Rhaponticum repens</i>	33
<i>Glycyrrhiza glabra</i>	31
<i>Euphorbia esula</i>	31
<i>Galium verum</i>	27
<i>Chenopodium album</i> aggr.	27
<i>Ceratocarpus arenarius</i>	27
<i>Anisantha tectorum</i>	27
<i>Artemisia arenaria</i>	24
<i>Amaranthus albus</i>	24
<i>Poa bulbosa</i>	22
<i>Ceratocephala falcata</i>	22
<i>Bassia sedoides</i>	22
<i>Tragopogon podolicus</i>	20
<i>Carex melanostachya</i>	20
<i>Carduus uncinatus</i>	20
<i>Lappula squarrosa</i>	18
<i>Dodartia orientalis</i>	18
<i>Bromopsis inermis</i>	18
<i>Bromus squarrosus</i>	16
<i>Carex praecox</i>	15
<i>Medicago sativa</i>	13
<i>Carex stenophylla</i>	13
<i>Calamagrostis epigejos</i>	13

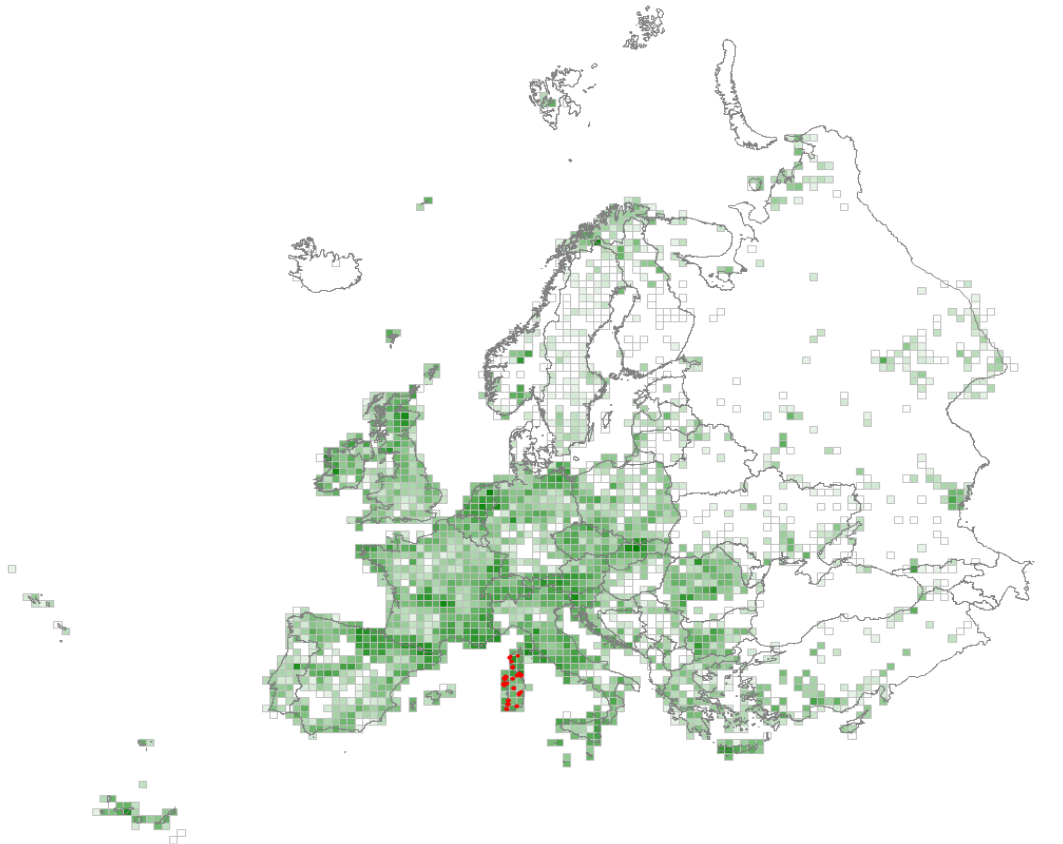
<i>Taraxacum</i> sect. <i>Taraxacum</i>	11
<i>Chorispora tenella</i>	11
<i>Centaurea arenaria</i> aggr.	11
<i>Bassia laniflora</i>	11
<i>Asparagus officinalis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Eremopyrum triticeum</i>	51
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S71 – Western Mediterranean spiny heath

Low scrub of often spiny, cushion-forming plants on thin soils on wind-exposed and spray-splashed tops of rocky cliffs on Corsica, Sardinia, Pantelleria and in the Gulf of Taranto.



Corresponding alliances in EuroVegChecklist 2016

- > CRI-02B Astragalion tragacanthae (Folch ex Rivas-Mart., Fernández-González et Loidi 1999) Rivas-Mart. et al. 2002
- > CRI-02C Launaeion cervicornis (O. de Bolòs et Vigo ex Gil et Llorens 1995) Rivas-Mart. et al. 1999
- > CRI-02D Euphorbion pithusae Biondi et Géhu in Géhu et Biondi 1994
- > CRI-02E Anthyllidion barbae-jovis S. Brullo et De Marco 1989
- <> ROS-01F Rosmarinion officinalis Molinier 1934
- <> ROS-01H Hypericion balearici O. de Bolòs et Molinier 1958

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Genista corsica</i>	82
<i>Teucrium marum</i>	39
<i>Genista sardoa</i>	38
<i>Stachys glutinosa</i>	38

<i>Helichrysum italicum</i>	31
<i>Asparagus albus</i>	28
<i>Cistus monspeliensis</i>	27
<i>Juniperus phoenicea</i>	26
<i>Ferula arrigonii</i>	24
<i>Carlina corymbosa</i> aggr.	24
<i>Ptilostemon casabonae</i>	22
<i>Euphorbia pithyusa</i>	19
<i>Rosmarinus officinalis</i>	18
<i>Gagea villosa</i>	17
<i>Centaurea horrida</i>	16
<i>Crocus minimus</i>	16
<i>Phillyrea angustifolia</i>	16
<i>Chamaerops humilis</i>	16
<i>Teucrium massiliense</i>	16
<i>Allium parviflorum</i>	16
<i>Lavandula stoechas</i>	15

Constant species (percentage frequencies)

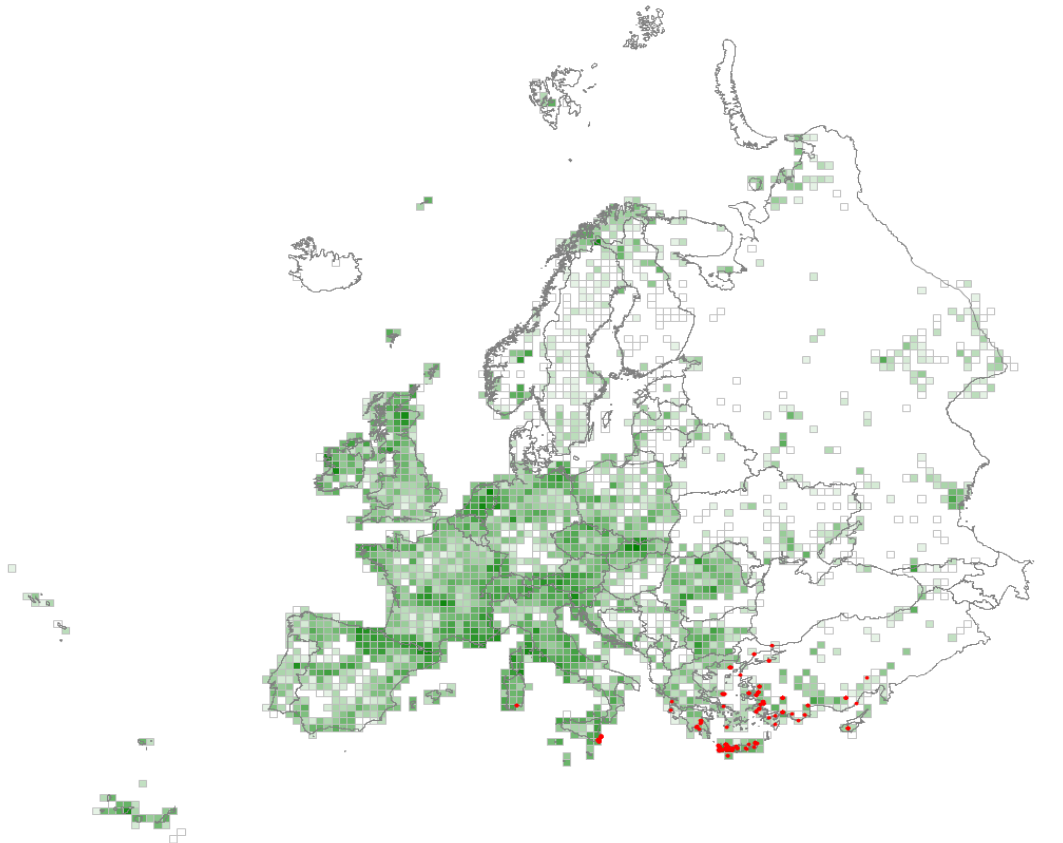
<i>Genista corsica</i>	81
<i>Helichrysum italicum</i>	60
<i>Cistus monspeliensis</i>	53
<i>Carlina corymbosa</i> aggr.	43
<i>Juniperus phoenicea</i>	40
<i>Brachypodium retusum</i>	40
<i>Pistacia lentiscus</i>	39
<i>Rosmarinus officinalis</i>	33
<i>Teucrium marum</i>	28
<i>Phillyrea angustifolia</i>	27
<i>Cistus salviifolius</i>	26
<i>Asphodelus ramosus</i>	24
<i>Asparagus albus</i>	24
<i>Dactylis glomerata</i>	23
<i>Stachys glutinosa</i>	21
<i>Calicotome villosa</i>	20
<i>Lavandula stoechas</i>	19
<i>Daucus carota</i>	19
<i>Reichardia picroides</i>	18
<i>Asparagus acutifolius</i>	18
<i>Rubia peregrina</i>	16
<i>Erica arborea</i>	16
<i>Genista sardoa</i>	15
<i>Chamaerops humilis</i>	15
<i>Cistus creticus</i>	14
<i>Smilax aspera</i>	12
<i>Prasium majus</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Genista corsica</i>	80
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S72 – Eastern Mediterranean spiny heath (phrygana)

Low scrub dominated by thorny hemispherical chamaephytes on various base-rich and acidic substrates in the thermo-, meso- and supramediterranean belts of mainland Greece, Anatolia, the Aegean and Ionian islands, Crete, Cyprus and parts of Sicily. It can be of a primary origin or develops after clearance of evergreen sclerophyllous forest.



Corresponding alliances in EuroVegChecklist 2016

- > LAV-03A *Hyperico olympici-Cistion cretici* (Oberd. 1954) R. Jahn et Bergmeier in Mucina et al. 2009
- > LAV-03B *Odontarrheno euboeae-Lavandulion stoechadis* Mucina in Mucina et al. 2016
- > LAV-03C *Helichryso barrelieri-Phagnalium graeci* (Barbero et Quézel 1989) R. Jahn in Mucina et al. 2009
- <> ROS-06C *Micromerion* Oberd. 1954
- > ROS-07A *Hyperico empetrifolii-Micromerion graecae* Barbero et Quézel 1989
- > ROS-07B *Origano syriaci-Hypericion thymifolii* Mucina et Theurillat in Mucina et al. 2016
- > ROS-07C *Sarcopoterio spinosi-Genistion fasselatae* M. Costa et al. 1984

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sarcopoterium spinosum</i>	66
<i>Genista acanthoclada</i>	32
<i>Thymbra capitata</i>	31
<i>Leontodon tuberosus</i>	30
<i>Lagoecia cuminoides</i>	29
<i>Hymenocarpus circinnatus</i>	28
<i>Allium rubrovittatum</i>	27
<i>Bromus intermedius</i>	26
<i>Bupleurum gracile</i>	26
<i>Plantago cretica</i>	25
<i>Galium murale</i>	25
<i>Anisantha fasciculata</i>	25
<i>Filago eriocephala</i>	25
<i>Valantia hispida</i>	24
<i>Teucrium microphyllum</i>	23
<i>Euphorbia acanthothamnos</i>	23
<i>Campanula podocarpa</i>	21
<i>Onobrychis caput-galli</i>	21
<i>Fumana arabica</i>	21
<i>Gastridium phleoides</i>	20
<i>Carlina lanata</i>	20
<i>Acanthus spinosus</i>	20
<i>Medicago coronata</i>	20
<i>Linum strictum</i> aggr.	20
<i>Galium setaceum</i>	20
<i>Aegilops biuncialis</i>	20
<i>Psilurus incurvus</i>	20
<i>Hypochaeris achyrophorus</i>	20
<i>Carlina graeca</i>	20
<i>Aira elegantissima</i>	20
<i>Cuscuta palaestina</i> aggr.	19
<i>Crepis neglecta</i> aggr.	19
<i>Trifolium stellatum</i>	19
<i>Hippocrepis unisiliquosa</i>	19
<i>Crucianella latifolia</i>	19
<i>Avellinia festucoides</i>	19
<i>Satureja thymbra</i>	19
<i>Ranunculus paludosus</i>	19
<i>Centaurea pulchella</i>	18
<i>Asphodelus ramosus</i>	18
<i>Salvia viridis</i>	18
<i>Anagallis arvensis</i>	18
<i>Sherardia arvensis</i>	18
<i>Filago aegaea</i>	18
<i>Phagnalon rupestre</i>	18
<i>Odontarrhena carica</i>	18
<i>Drimia maritima</i> aggr.	18
<i>Micromeria nervosa</i>	18
<i>Crepis foetida</i> aggr.	18
<i>Galium brevifolium</i>	17
<i>Briza maxima</i>	17
<i>Asperula rigida</i>	17

<i>Avena barbata</i>	17
<i>Centaurea idaea</i>	17
<i>Pyrus spinosa</i>	17
<i>Trifolium uniflorum</i>	16
<i>Knautia integrifolia</i>	16
<i>Daucus involucratus</i>	16
<i>Trifolium campestre</i>	16
<i>Rostraria smyrnacea</i>	16
<i>Iris unguicularis</i>	16
<i>Ophrys argolica</i>	16
<i>Crupina crupinastrum</i>	16
<i>Tordylium apulum</i>	16
<i>Linum trigynum</i>	16
<i>Bellardia trixago</i>	15
<i>Scorzonera elata</i>	15
<i>Trachynia distachya</i>	15
<i>Scorpiurus muricatus</i>	15
<i>Medicago orbicularis</i>	15
<i>Asterolinon linum-stellatum</i>	15
<i>Picris rhagadioloides</i>	15
<i>Catapodium rigidum</i>	15

Constant species (percentage frequencies)

<i>Sarcopoterium spinosum</i>	83
<i>Dactylis glomerata</i>	47
<i>Thymra capitata</i>	40
<i>Trifolium campestre</i>	39
<i>Anagallis arvensis</i>	39
<i>Leontodon tuberosus</i>	38
<i>Asphodelus ramosus</i>	32
<i>Sherardia arvensis</i>	31
<i>Linum strictum</i> aggr.	30
<i>Galium murale</i>	29
<i>Briza maxima</i>	29
<i>Avena barbata</i>	29
<i>Hypochaeris achyrophorus</i>	28
<i>Lagoecia cuminoides</i>	26
<i>Drimia maritima</i> aggr.	26
<i>Catapodium rigidum</i>	25
<i>Brachypodium retusum</i>	25
<i>Trifolium stellatum</i>	24
<i>Trachynia distachya</i>	24
<i>Poa bulbosa</i>	24
<i>Genista acanthoclada</i>	24
<i>Aira elegantissima</i>	23
<i>Valantia hispida</i>	21
<i>Cistus creticus</i>	21
<i>Bromus intermedius</i>	21
<i>Anisantha fasciculata</i>	21
<i>Hymenocarpus circinnatus</i>	20
<i>Calicotome villosa</i>	20
<i>Asparagus acutifolius</i>	20
<i>Rostraria cristata</i>	19
<i>Crepis foetida</i> aggr.	19
<i>Asterolinon linum-stellatum</i>	19

<i>Trifolium scabrum</i>	18
<i>Psilurus incurvus</i>	18
<i>Pistacia lentiscus</i>	18
<i>Phagnalon rupestre</i>	18
<i>Crucianella latifolia</i>	18
<i>Crepis neglecta</i> aggr.	18
<i>Allium rubrovittatum</i>	18
<i>Ranunculus paludosus</i>	17
<i>Arisarum vulgare</i>	17
<i>Plantago lagopus</i>	16
<i>Linum trigynum</i>	16
<i>Hyparrhenia hirta</i>	16
<i>Euphorbia acanthothamnos</i>	16
<i>Eryngium campestre</i>	16
<i>Vulpia ciliata</i>	15
<i>Tordylium apulum</i>	15
<i>Teucrium microphyllum</i>	15
<i>Hedypnois rhagadioloides</i>	15
<i>Scorpiurus muricatus</i>	14
<i>Plantago bellardii</i>	14
<i>Bupleurum gracile</i>	14
<i>Satureja thymbra</i>	13
<i>Quercus coccifera</i>	13
<i>Pyrus spinosa</i>	13
<i>Prasium majus</i>	13
<i>Medicago coronata</i>	13
<i>Fumana arabica</i>	13
<i>Centaurea idaea</i>	13
<i>Carlina graeca</i>	13
<i>Asparagus aphyllus</i>	13
<i>Tuberaria guttata</i>	12
<i>Trifolium angustifolium</i>	12
<i>Phlomis fruticosa</i>	12
<i>Pallenis spinosa</i>	12
<i>Ononis reclinata</i>	12
<i>Onobrychis caput-galli</i>	12
<i>Filago eriocephala</i>	12
<i>Euphorbia peplus</i>	12
<i>Crupina crupinastrum</i>	12
<i>Urospermum picroides</i>	11
<i>Sonchus bulbosus</i>	11
<i>Scaligeria napiformis</i>	11
<i>Plantago cretica</i>	11
<i>Olea europaea</i>	11
<i>Medicago monspeliaca</i>	11
<i>Lotus ornithopodioides</i>	11
<i>Knautia integrifolia</i>	11
<i>Gastridium phleoides</i>	11
<i>Galium setaceum</i>	11
<i>Filago aegaea</i>	11
<i>Daucus involucratus</i>	11
<i>Cynosurus echinatus</i>	11
<i>Convolvulus althaeoides</i>	11
<i>Chamaerops humilis</i>	11
<i>Blackstonia perfoliata</i>	11

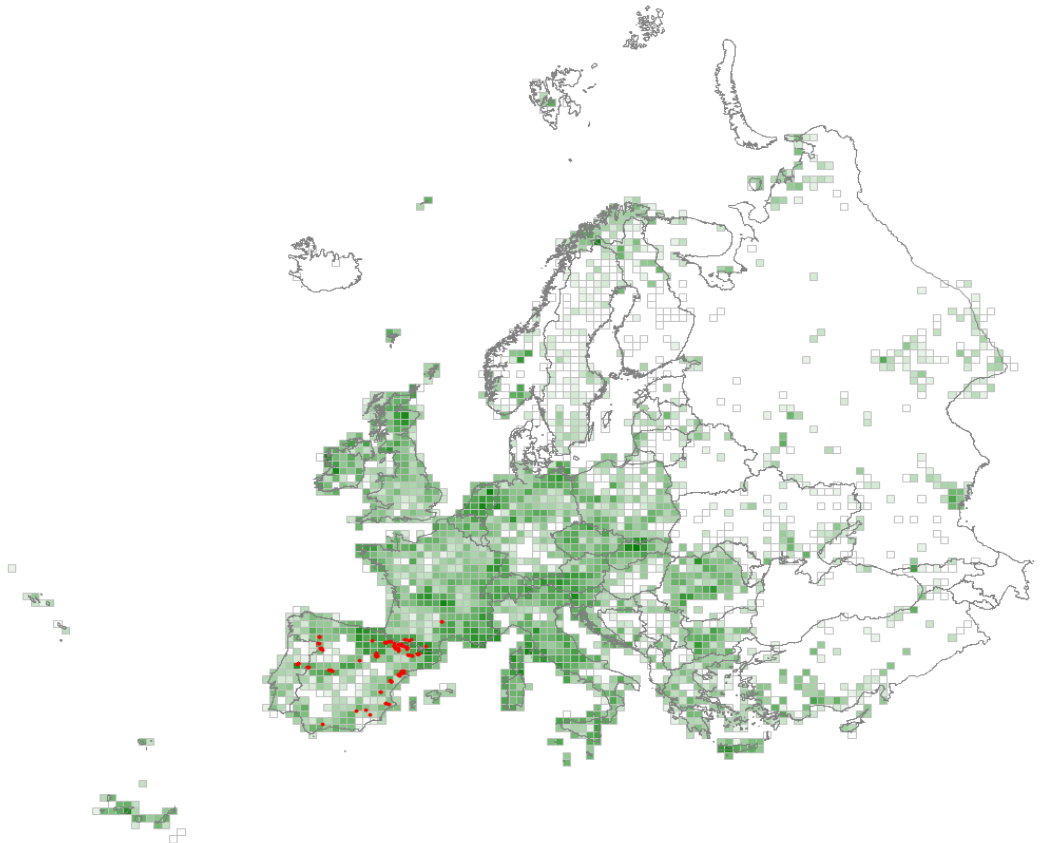
<i>Bellardia trixago</i>	11
<i>Asperula rigida</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Sarcopoterium spinosum</i>	69
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S73 – Western Mediterranean mountain hedgehog-heath

Heath of often spiny hedgehog sub-shrubs on base-rich and acidic soils in the upper supra- and oromediterranean belts of the Iberian Peninsula, historically sustaining transhumance pastoralism but often extending down from crests and steep slopes due to grazing and burning.



Corresponding alliances in EuroVegChecklist 2016

- <> CYT-03B Cytision oromediterraneo-scoparii Rivas-Mart. et al. 2002
- > ONO-02F Echinospartion horridi Rivas-Mart. et al. 1991
- > ONO-02G Genistion occidentalis Rivas-Mart. in Rivas-Mart. et al. 1984
- > ROS-02A Xeroacantho-Erinaceion (Quézel 1953) O. de Bolòs 1967
- <> ROS-05A Andryalion agardhii Rivas-Mart. ex Rivas Goday et Mayor 1966
- > SAB-02A Cytision oromediterranei Tx. in Tx. et Oberd. 1958 corr. Rivas-Mart. 1987

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Erinacea anthyllis</i>	55
<i>Echinospartum horridum</i>	50
<i>Echinospartum lusitanicum</i>	35
<i>Koeleria vallesiana</i>	30

<i>Thymus vulgaris</i>	27
<i>Paronychia kapela</i>	25
<i>Helianthemum apenninum</i>	25
<i>Crepis albida</i>	23
<i>Centaurea resupinata</i>	23
<i>Centaurea pinae</i>	23
<i>Potentilla pusilla</i>	21
<i>Anthyllis montana</i>	21
<i>Bupleurum fruticosum</i>	20
<i>Arenaria aggregata</i> aggr.	19
<i>Brassica repanda</i>	19
<i>Erysimum grandiflorum</i>	19
<i>Teucrium carthaginense</i>	19
<i>Dianthus pungens</i>	19
<i>Saponaria caespitosa</i>	18
<i>Buxus sempervirens</i>	18
<i>Euphorbia flavicoma</i>	18
<i>Helictochloa pratensis</i>	18
<i>Carex humilis</i>	18
<i>Satureja innota</i>	16
<i>Lavandula latifolia</i>	16
<i>Brimeura amethystina</i>	16
<i>Teucrium pyrenaicum</i>	16
<i>Festuca capillifolia</i>	16
<i>Marrubium supinum</i>	15
<i>Carthamus carduncellus</i>	15

Constant species (percentage frequencies)

<i>Koeleria vallesiana</i>	58
<i>Thymus vulgaris</i>	57
<i>Erinacea anthyllis</i>	49
<i>Carex humilis</i>	41
<i>Teucrium chamaedrys</i>	33
<i>Buxus sempervirens</i>	33
<i>Helianthemum apenninum</i>	31
<i>Echinopartum horridum</i>	28
<i>Pinus sylvestris</i>	27
<i>Teucrium polium</i> aggr.	25
<i>Bromopsis erecta</i>	25
<i>Anthyllis montana</i>	25
<i>Helictochloa pratensis</i>	24
<i>Paronychia kapela</i>	23
<i>Potentilla pusilla</i>	22
<i>Anthyllis vulneraria</i>	22
<i>Genista scorpius</i>	20
<i>Lavandula latifolia</i>	19
<i>Crepis albida</i>	18
<i>Helianthemum canum</i>	17
<i>Juniperus communis</i> subsp. <i>nana</i>	16
<i>Fumana procumbens</i>	16
<i>Festuca ovina</i>	16
<i>Echinopartum lusitanicum</i>	16
<i>Coronilla minima</i>	16
<i>Bupleurum fruticosum</i>	16
<i>Brachypodium retusum</i>	16

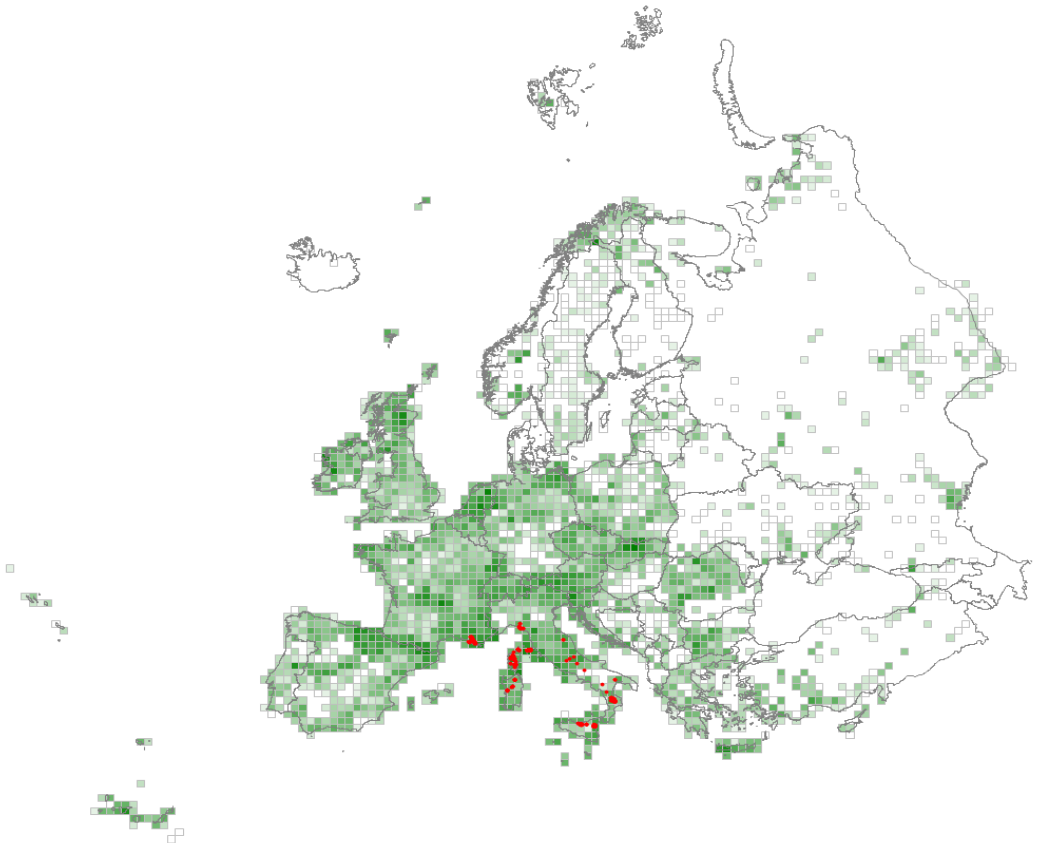
<i>Amelanchier ovalis</i>	16
<i>Lavandula angustifolia</i>	15
<i>Sedum sediforme</i>	14
<i>Ononis minutissima</i>	14
<i>Juniperus communis</i> subsp. <i>communis</i>	14
<i>Festuca hystrix</i>	13
<i>Arenaria aggregata</i> aggr.	13
<i>Sanguisorba minor</i> aggr.	12
<i>Dianthus pungens</i>	12
<i>Arctostaphylos uva-ursi</i>	12
<i>Teucrium pyrenaicum</i>	11
<i>Carex flacca</i>	11
<i>Aphyllanthes monspeliensis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Erinacea anthyllis</i>	49
<i>Echinospartum horridum</i>	28

S74 – Central Mediterranean mountain hedgehog-heath

Heath of often spiny hedgehog sub-shrubs on base-rich and acidic soils in windy and sunny places in the supra- and oromediterranean belts of Corsica, Sardinia, Elba, Sicily and the southern mainland mountains of Italy. Downslope expansion below the timberline can follow clearance and grazing.



Corresponding alliances in EuroVegChecklist 2016

- > GEN-01A Anthyllidion hermanniae Klein 1972
- > ONO-03E Cerastio-Astragalion nebrodensis Pignatti et Nimis ex S. Brullo 1984
- <> RUM-01A Rumici-Astragalion siculi Poli 1965
- > RUM-01B Armerion nebrodensis S. Brullo 1984
- > RUM-02A Koelerio brutiae-Astragalion calabrici Giacomini et Gentile ex S. Brullo 2005
- > RUM-02B Armerion aspromontanae S. Brullo et al. 2001

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Genista desoleana</i>	45
<i>Festuca gamisansii</i>	36
<i>Astracantha sicula</i>	36
<i>Astracantha parnassi</i> subsp. <i>calabricus</i>	35

<i>Secale strictum</i>	34
<i>Galium aetnicum</i>	33
<i>Centaurea sarfattiana</i>	32
<i>Armeria brutia</i>	31
<i>Viola corsica</i>	31
<i>Carlina nebrodensis</i>	28
<i>Festuca circummediterranea</i>	27
<i>Silene tyrrhenia</i>	26
<i>Phleum ambiguum</i>	24
<i>Thymus herba-barona</i>	23
<i>Genista lobelii</i>	22
<i>Cerastium tomentosum</i>	22
<i>Senecio squalidus</i> subsp. <i>aethnensis</i>	22
<i>Viola aetnensis</i>	21
<i>Genista cupanii</i>	21
<i>Petrorhagia saxifraga</i>	21
<i>Saponaria sicula</i>	20
<i>Bunium alpinum</i>	20
<i>Sedum amplexicaule</i>	20
<i>Centaurea ilvensis</i>	19
<i>Genista salzmannii</i>	18
<i>Tolpis virgata</i>	18
<i>Silene italica</i> aggr.	18
<i>Linaria purpurea</i>	17
<i>Festuca laevigata</i>	17
<i>Hypochaeris robertia</i>	16
<i>Potentilla calabra</i>	15
<i>Hypericum barbatum</i>	15
<i>Cuscuta epithymum</i>	15

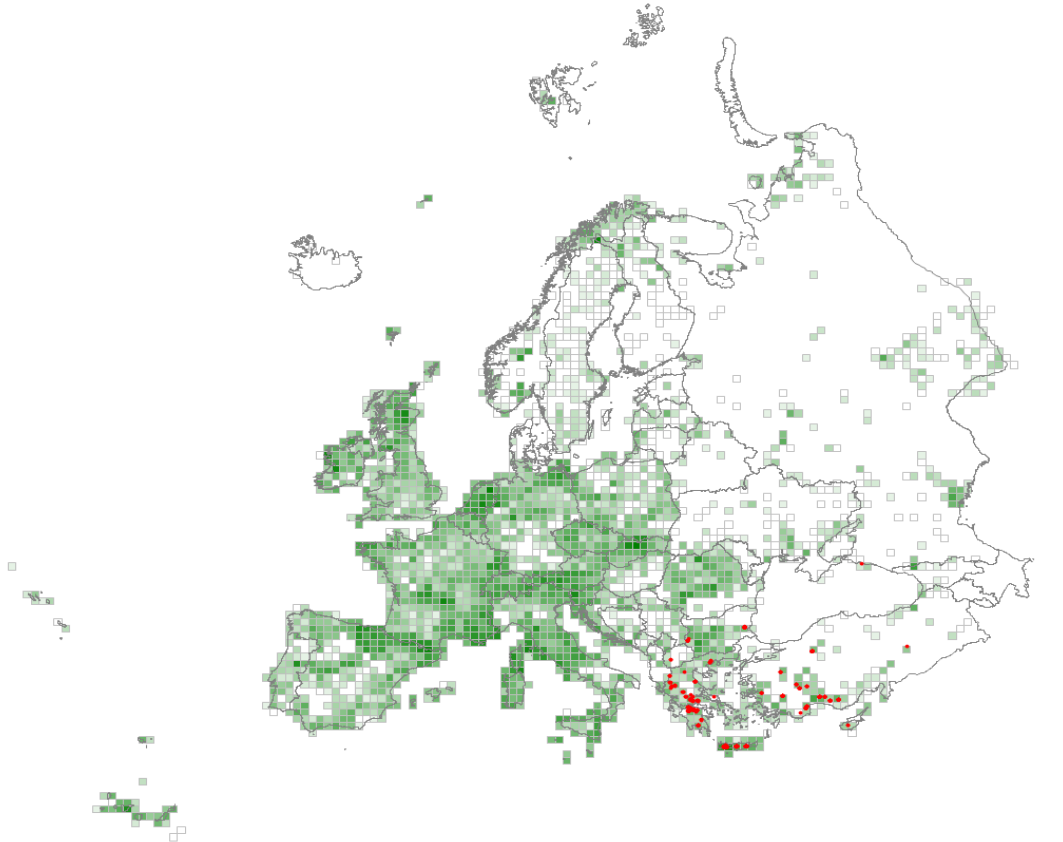
Constant species (percentage frequencies)

<i>Festuca circummediterranea</i>	40
<i>Petrorhagia saxifraga</i>	29
<i>Silene italica</i> aggr.	27
<i>Helichrysum italicum</i>	27
<i>Hypochaeris robertia</i>	24
<i>Astracantha sicula</i>	24
<i>Phleum ambiguum</i>	22
<i>Genista desoleana</i>	22
<i>Galium aetnicum</i>	22
<i>Anthoxanthum odoratum</i> aggr.	22
<i>Sedum amplexicaule</i>	21
<i>Jasione montana</i>	20
<i>Brachypodium retusum</i>	20
<i>Secale strictum</i>	19
<i>Cerastium tomentosum</i>	19
<i>Viola corsica</i>	18
<i>Thymus herba-barona</i>	18
<i>Senecio squalidus</i> subsp. <i>aethnensis</i>	18
<i>Rumex acetosella</i>	17
<i>Plantago maritima</i> subsp. <i>serpentina</i>	17
<i>Carlina nebrodensis</i>	17
<i>Bunium alpinum</i>	17
<i>Anthyllis vulneraria</i>	16
<i>Thymus longicaulis</i>	15

<i>Helianthemum nummularium</i>	15
<i>Genista lobelii</i>	15
<i>Cuscuta epithymum</i>	15
<i>Clinopodium alpinum</i>	15
<i>Anthemis cretica</i>	15
<i>Festuca rubra</i> aggr.	14
<i>Festuca gamisansii</i>	14
<i>Dactylis glomerata</i>	14
<i>Astracantha parnassi</i> subsp. <i>calabricus</i>	14
<i>Viola aetnensis</i>	13
<i>Rumex aetnensis</i>	13
<i>Koeleria splendens</i>	13
<i>Aira caryophyllea</i>	13
<i>Poa bulbosa</i>	12
<i>Pilosella hoppeana</i>	12
<i>Hypericum barbatum</i>	12
<i>Centaurea sarfattiana</i>	12
<i>Avenella flexuosa</i>	12
<i>Armeria brutia</i>	12
<i>Tolpis virgata</i>	11
<i>Tanacetum vulgare</i>	11
<i>Genista salzmännii</i>	11
<i>Bellium bellidioides</i>	11
<i>Anthyllis hermanniae</i>	11
<i>Achillea ligustica</i>	11

S75 – Eastern Mediterranean mountain hedgehog-heath

Heath of often spiny hedgehog sub-shrubs on mostly base-rich soils in dry mountains of the supra- and oromediterranean belts of the Eastern Mediterranean. Downslope expansion below the timberline can follow clearance and grazing.



Corresponding alliances in EuroVegChecklist 2016

- > CYP-01A *Hyperico stenobotryos-Alysson troodi* S. Brullo et al. 2005
- > DAP-01A *Astragalo angustifolii-Seslerion coerulantis* Quézel 1964
- > DAP-01B *Eryngio multifidi-Bromion fibrosi* Quézel 1964
- > DAP-01C *Stipo pulcherrimae-Morinion persicae* Quézel 1964
- > DAP-02A *Astragalion cretici* Bergmeier 2002
- > DAP-02B *Verbascion spinosi* Zaffran ex Bergmeier 2002
- > DAP-02C *Colchico cretensis-Cirsion morinifolii* Bergmeier 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Astragalus angustifolius</i>	53
<i>Astracantha cretica</i>	48
<i>Berberis cretica</i>	42
<i>Prunus prostrata</i>	41

<i>Acantholimon ulicinum</i>	38
<i>Anchusa cespitosa</i>	35
<i>Asperula idaea</i>	31
<i>Bufonia stricta</i>	31
<i>Astracantha rumelica</i>	28
<i>Aubrieta deltoidea</i>	27
<i>Lactuca alpestris</i>	27
<i>Cirsium hypopsilum</i>	27
<i>Astracantha arnacantha</i>	26
<i>Daphne oleoides</i>	26
<i>Cirsium morinifolium</i>	24
<i>Cerastium candidissimum</i>	24
<i>Marrubium velutinum</i>	23
<i>Scilla nana</i>	23
<i>Centaurea idaea</i>	23
<i>Bromopsis tomentella</i>	22
<i>Phlomis armeniaca</i>	22
<i>Marrubium cylleneum</i>	21
<i>Verbascum spinosum</i>	21
<i>Ptilostemon afer</i>	21
<i>Minuartia attica</i>	20
<i>Silene apetala</i>	19
<i>Cerastium araraticum</i>	19
<i>Taraxacum sect. Scariosa</i>	19
<i>Marrubium globosum</i>	19
<i>Malcolmia graeca</i>	19
<i>Carduus tmoleus</i>	19
<i>Satureja spinosa</i>	18
<i>Verbascum epixanthinum</i>	18
<i>Marrubium bourgaei</i>	18
<i>Sideritis syriaca</i>	18
<i>Galium incurvum</i>	18
<i>Consolida saccata</i>	18
<i>Thymus sipyleus</i>	17
<i>Poa thessala</i>	17
<i>Galium thymifolium</i>	17
<i>Cerastium anomalum</i>	17
<i>Ziziphora clinopodioides</i>	17
<i>Erysimum mutabile</i>	17
<i>Arum idaeum</i>	17
<i>Adonis eriocalycina</i>	17
<i>Sedum tristriatum</i>	17
<i>Euphorbia kotschyana</i>	17
<i>Corydalis uniflora</i>	16
<i>Galium taygetum</i>	16
<i>Erysimum kotschyanum</i>	16
<i>Colchicum cretense</i>	16
<i>Euphorbia acanthothamnos</i>	16
<i>Crocus sieberi</i>	16
<i>Cyanus pichleri</i>	16
<i>Ranunculus subhomophyllus</i>	16
<i>Polygonum karacae</i>	16
<i>Onobrychis fallax</i>	16
<i>Potentilla recta</i> aggr.	16
<i>Galium incanum</i>	16

<i>Viola pentadactyla</i>	16
<i>Clinopodium alpinum</i>	16
<i>Astracantha parnassi</i> subsp. <i>cyllenea</i>	16
<i>Astragalus nanus</i>	15
<i>Minuartia juniperina</i>	15
<i>Odontarrhena huber-morathii</i>	15
<i>Eryngium amethystinum</i>	15
<i>Scutellaria orientalis</i> aggr.	15

Constant species (percentage frequencies)

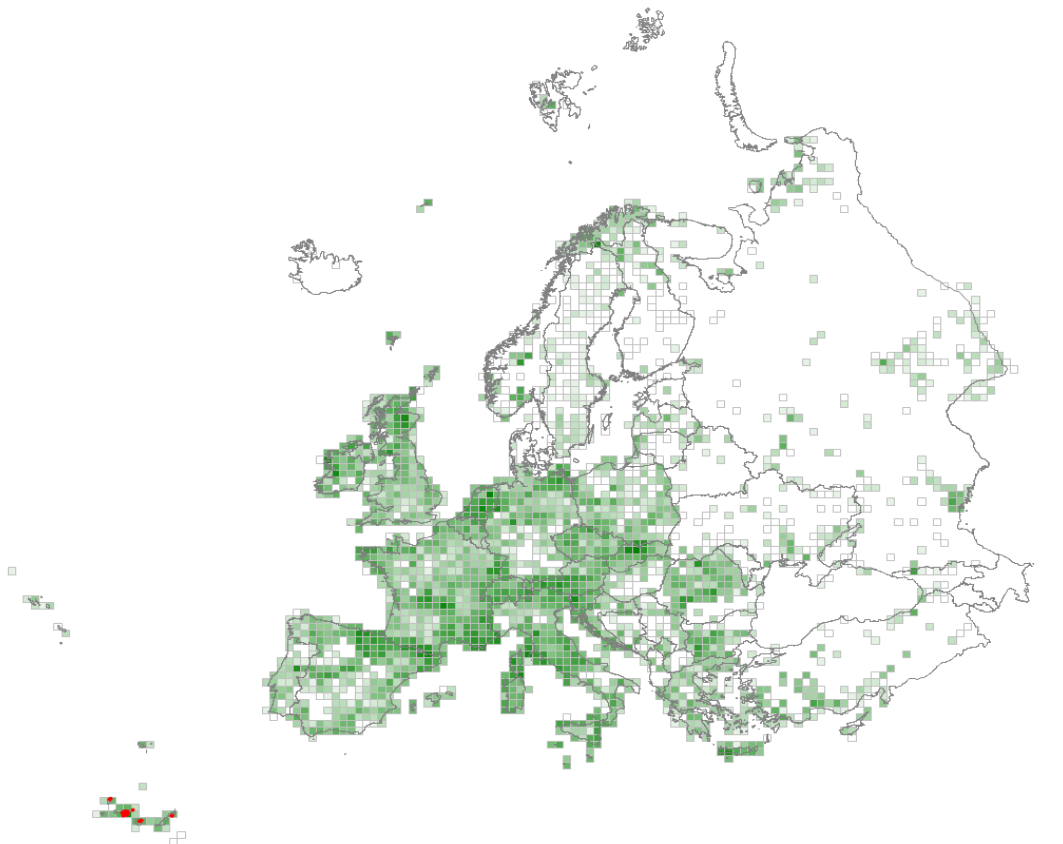
<i>Astragalus angustifolius</i>	55
<i>Prunus prostrata</i>	36
<i>Daphne oleoides</i>	33
<i>Berberis cretica</i>	32
<i>Dactylis glomerata</i>	31
<i>Clinopodium alpinum</i>	29
<i>Acantholimon ulicinum</i>	29
<i>Astracantha cretica</i>	27
<i>Poa bulbosa</i>	23
<i>Eryngium amethystinum</i>	19
<i>Sedum album</i>	18
<i>Melica ciliata</i> aggr.	18
<i>Asperula idaea</i>	18
<i>Centaurea idaea</i>	17
<i>Rhamnus saxatilis</i>	16
<i>Aubrieta deltoidea</i>	16
<i>Anchusa cespitosa</i>	16
<i>Pimpinella tragium</i>	15
<i>Euphorbia kotschyana</i>	15
<i>Astracantha rumelica</i>	15
<i>Bromopsis tomentella</i>	14
<i>Lactuca alpestris</i>	13
<i>Cerastium candidissimum</i>	13
<i>Bufonia stricta</i>	13
<i>Cerastium brachypetalum</i>	12
<i>Carlina corymbosa</i> aggr.	12
<i>Carduus tmoleus</i>	12
<i>Bromus squarrosus</i>	12
<i>Poa thessala</i>	11
<i>Herniaria parnassica</i>	11
<i>Festuca varia</i>	11
<i>Euphorbia acanthothamnus</i>	11
<i>Cirsium hypopsilum</i>	11
<i>Arenaria serpyllifolia</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Astragalus angustifolius</i>	42
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S76 – Canary mountain hedgehog-heath

Oromediterranean sparse summit low-grown scrub on volcanic screes of Tenerife and La Palma.



Corresponding alliances in EuroVegChecklist 2016

- > SUP-01A Spartocytision nubigeni Oberd. ex Esteve 1973
- > SUP-01B Plantaginion webbii Martín Osorio, Wildpret et Rivas-Mart. In Martín Osorio et al. 2007
- <> VIO-01A Violion cheiranthifoliae Voggenreiter ex Martín Osorio, Wildpret et Rivas-Mart. in Martín Osorio et al. 2007

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cytisus supranubius</i>	74
<i>Pterocephalus lasiospermus</i>	64
<i>Nepeta teydea</i>	62
<i>Arrhenatherum calderae</i>	59
<i>Tolpis webbii</i>	58
<i>Erysimum scoparium</i>	51
<i>Descurainia bourgaeana</i>	51

<i>Scrophularia glabrata</i>	46
<i>Argyranthemum tenerifae</i>	41
<i>Echium wildpretii</i>	34
<i>Carlina xeranthemoides</i>	34
<i>Adenocarpus viscosus</i>	31
<i>Pimpinella cumbrae</i>	28
<i>Plantago webbii</i>	27
<i>Descurainia lemsii</i>	26
<i>Sideritis eriocephala</i>	26
<i>Micromeria lachnophylla</i>	20
<i>Cheirolophus teydis</i>	19
<i>Descurainia gonzalesii</i>	18
<i>Erigeron calderae</i>	17
<i>Andryala pinnatifida</i>	17
<i>Bufonia paniculata</i>	17
<i>Polycarpaea tenuis</i>	17

Constant species (percentage frequencies)

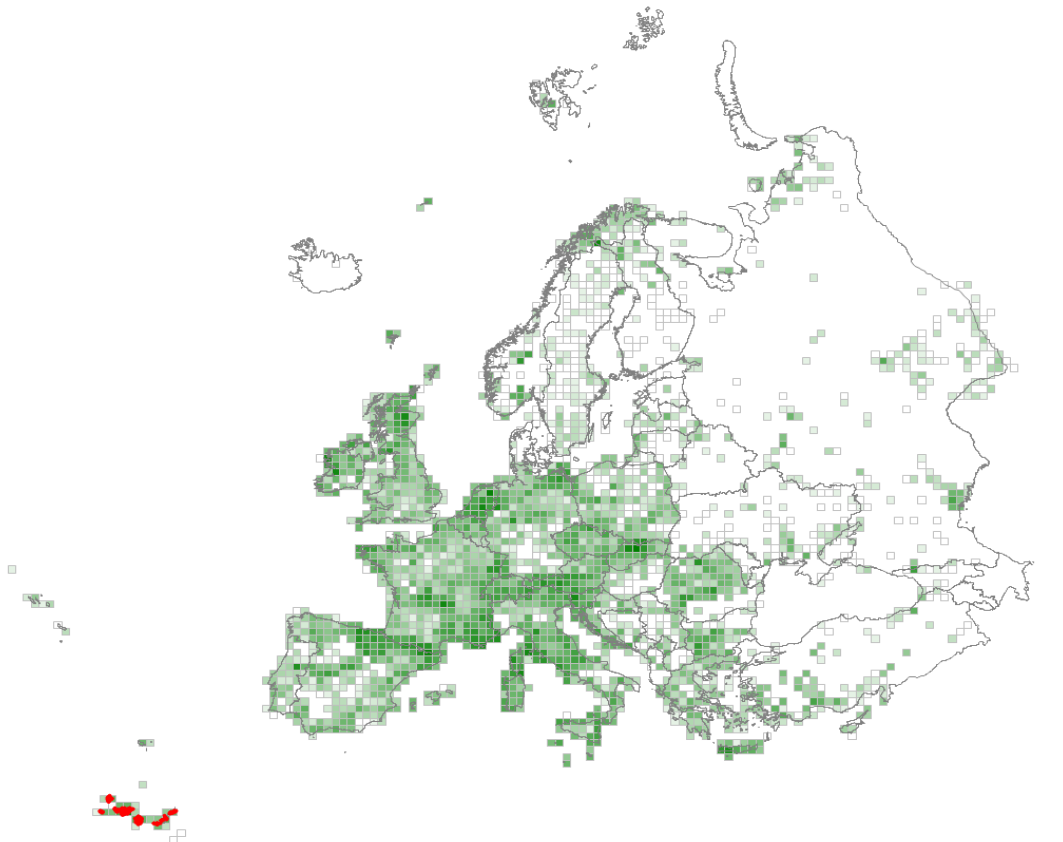
<i>Cytisus supranubius</i>	84
<i>Pterocephalus lasiospermus</i>	68
<i>Tolpis webbii</i>	50
<i>Erysimum scoparium</i>	49
<i>Arrhenatherum calderae</i>	46
<i>Nepeta teydea</i>	45
<i>Descurainia bourgaeana</i>	42
<i>Scrophularia glabrata</i>	37
<i>Adenocarpus viscosus</i>	36
<i>Argyranthemum tenerifae</i>	32
<i>Carlina xeranthemoides</i>	20
<i>Pinus canariensis</i>	17
<i>Echium wildpretii</i>	17
<i>Andryala pinnatifida</i>	16
<i>Pimpinella cumbrae</i>	15
<i>Anisantha tectorum</i>	14
<i>Micromeria lachnophylla</i>	12
<i>Plantago webbii</i>	11
<i>Cytisus proliferus</i>	11
<i>Cheirolophus teydis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Cytisus supranubius</i>	55
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S81 – Canarian xerophytic scrub

Open scrub dominated by succulent and sclerophyllous shrubs on rocky substrates with skeletal soils in the arid lowlands and on deeper soils in the moist foothills of the Canary Islands.



Corresponding alliances in EuroVegChecklist 2016

- > AEO-01A *Soncho acaulis*-*Sempervivion* Sunding 1972
- > AEO-01B *Greenovion aureae* Rivas-Mart. et al. 1993
- > AEO-02A *Aichryso laxi*-*Monanthion laxiflorae* Santos et Reyes Betancort 2009
- <> KLE-01A *Aeonio-Euphorbion canariensis* Sunding 1972
- > KLE-01B *Euphorbion regijs-jubo-lamarckii* Rivas-Mart., Wildpret, O. Rodríguez et Del Arco in Rivas-Mart. et al. 2011

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Euphorbia balsamifera</i>	53
<i>Plocama pendula</i>	52
<i>Euphorbia canariensis</i>	50
<i>Kleinia neriifolia</i>	46
<i>Rubia fruticosa</i>	40

<i>Cenchrus ciliaris</i>	40
<i>Schizogyne sericea</i>	39
<i>Ceropegia fusca</i>	39
<i>Neochamaelea pulverulenta</i>	36
<i>Euphorbia regis-jubae</i>	32
<i>Launaea arborescens</i>	32
<i>Scilla haemorrhoidalis</i>	30
<i>Euphorbia aphylla</i>	30
<i>Asparagus pastorianus</i>	29
<i>Aristida adscensionis</i>	28
<i>Campylanthus salsoloides</i>	28
<i>Opuntia stricta</i>	27
<i>Fagonia cretica</i>	26
<i>Lavandula canariensis</i>	25
<i>Helianthemum canariense</i>	23
<i>Reseda scoparia</i>	22
<i>Kickxia scoparia</i>	22
<i>Sonchus leptocephalus</i>	22
<i>Lycium intricatum</i>	22
<i>Echium brevirame</i>	21
<i>Asparagus arborescens</i>	21
<i>Lycium afrum</i>	21
<i>Tricholaena teneriffae</i>	21
<i>Rumex lunaria</i>	20
<i>Argyranthemum frutescens</i>	20
<i>Periploca angustifolia</i>	20
<i>Aeonium percarneum</i>	19
<i>Forsskaolea angustifolia</i>	18
<i>Euphorbia lamarckii</i>	18
<i>Hyparrhenia hirta</i>	18
<i>Aeonium viscatum</i>	18
<i>Bupleurum handiense</i>	16
<i>Tetrapogon villosus</i>	15
<i>Volutaria canariensis</i>	15
<i>Echium decaisnei</i>	15
<i>Argyranthemum gracile</i>	15

Constant species (percentage frequencies)

<i>Kleinia neriifolia</i>	51
<i>Euphorbia balsamifera</i>	49
<i>Launaea arborescens</i>	40
<i>Euphorbia regis-jubae</i>	39
<i>Rubia fruticosa</i>	38
<i>Plocama pendula</i>	38
<i>Schizogyne sericea</i>	36
<i>Hyparrhenia hirta</i>	34
<i>Euphorbia canariensis</i>	30
<i>Cenchrus ciliaris</i>	27
<i>Periploca angustifolia</i>	24
<i>Lycium intricatum</i>	23
<i>Scilla haemorrhoidalis</i>	20
<i>Ceropegia fusca</i>	18
<i>Aristida adscensionis</i>	18
<i>Neochamaelea pulverulenta</i>	17
<i>Micromeria varia</i>	16

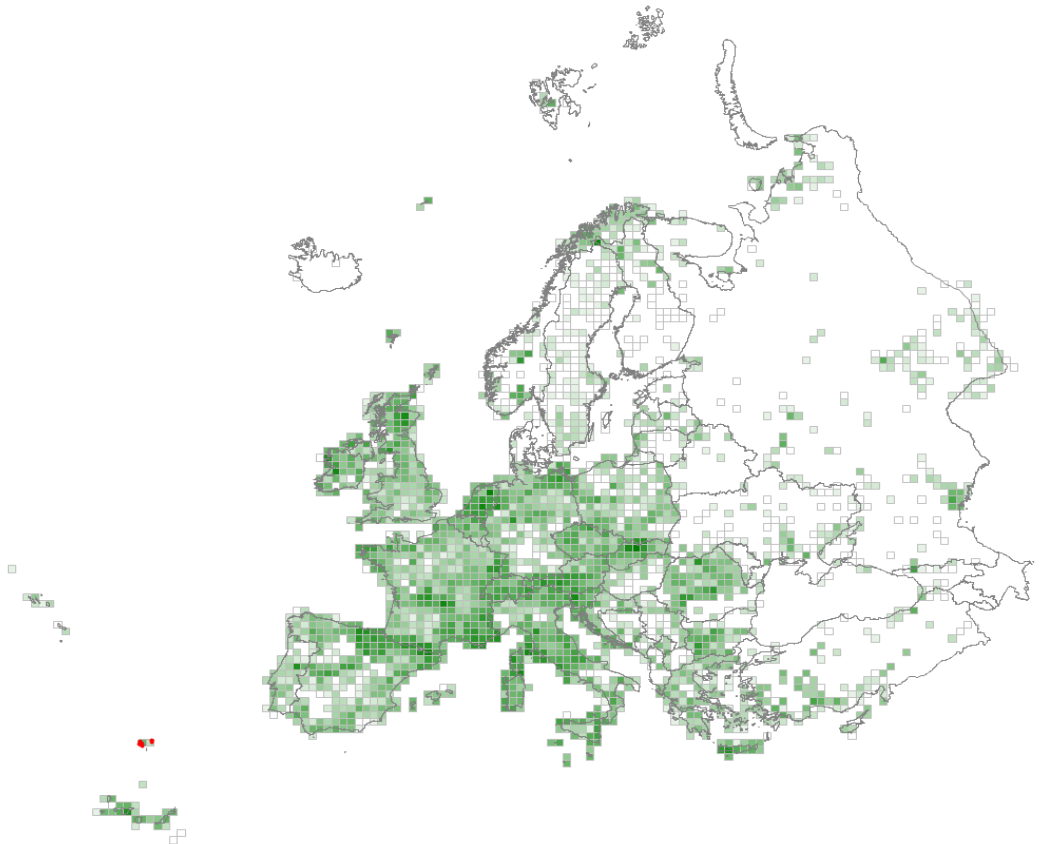
<i>Lavandula canariensis</i>	16
<i>Argyranthemum frutescens</i>	16
<i>Helianthemum canariense</i>	15
<i>Rumex lunaria</i>	13
<i>Limonium pectinatum</i>	13
<i>Suaeda vera</i>	12
<i>Opuntia stricta</i>	12
<i>Fagonia cretica</i>	12
<i>Lotus sessilifolius</i>	11
<i>Euphorbia aphylla</i>	11
<i>Bituminaria bituminosa</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Euphorbia balsamifera</i>	41
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S82 – Madeiran xerophytic scrub

Diverse scrub of sclerophyllous shrubs, small trees and succulent herbs on usually thin soils of rocky outcrops, cliffs and abandoned fields in the arid lowlands of Madeira.



Corresponding alliances in EuroVegChecklist 2016

- > AEO-01C Sinapidendro angustifolii-Aeonion glutinosi Capelo et al. 2000
- <> KLE-01A Aeonio-Euphorbion canariensis Sunding 1972

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Echium nervosum</i>	79
<i>Maytenus umbellata</i>	76
<i>Globularia salicina</i>	73
<i>Aeonium glandulosum</i>	70
<i>Helichrysum melaleucum</i>	67
<i>Sideroxylon mirmulans</i>	66
<i>Dactylis smithii</i>	56
<i>Euphorbia mellifera</i>	53
<i>Sonchus pinnatus</i>	50
<i>Phyllis nobla</i>	50

<i>Davallia canariensis</i>	44
<i>Sideritis candicans</i>	43
<i>Opuntia tuna</i>	41
<i>Hypericum grandifolium</i>	38
<i>Echium portasanctensis</i>	37
<i>Carlina salicifolia</i>	37
<i>Plantago arborescens</i>	35
<i>Crambe fruticosa</i>	34
<i>Teucrium betonicum</i>	33
<i>Sinapidendron gymnocalyx</i>	32
<i>Asparagus umbellatus</i>	29
<i>Sinapidendron angustifolium</i>	27
<i>Argyranthemum webbii</i>	26
<i>Bituminaria bituminosa</i>	24
<i>Asparagus asparagoides</i>	23
<i>Asparagus scoparius</i>	23
<i>Lotus macranthus</i>	21
<i>Lotus argyroides</i>	21
<i>Erysimum arbuscula</i>	21
<i>Cheirolophus massonianus</i>	21
<i>Carduus squarrosus</i>	21
<i>Artemisia argentea</i>	21
<i>Phagnalon lowei</i>	21
<i>Matthiola maderensis</i>	21
<i>Crepis heldreichiana</i>	18
<i>Ageratina adenophora</i>	17
<i>Sonchus ustulatus</i>	17
<i>Polypodium cambricum</i> subsp. <i>macaronesicum</i>	17
<i>Plantago leiopetala</i>	16

Constant species (percentage frequencies)

<i>Aeonium glandulosum</i>	86
<i>Globularia salicina</i>	77
<i>Helichrysum melaleucum</i>	73
<i>Echium nervosum</i>	68
<i>Maytenus umbellata</i>	64
<i>Phyllis nobla</i>	55
<i>Davallia canariensis</i>	55
<i>Dactylis smithii</i>	55
<i>Sideroxylon mirmulans</i>	50
<i>Bituminaria bituminosa</i>	50
<i>Carlina salicifolia</i>	41
<i>Hypericum grandifolium</i>	32
<i>Hedera helix</i> aggr.	32
<i>Euphorbia mellifera</i>	32
<i>Sonchus pinnatus</i>	27
<i>Sideritis candicans</i>	27
<i>Rubus ulmifolius</i>	27
<i>Plantago arborescens</i>	27
<i>Smilax aspera</i>	23
<i>Opuntia tuna</i>	23
<i>Hyparrhenia hirta</i>	23
<i>Asparagus umbellatus</i>	23
<i>Erica scoparia</i>	18
<i>Teucrium betonicum</i>	14

<i>Sinapidendron gymnocalyx</i>	14
<i>Polypodium cambricum</i> subsp. <i>macaronesicum</i>	14
<i>Echium portasanctensis</i>	14
<i>Crambe fruticosa</i>	14
<i>Argyranthemum webbii</i>	14
<i>Ageratina adenophora</i>	14

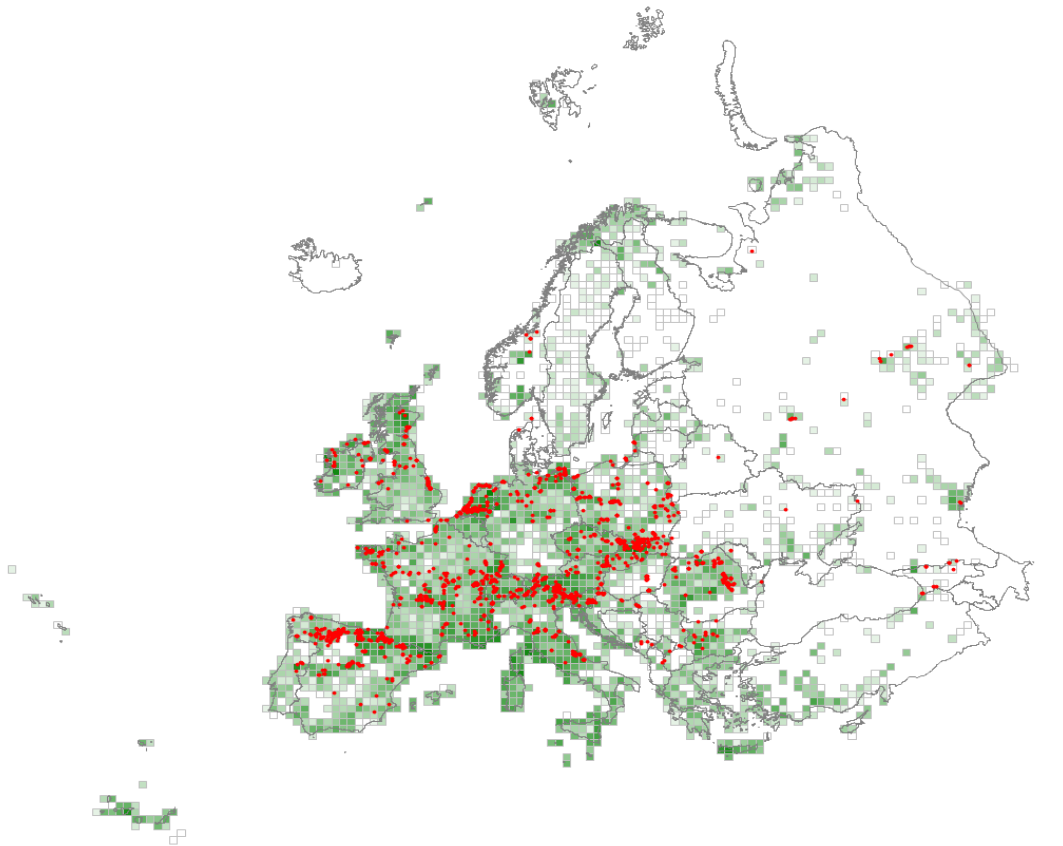
Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Sideroxylon mirmulans</i>	50
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S91 – Temperate riparian scrub

Scrub of *Salix* spp. and *Myricaria germanica* developed on the mineral sediments of banks, shoals and gravel bars of lowland to montane streams through the temperate zone, re-establishing after seasonal flooding or succeeding to riparian and gallery forest where the sediments stabilise.

Remark: *Salix acutifolia* scrub in Ukraine, occurring not only in floodplains, needs to be considered as potential new habitat.



Corresponding alliances in EuroVegChecklist 2016

- > PUR-01A *Salicion eleagno-daphnoidis* (Moor 1958) Grass 1993
- > PUR-01C *Salicion triandrae* T. Müller et Görs 1958
- > PUR-01D *Rubus caesii*-*Amorpha fruticosa* Shevchyk et V. Solomakha in Shevchyk et al. 1996
- > PUR-01E *Artemisia dniproicae*-*Salicion acutifoliae* Shevchyk et V. Solomakha in Shevchyk et al. 1996
- > PUR-01F *Salicion salviifoliae* Rivas-Mart. et al. 1984
- > PUR-01G *Salicion discolori-neotrichae* Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart. et al. 2002
- > PUR-01H *Salicion cantabricae* Rivas-Mart., T.E. Díaz et Penas in Rivas-Mart. et al. 2011
- > PUR-01I *Salicion pedicellatae* Rivas-Mart. et al. 1984
- > PUR-01J *Salicion apennino-purpureae* Biondi et Allegrezza in Biondi et al. 2014

- > PUR-02A Tamaricion parviflorae I. Kárpáti et V. Kárpáti 1961
- > PUR-02B Artemisio scopariae-Tamaricion ramosissimae Simon et Dihoru 1963
- <> VIR-03A Salicion phyllicifoliae Dierssen 1992

Characteristic species combination

Diagnostic species (phi coefficient * 100)

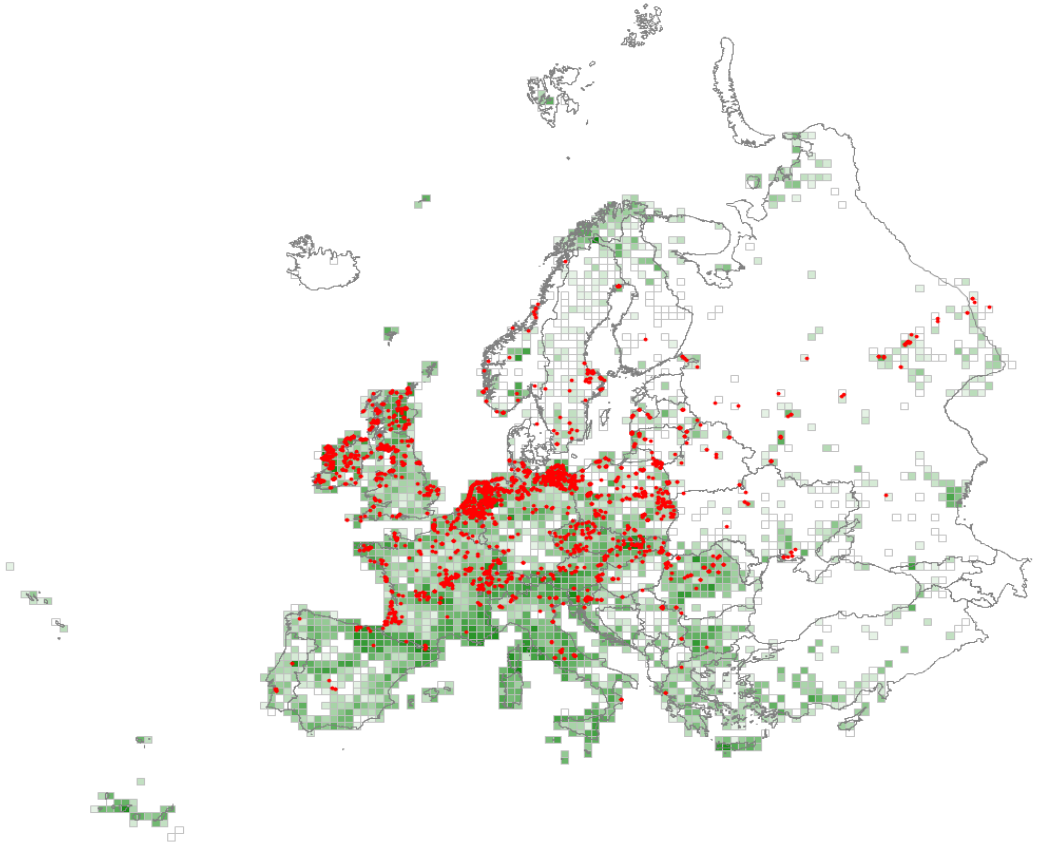
<i>Salix purpurea</i>	42
<i>Salix triandra</i>	40
<i>Salix eleagnos</i>	35
<i>Myricaria germanica</i>	33
<i>Salix viminalis</i>	28
<i>Calamagrostis pseudophragmites</i>	22
<i>Salix daphnoides</i>	18
<i>Hippophae rhamnoides</i>	16
<i>Salix cinerea</i> subsp. <i>oleifolia</i>	15

Constant species (percentage frequencies)

<i>Salix purpurea</i>	45
<i>Urtica dioica</i>	33
<i>Salix eleagnos</i>	29
<i>Salix triandra</i>	28
<i>Rubus caesius</i>	25
<i>Agrostis stolonifera</i>	24
<i>Ranunculus repens</i>	19
<i>Phalaroides arundinacea</i>	19
<i>Solanum dulcamara</i>	18
<i>Tussilago farfara</i>	17
<i>Hippophae rhamnoides</i>	17
<i>Calystegia sepium</i>	17
<i>Poa trivialis</i>	16
<i>Salix viminalis</i>	15
<i>Salix cinerea</i> subsp. <i>oleifolia</i>	15
<i>Myricaria germanica</i>	15
<i>Galium mollugo</i> aggr.	15
<i>Galium aparine</i>	15
<i>Taraxacum</i> sect. <i>Taraxacum</i>	14
<i>Equisetum arvense</i>	14
<i>Deschampsia cespitosa</i> aggr.	13
<i>Angelica sylvestris</i>	13
<i>Mentha longifolia</i>	12
<i>Lysimachia vulgaris</i>	12
<i>Dactylis glomerata</i>	12
<i>Salix alba</i>	11
<i>Populus nigra</i>	11
<i>Lythrum salicaria</i>	11
<i>Glechoma hederacea</i>	11
<i>Galium palustre</i> aggr.	11
<i>Eupatorium cannabinum</i>	11
<i>Achillea millefolium</i> aggr.	11

S92 – *Salix fen scrub*

Scrub dominated by various species of *Salix* spp. on peaty and mineral soils maintained in a permanently waterlogged state by high groundwater in floodplain backwaters, around lakes and ponds, among mires and dunes, and in abandoned wet meadows and pastures, occurring through the lowlands of Atlantic, boreal and continental Europe and extending into the Mediterranean region at higher altitudes. Associated floras vary according to the base status of the groundwater and soils.



Corresponding alliances in EuroVegChecklist 2016

- > FRA-01A *Salicion cinereae* T. Müller et Görs ex Passarge 1961
- > FRA-01B *Alno incanae-Salicion pentandrae* Kielland-Lund 1981

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Salix cinerea</i> subsp. <i>cinerea</i>	34
<i>Myrica gale</i>	21
<i>Salix pentandra</i>	16

Constant species (percentage frequencies)

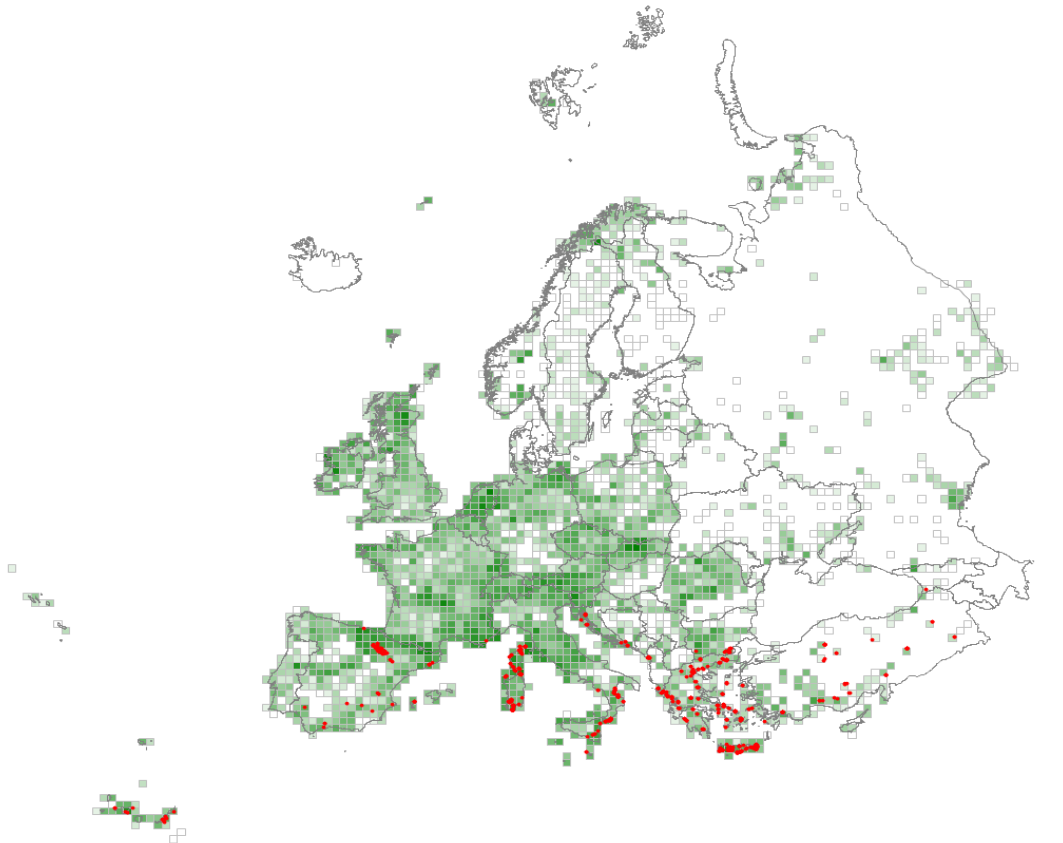
<i>Salix cinerea</i> subsp. <i>cinerea</i>	55
<i>Lysimachia vulgaris</i>	31
<i>Galium palustre</i> aggr.	30
<i>Molinia caerulea</i> aggr.	29
<i>Phragmites australis</i>	26
<i>Salix repens</i>	24
<i>Myrica gale</i>	22
<i>Lycopus europaeus</i>	21
<i>Frangula alnus</i>	21
<i>Calliergonella cuspidata</i>	21
<i>Lythrum salicaria</i>	20
<i>Solanum dulcamara</i>	19
<i>Urtica dioica</i>	18
<i>Potentilla erecta</i>	18
<i>Filipendula ulmaria</i>	17
<i>Calamagrostis canescens</i>	16
<i>Peucedanum palustre</i>	15
<i>Iris pseudacorus</i>	15
<i>Comarum palustre</i>	15
<i>Betula pubescens</i>	15
<i>Mentha aquatica</i>	14
<i>Equisetum fluviatile</i>	14
<i>Cirsium palustre</i>	14
<i>Salix aurita</i>	13
<i>Agrostis stolonifera</i>	13
<i>Juncus effusus</i>	12
<i>Holcus lanatus</i>	12
<i>Carex panicea</i>	12
<i>Carex acutiformis</i>	12
<i>Scutellaria galericulata</i>	11
<i>Salix pentandra</i>	11
<i>Poa trivialis</i>	11
<i>Menyanthes trifoliata</i>	11
<i>Festuca rubra</i> aggr.	11
<i>Erica tetralix</i>	11
<i>Dryopteris carthusiana</i> aggr.	11
<i>Alnus glutinosa</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Salix cinerea</i> subsp. <i>cinerea</i>	46
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S93 – Mediterranean riparian scrub

Usually open scrub dominated by species of *Tamarix* spp., *Nerium oleander*, *Vitex agnus-castus* and similar shrubs and small trees on seasonally dry or irregularly flooded riverbeds and along streamsides through the thermo- and mesomediterranean belts.



Corresponding alliances in EuroVegChecklist 2016

- > NER-01A *Tamaricion africanae* Br.-Bl. et O. de Bolòs 1958
- > NER-01B *Tamaricion boveano-canariensis* Izco et al. 1984
- > NER-01C *Rubus ulmifolii*-*Nerium oleandri* O. de Bolòs 1958
- > NER-01D *Securinegion buxifoliae* Rivas Goday ex López Sáez et Velasco-Negueruela
- > NER-01E *Tamaricion dalmatica* Jasprica in Jasprica, Kovačić & Ruščić 2016
- <> NER-01F *Rubus sancti*-*Nerium oleandri* Brullo et al. 2004

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Vitex agnus-castus</i>	42
<i>Tamarix africana</i>	38
<i>Nerium oleander</i>	36
<i>Tamarix parviflora</i>	30

<i>Tamarix hampeana</i>	30
<i>Tamarix canariensis</i>	28

Constant species (percentage frequencies)

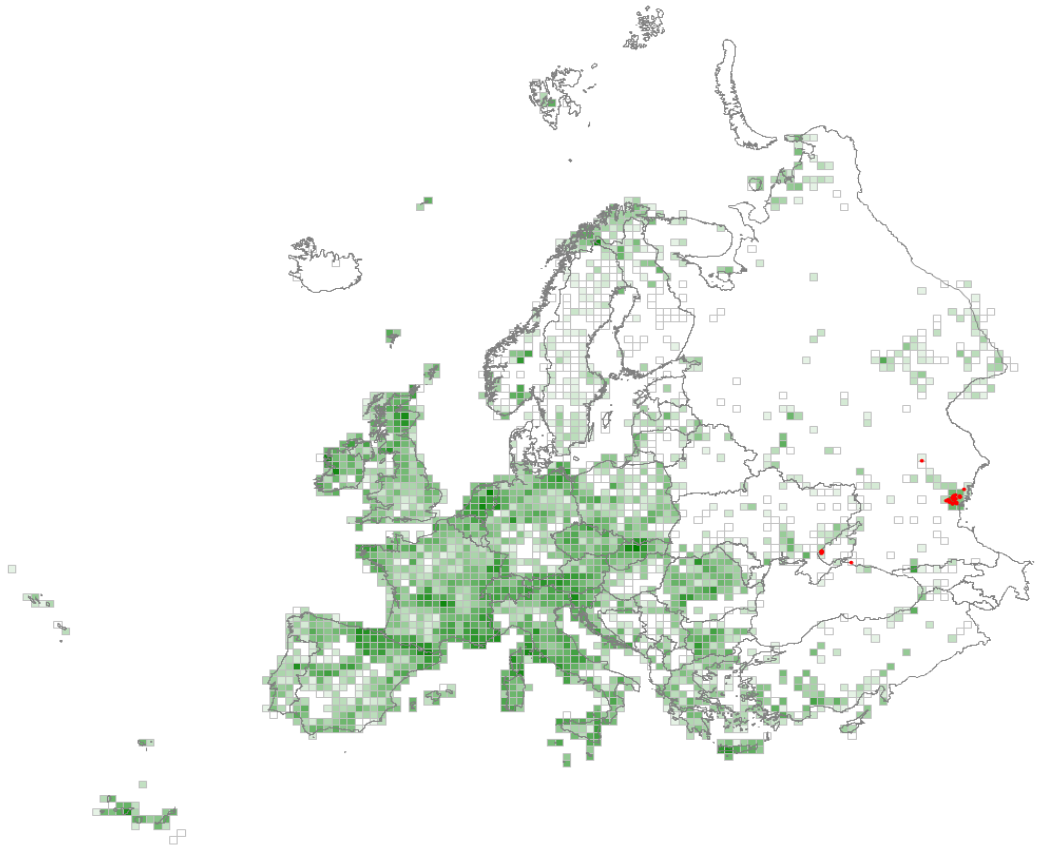
<i>Nerium oleander</i>	40
<i>Vitex agnus-castus</i>	36
<i>Rubus ulmifolius</i>	26
<i>Tamarix africana</i>	19
<i>Piptatherum miliaceum</i>	16
<i>Dittrichia viscosa</i>	15
<i>Pistacia lentiscus</i>	14
<i>Phragmites australis</i>	14
<i>Galium aparine</i>	14
<i>Tamarix parviflora</i>	13
<i>Tamarix hampeana</i>	13
<i>Tamarix canariensis</i>	11
<i>Scirpoides holoschoenus</i>	11
<i>Juncus acutus</i>	11
<i>Arisarum vulgare</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Nerium oleander</i>	30
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S94 – Semi-desert riparian scrub

Open scrub of *Tamarix* spp. and other shrubs and small trees occupying small or linear patches at sites characterised by seasonally high groundwater table and saline soils in beds of temporary or permanent rivers, in pans or sometimes in human-affected sites like irrigation systems through the semi-desert and desert region of South-Eastern Europe.



Corresponding alliances in EuroVegChecklist 2016

- > TAM-01A Agropyro fragilis-Tamaricion ramosissimae Golub in Barmin 2001

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Tamarix ramosissima</i>	71
<i>Alhagi maurorum</i>	62
<i>Aeluropus pungens</i>	53
<i>Suaeda altissima</i>	49
<i>Tamarix gracilis</i>	47
<i>Polygonum arenarium</i>	45
<i>Limonium meyeri</i>	40
<i>Atriplex aucheri</i>	38

<i>Atriplex micrantha</i>	35
<i>Eremopyrum triticeum</i>	31
<i>Atriplex tatarica</i>	31
<i>Lactuca tatarica</i>	30
<i>Tamarix laxa</i>	28
<i>Petrosimonia oppositifolia</i>	27
<i>Polygonum bellardii</i>	27
<i>Lepidium latifolium</i>	27
<i>Bassia hyssopifolia</i>	27
<i>Artemisia santonicum</i>	27
<i>Cynanchum acutum</i>	26
<i>Bassia sedoides</i>	25
<i>Descurainia sophia</i>	23
<i>Bolboschoenus glaucus</i>	23
<i>Suaeda acuminata</i>	22
<i>Frankenia hirsuta</i>	21
<i>Galium humifusum</i>	20
<i>Zygophyllum fabago</i>	20
<i>Lotus krylovii</i>	20
<i>Puccinellia gigantea</i>	19
<i>Gypsophila scorzonerifolia</i>	18
<i>Cynodon dactylon</i>	18
<i>Althaea officinalis</i>	18
<i>Petrosimonia brachiata</i>	17
<i>Medicago sativa</i>	16
<i>Sisymbrium loeselii</i>	16
<i>Lappula marginata</i>	15
<i>Leymus racemosus</i>	15

Constant species (percentage frequencies)

<i>Alhagi maurorum</i>	67
<i>Tamarix ramosissima</i>	60
<i>Limonium meyeri</i>	56
<i>Elytrigia repens</i> aggr.	52
<i>Eremopyrum triticeum</i>	50
<i>Polygonum arenarium</i>	48
<i>Aeluropus pungens</i>	46
<i>Artemisia santonicum</i>	42
<i>Cynodon dactylon</i>	40
<i>Atriplex tatarica</i>	40
<i>Suaeda altissima</i>	33
<i>Lactuca tatarica</i>	33
<i>Descurainia sophia</i>	33
<i>Atriplex aucheri</i>	33
<i>Cynanchum acutum</i>	31
<i>Phragmites australis</i>	25
<i>Bassia sedoides</i>	25
<i>Tamarix gracilis</i>	23
<i>Petrosimonia oppositifolia</i>	23
<i>Atriplex micrantha</i>	23
<i>Galium humifusum</i>	21
<i>Senecio leucanthemifolius</i>	19
<i>Lepidium latifolium</i>	19
<i>Crambe maritima</i>	19
<i>Anisantha tectorum</i>	19

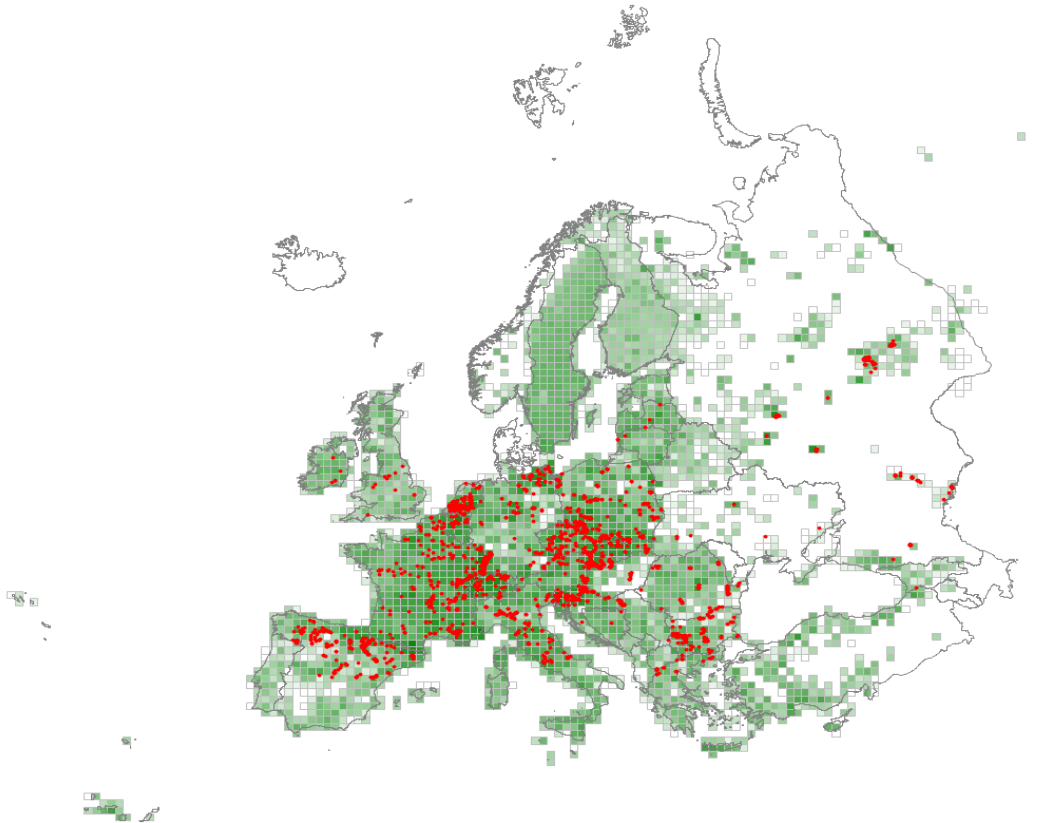
<i>Medicago sativa</i>	17
<i>Leymus racemosus</i>	17
<i>Calamagrostis epigejos</i>	17
<i>Bassia hyssopifolia</i>	17
<i>Althaea officinalis</i>	17
<i>Suaeda acuminata</i>	15
<i>Puccinellia gigantea</i>	15
<i>Polygonum bellardii</i>	15
<i>Poa bulbosa</i>	15
<i>Juncus gerardi</i>	15
<i>Xanthium orientale</i>	12
<i>Tamarix laxa</i>	12
<i>Lepidium perfoliatum</i>	12
<i>Glycyrrhiza glabra</i>	12
<i>Frankenia hirsuta</i>	12
<i>Asparagus officinalis</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Tamarix ramosissima</i>	56
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T11 – Temperate *Salix* and *Populus* riparian forest

Riparian forests dominated by willows (*Salix* spp.) and poplars (*Populus* spp.) of periodically-inundated terraces and shoals with deposition of nutrient-rich alluvium in the active floodplains of rivers through the lowlands of the temperate, submediterranean and steppe zones of Europe.



Corresponding alliances in EuroVegChecklist 2016

- > PUR-01B *Salicion albae* Soó 1951

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Salix alba</i>	54
<i>Salix euxina</i>	40
<i>Populus nigra</i>	31
<i>Rubus caesius</i>	23
<i>Phalaroides arundinacea</i>	23
<i>Humulus lupulus</i>	23
<i>Impatiens glandulifera</i>	22
<i>Populus alba</i>	20
<i>Urtica dioica</i>	20

<i>Symphytum officinale</i>	20
<i>Calystegia sepium</i>	18
<i>Acer negundo</i>	18
<i>Solidago gigantea</i>	18
<i>Glechoma hederacea</i>	17
<i>Salix triandra</i>	16
<i>Salix purpurea</i>	16
<i>Salix viminalis</i>	15

Constant species (percentage frequencies)

<i>Urtica dioica</i>	69
<i>Salix alba</i>	64
<i>Rubus caesius</i>	53
<i>Galium aparine</i>	42
<i>Phalaroides arundinacea</i>	37
<i>Salix euxina</i>	36
<i>Glechoma hederacea</i>	33
<i>Populus nigra</i>	32
<i>Calystegia sepium</i>	32
<i>Poa trivialis</i>	29
<i>Humulus lupulus</i>	27
<i>Sambucus nigra</i>	25
<i>Cornus sanguinea</i>	25
<i>Symphytum officinale</i>	24
<i>Ranunculus repens</i>	24
<i>Solanum dulcamara</i>	22
<i>Aegopodium podagraria</i>	21
<i>Lythrum salicaria</i>	19
<i>Populus alba</i>	18
<i>Phragmites australis</i>	18
<i>Iris pseudacorus</i>	18
<i>Brachypodium sylvaticum</i>	18
<i>Alnus glutinosa</i>	18
<i>Agrostis stolonifera</i>	18
<i>Salix purpurea</i>	17
<i>Lysimachia vulgaris</i>	17
<i>Lycopus europaeus</i>	17
<i>Crataegus monogyna</i>	17
<i>Angelica sylvestris</i>	17
<i>Lysimachia nummularia</i>	16
<i>Fraxinus excelsior</i>	15
<i>Dactylis glomerata</i>	15
<i>Alliaria petiolata</i>	15
<i>Geum urbanum</i>	14
<i>Galium palustre</i> aggr.	14
<i>Equisetum arvense</i>	14
<i>Solidago gigantea</i>	13
<i>Lamium maculatum</i>	13
<i>Impatiens glandulifera</i>	13
<i>Heracleum sphondylium</i>	13
<i>Filipendula ulmaria</i>	13
<i>Ficaria verna</i>	13
<i>Euonymus europaeus</i>	13
<i>Schedonorus giganteus</i>	12
<i>Rumex obtusifolius</i>	12

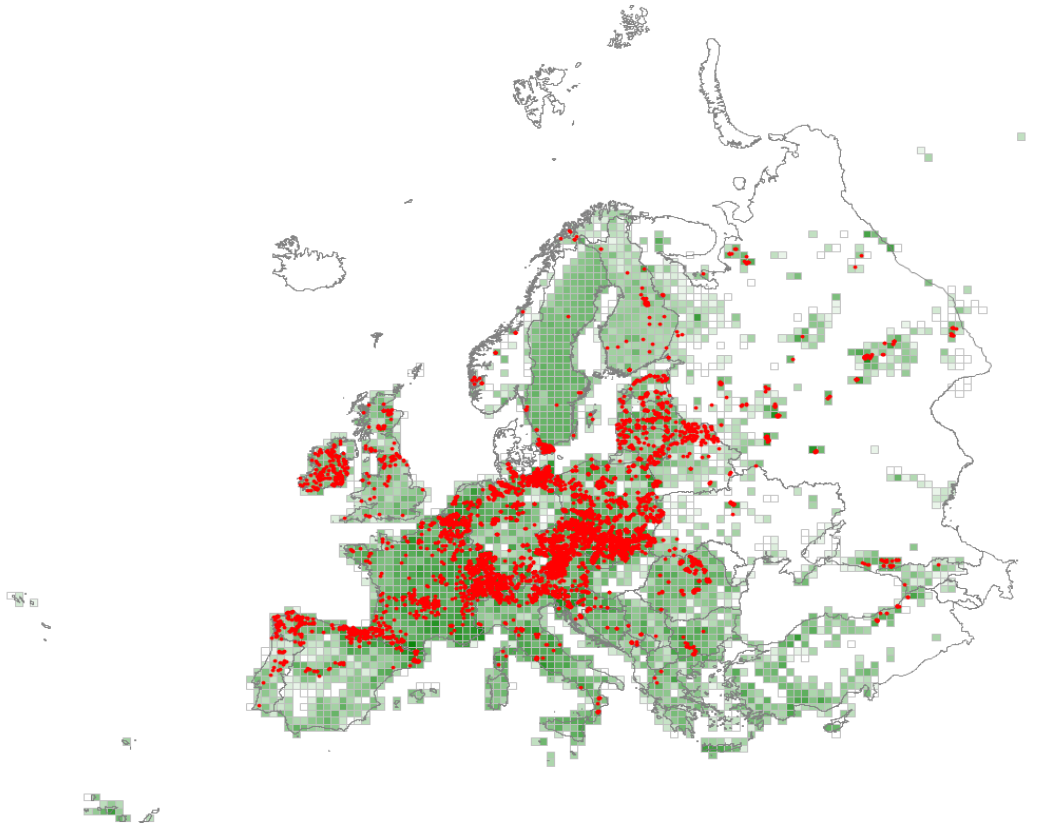
<i>Myosotis scorpioides</i> aggr.	12
<i>Impatiens noli-tangere</i>	12
<i>Anthriscus sylvestris</i>	12
<i>Stachys palustris</i>	11
<i>Salix triandra</i>	11
<i>Deschampsia cespitosa</i> aggr.	11
<i>Acer negundo</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Salix alba</i>	52
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T12 – *Alnus glutinosa*-*Alnus incana* forest on riparian and mineral soils

Riparian and non-riparian forests dominated by alder (*Alnus glutinosa*, *Alnus incana*), and sometimes ash (*Fraxinus angustifolia*, *Fraxinus excelsior*), typically without many softwood willows in the canopy and occurring throughout Europe along streams and small to medium rivers. The field layer can be quite species-rich.



Corresponding alliances in EuroVegChecklist 2016

- > POP-01C Osmundo-Alnion glutinosae (Br.-Bl. et al. 1956) Dierschke et Rivas-Mart. in Rivas-Mart. 1975
- <> POP-02A Alnion incanae Pawłowski et al. 1928
- > POP-02B Hyperico androsaemi-Alnion glutinosae (Amigo et al. 1987) Biurrun et al. 2016

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Alnus incana</i>	34
<i>Alnus glutinosa</i>	31
<i>Impatiens noli-tangere</i>	30
<i>Chrysosplenium alternifolium</i>	28

<i>Schedonorus giganteus</i>	24
<i>Cardamine amara</i>	23
<i>Plagiomnium undulatum</i>	23
<i>Carex remota</i>	23
<i>Cirsium oleraceum</i>	22
<i>Fraxinus excelsior</i>	21
<i>Stellaria nemorum</i>	21
<i>Prunus padus</i>	21
<i>Stachys sylvatica</i>	21
<i>Crepis paludosa</i>	21
<i>Filipendula ulmaria</i>	20
<i>Aegopodium podagraria</i>	20
<i>Circaea lutetiana</i>	19
<i>Geum rivale</i>	19
<i>Athyrium filix-femina</i>	19
<i>Urtica dioica</i>	18
<i>Lamium galeobdolon</i>	17
<i>Caltha palustris</i>	16
<i>Ficaria verna</i>	16
<i>Chaerophyllum hirsutum</i>	15

Constant species (percentage frequencies)

<i>Alnus glutinosa</i>	66
<i>Urtica dioica</i>	62
<i>Fraxinus excelsior</i>	53
<i>Athyrium filix-femina</i>	47
<i>Deschampsia cespitosa</i> aggr.	46
<i>Filipendula ulmaria</i>	44
<i>Oxalis acetosella</i>	41
<i>Impatiens noli-tangere</i>	40
<i>Ranunculus repens</i>	39
<i>Rubus idaeus</i>	38
<i>Dryopteris carthusiana</i> aggr.	38
<i>Alnus incana</i>	37
<i>Aegopodium podagraria</i>	36
<i>Plagiomnium undulatum</i>	34
<i>Geum urbanum</i>	34
<i>Geranium robertianum</i>	34
<i>Lamium galeobdolon</i>	33
<i>Stellaria nemorum</i>	32
<i>Stachys sylvatica</i>	32
<i>Corylus avellana</i>	31
<i>Crepis paludosa</i>	30
<i>Caltha palustris</i>	30
<i>Lysimachia vulgaris</i>	28
<i>Galium aparine</i>	28
<i>Schedonorus giganteus</i>	27
<i>Poa trivialis</i>	27
<i>Cirsium oleraceum</i>	27
<i>Acer pseudoplatanus</i>	27
<i>Geum rivale</i>	26
<i>Circaea lutetiana</i>	26
<i>Chrysosplenium alternifolium</i>	26
<i>Brachypodium sylvaticum</i>	26
<i>Anemone nemorosa</i>	26

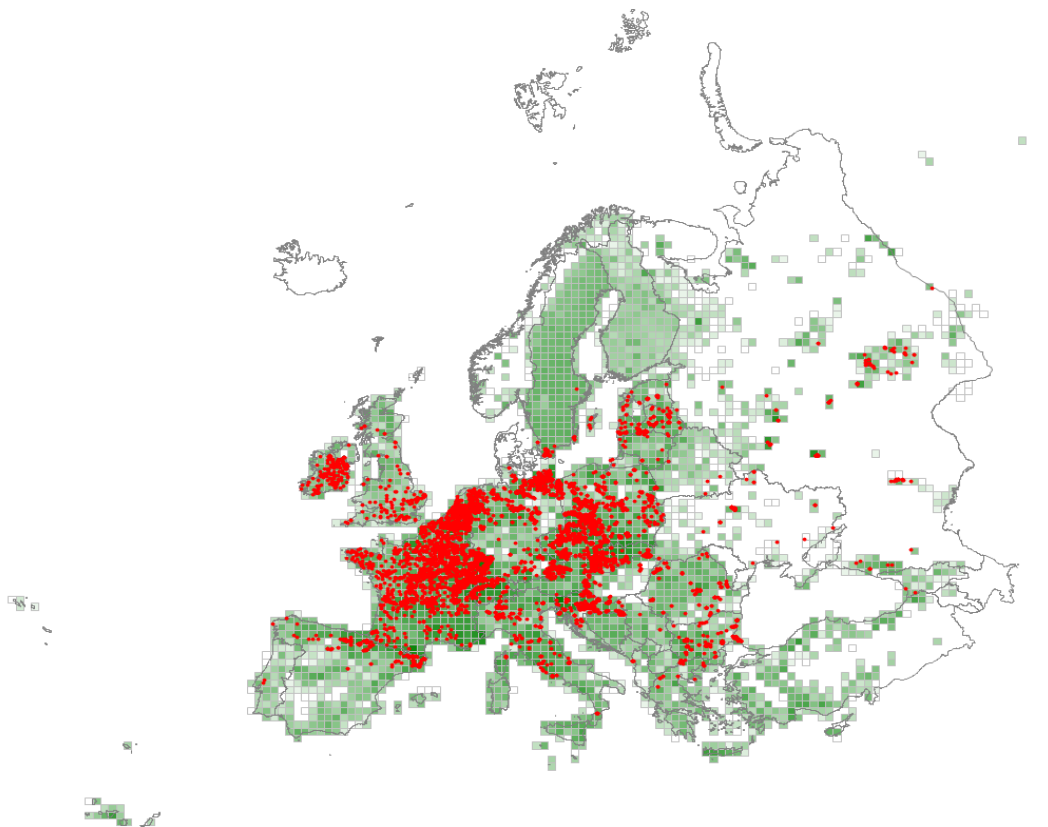
<i>Carex remota</i>	25
<i>Angelica sylvestris</i>	25
<i>Sorbus aucuparia</i>	24
<i>Prunus padus</i>	24
<i>Picea abies</i>	24
<i>Galium palustre</i> aggr.	24
<i>Sambucus nigra</i>	23
<i>Myosotis scorpioides</i> aggr.	23
<i>Glechoma hederacea</i>	23
<i>Carex sylvatica</i>	22
<i>Ajuga reptans</i>	22
<i>Rubus fruticosus</i> aggr.	21
<i>Ficaria verna</i>	21
<i>Cardamine amara</i>	21
<i>Solanum dulcamara</i>	20
<i>Lycopus europaeus</i>	20
<i>Chaerophyllum hirsutum</i>	20
<i>Plagiomnium affine</i> aggr.	19
<i>Paris quadrifolia</i>	18
<i>Frangula alnus</i>	18
<i>Senecio nemorensis</i> aggr.	17
<i>Euonymus europaeus</i>	17
<i>Brachythecium rutabulum</i>	17
<i>Viburnum opulus</i>	16
<i>Dryopteris filix-mas</i>	16
<i>Juncus effusus</i>	15
<i>Humulus lupulus</i>	15
<i>Valeriana officinalis</i> aggr.	14
<i>Quercus robur</i>	14
<i>Primula elatior</i>	14
<i>Milium effusum</i>	14
<i>Lysimachia nummularia</i>	14
<i>Equisetum sylvaticum</i>	14
<i>Equisetum arvense</i>	14
<i>Carex acutiformis</i>	14
<i>Viola reichenbachiana</i>	13
<i>Silene dioica</i>	13
<i>Rubus caesius</i>	13
<i>Mercurialis perennis</i>	13
<i>Eupatorium cannabinum</i>	13
<i>Asarum europaeum</i>	13
<i>Scutellaria galericulata</i>	12
<i>Poa nemoralis</i>	12
<i>Phalaroides arundinacea</i>	12
<i>Lysimachia nemorum</i>	12
<i>Fragaria vesca</i>	12
<i>Oxyrrhynchium hians</i>	11
<i>Mnium hornum</i>	11
<i>Lamium maculatum</i>	11
<i>Hedera helix</i> aggr.	11
<i>Galeopsis tetrahit</i> aggr.	11
<i>Fagus sylvatica</i>	11
<i>Dactylis glomerata</i>	11
<i>Cirsium palustre</i>	11
<i>Atrichum undulatum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Alnus glutinosa</i>	55
<i>Alnus incana</i>	30

T13 – Temperate hardwood riparian forest

Mixed broadleaved forests typical of less-frequently flooded, well-aerated mineral soils on floodplains of the middle and lower reaches of major European rivers. The canopy in high-forest stands can be very tall and multi-layered and is typically dominated by various mixtures of *Alnus glutinosa*, *Fraxinus angustifolia*, *Fraxinus excelsior*, *Populus alba*, *Populus canescens*, *Prunus padus*, *Quercus robur*, *Ulmus glabra*, *Ulmus laevis* and *Ulmus minor*. There is typically an abundant and varied understorey, again often structurally complex, with a range of small trees, shrubs and lianas that are more typical of mesic deciduous forests (such as T1E *Carpinus* and *Quercus* mesic deciduous forest).



Corresponding alliances in EuroVegChecklist 2016

- <> POP-02A *Alnion incanae* Pawłowski et al. 1928
- > POP-02C *Fraxino-Quercion roboris* Passarge 1968
- <> POP-02D *Alno-Quercion roboris* Horvat 1950
- > POP-02E *Poo angustifoliae-Ulmion laevis* Golub in Golub et Kuzmina 1997

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Alnus glutinosa</i>	25
<i>Circaea lutetiana</i>	22
<i>Ulmus laevis</i>	21
<i>Fraxinus excelsior</i>	21
<i>Quercus robur</i>	20
<i>Glechoma hederacea</i>	19
<i>Iris pseudacorus</i>	18
<i>Prunus padus</i>	18
<i>Schedonorus giganteus</i>	17
<i>Geum urbanum</i>	17
<i>Ficaria verna</i>	17
<i>Humulus lupulus</i>	17
<i>Urtica dioica</i>	17
<i>Rubus caesius</i>	17
<i>Ulmus minor</i>	16
<i>Carex remota</i>	16
<i>Viburnum opulus</i>	15
<i>Rumex sanguineus</i>	15

Constant species (percentage frequencies)

<i>Urtica dioica</i>	59
<i>Quercus robur</i>	59
<i>Alnus glutinosa</i>	54
<i>Fraxinus excelsior</i>	51
<i>Geum urbanum</i>	40
<i>Rubus caesius</i>	38
<i>Glechoma hederacea</i>	37
<i>Galium aparine</i>	37
<i>Deschampsia cespitosa</i> aggr.	36
<i>Crataegus monogyna</i>	31
<i>Corylus avellana</i>	31
<i>Cornus sanguinea</i>	31
<i>Circaea lutetiana</i>	30
<i>Sambucus nigra</i>	29
<i>Brachypodium sylvaticum</i>	29
<i>Rubus fruticosus</i> aggr.	28
<i>Iris pseudacorus</i>	27
<i>Filipendula ulmaria</i>	26
<i>Euonymus europaeus</i>	26
<i>Lysimachia vulgaris</i>	24
<i>Hedera helix</i> aggr.	24
<i>Ulmus minor</i>	23
<i>Poa trivialis</i>	23
<i>Ficaria verna</i>	23
<i>Dryopteris carthusiana</i> aggr.	23
<i>Stachys sylvatica</i>	22
<i>Viburnum opulus</i>	21
<i>Ranunculus repens</i>	21
<i>Carex sylvatica</i>	21
<i>Solanum dulcamara</i>	20
<i>Prunus padus</i>	20
<i>Lycopus europaeus</i>	20

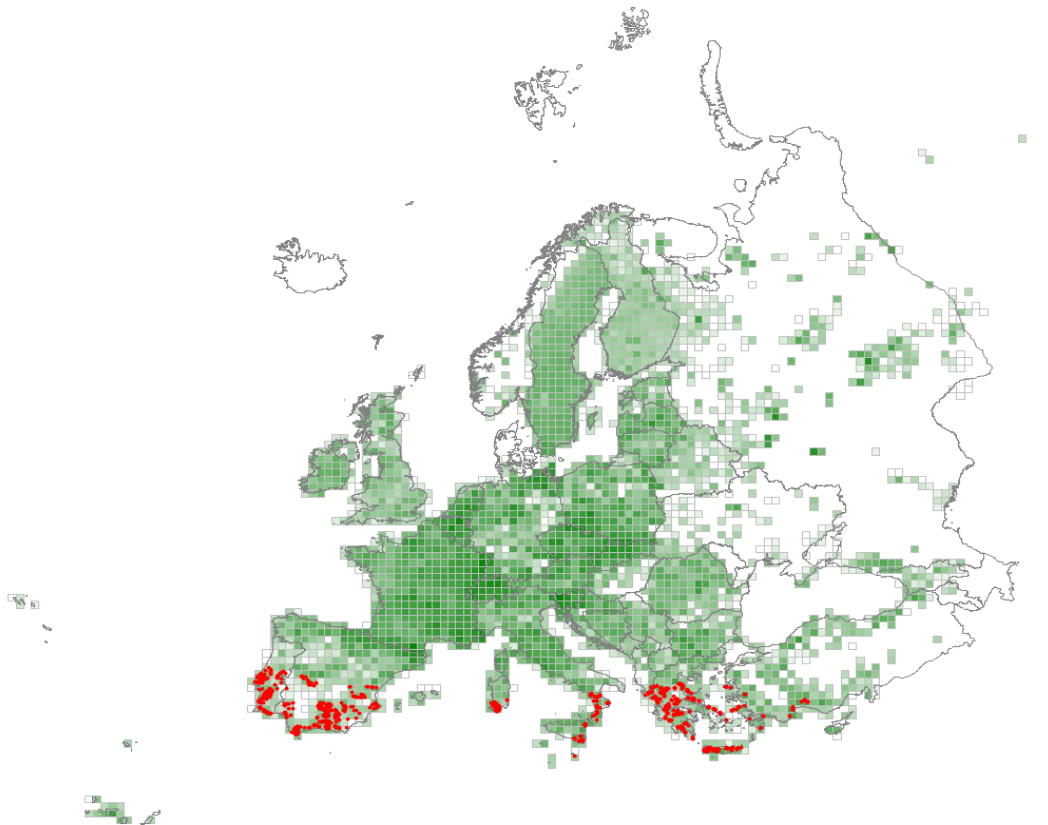
<i>Humulus lupulus</i>	20
<i>Geranium robertianum</i>	20
<i>Galium palustre</i> aggr.	20
<i>Carpinus betulus</i>	20
<i>Aegopodium podagraria</i>	20
<i>Schedonorus giganteus</i>	19
<i>Frangula alnus</i>	19
<i>Athyrium filix-femina</i>	19
<i>Carex remota</i>	18
<i>Acer campestre</i>	18
<i>Lysimachia nummularia</i>	17
<i>Anemone nemorosa</i>	17
<i>Lamium galeobdolon</i>	16
<i>Impatiens noli-tangere</i>	16
<i>Carex acutiformis</i>	16
<i>Angelica sylvestris</i>	16
<i>Acer pseudoplatanus</i>	16
<i>Prunus spinosa</i>	15
<i>Rumex sanguineus</i>	14
<i>Dactylis glomerata</i>	14
<i>Alliaria petiolata</i>	14
<i>Sorbus aucuparia</i>	13
<i>Rubus idaeus</i>	13
<i>Milium effusum</i>	13
<i>Galeopsis tetrahit</i> aggr.	13
<i>Crataegus laevigata</i>	13
<i>Ajuga reptans</i>	13
<i>Viola reichenbachiana</i>	12
<i>Scrophularia nodosa</i>	12
<i>Plagiomnium undulatum</i>	12
<i>Phalaroides arundinacea</i>	12
<i>Moehringia trinervia</i>	12
<i>Lythrum salicaria</i>	12
<i>Ligustrum vulgare</i>	12
<i>Brachythecium rutabulum</i>	12
<i>Ulmus laevis</i>	11
<i>Ribes rubrum</i> aggr.	11
<i>Paris quadrifolia</i>	11
<i>Juncus effusus</i>	11
<i>Impatiens parviflora</i>	11
<i>Fraxinus angustifolia</i>	11
<i>Caltha palustris</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Alnus glutinosa</i>	38
<i>Quercus robur</i>	34

T14 – Mediterranean and Macaronesian riparian forest

Deciduous broadleaved forest, most commonly dominated by poplars (*Populus*), willows (*Salix*) or oriental plane (*Platanus orientalis*), on periodically flooded alluvia or gravel terraces and streambanks in humid localities in the Mediterranean and Macaronesia. Also includes streamside forests with *Rhododendron ponticum* and *Betula pendula* var. *fontqueri* in Spain.



Corresponding alliances in EuroVegChecklist 2016

- > POP-01A Populion albae Br.-Bl. ex Tchou 1949
- > POP-01B Ligustro vulgaris-Alnion glutinosae Poldini, Sbrulino et Venanzoni in Biondi et al. 2015
- > POP-01C Osmundo-Alnion glutinosae (Br.-Bl. et al. 1956) Dierschke et Rivas-Mart. in Rivas-Mart. 1975
- > POP-01D Rhododendro pontici-Prunion lusitanicae Pérez Latorre, Galán de Mera et Cabezudo in Pérez Latorre et al. 1999
- > POP-01E Platanion orientalis I. Kárpáti et V. Kárpáti 1961
- > POP-01F Lauro nobilis-Fraxinion angustifoliae I. Kárpáti et V. Kárpáti 1961
- = PUR-03A Salicion canariensis Rivas-Mart., Wildpret, Del Arco, O. Rodríguez, Pérez de Paz, García Gallo, Acebes, T.E. Díaz et Fernández-González ex Rivas-Mart.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Platanus orientalis</i>	60
<i>Fraxinus angustifolia</i>	32
<i>Oenanthe crocata</i>	27
<i>Vitis vinifera</i>	26
<i>Nerium oleander</i>	25
<i>Arundo donax</i>	25
<i>Arum italicum</i>	24
<i>Vinca difformis</i>	22
<i>Melissa officinalis</i>	22
<i>Populus alba</i>	22
<i>Rubus ulmifolius</i>	21
<i>Carex pendula</i>	21
<i>Ficus carica</i>	19
<i>Rubus sanctus</i>	19
<i>Dorycnium rectum</i>	17
<i>Dioscorea communis</i>	16
<i>Salix pedicellata</i>	15
<i>Scrophularia scorodonia</i>	15
<i>Salix alba</i>	15

Constant species (percentage frequencies)

<i>Rubus ulmifolius</i>	59
<i>Brachypodium sylvaticum</i>	45
<i>Platanus orientalis</i>	41
<i>Hedera helix</i> aggr.	41
<i>Dioscorea communis</i>	35
<i>Fraxinus angustifolia</i>	32
<i>Nerium oleander</i>	28
<i>Arum italicum</i>	28
<i>Smilax aspera</i>	25
<i>Alnus glutinosa</i>	25
<i>Vitis vinifera</i>	23
<i>Clematis vitalba</i>	22
<i>Rubia peregrina</i>	20
<i>Crataegus monogyna</i>	20
<i>Scirpoides holoschoenus</i>	19
<i>Pteridium aquilinum</i>	19
<i>Populus alba</i>	19
<i>Ficus carica</i>	19
<i>Carex pendula</i>	19
<i>Salix alba</i>	18
<i>Oenanthe crocata</i>	17
<i>Galium aparine</i>	17
<i>Populus nigra</i>	16
<i>Piptatherum miliaceum</i>	16
<i>Ulmus minor</i>	14
<i>Rubus sanctus</i>	14
<i>Dactylis glomerata</i>	14
<i>Salix cinerea</i> subsp. <i>oleifolia</i>	13
<i>Rumex conglomeratus</i>	13
<i>Asparagus acutifolius</i>	13
<i>Salix euxina</i>	12

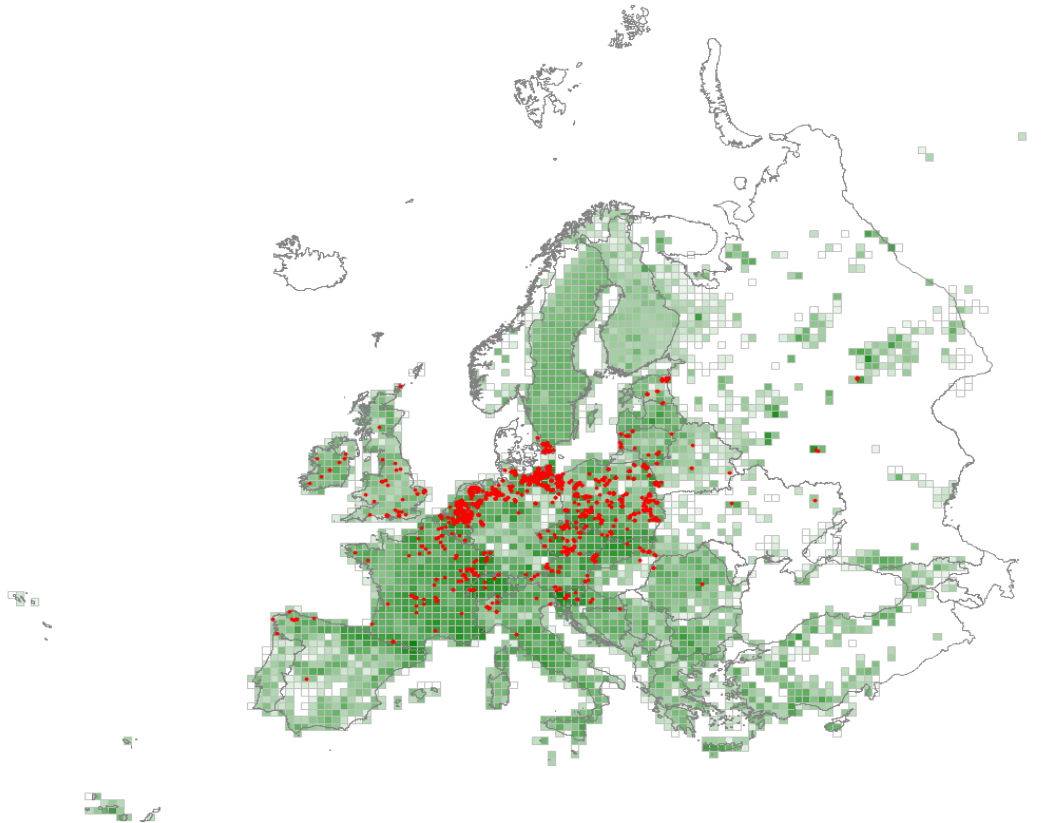
<i>Rosa sempervirens</i>	12
<i>Rosa canina</i> aggr.	12
<i>Geranium purpureum</i>	12
<i>Equisetum ramosissimum</i>	12
<i>Arundo donax</i>	12
<i>Prunella vulgaris</i>	11
<i>Parietaria judaica</i>	11
<i>Mentha suaveolens</i>	11
<i>Calystegia sepium</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Platanus orientalis</i>	37
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T15 – Broadleaved swamp forest on non-acid peat

Deciduous broadleaved forest, commonly dominated by alder (*Alnus glutinosa*, *Alnus incana*), oak (*Quercus robur*) or aspen (*Populus tremula*) on non-acid peat with groundwater at or seasonally above the surface in swamps across the lowlands of the temperate and boreal zones.



Corresponding alliances in EuroVegChecklist 2016

- <> ALN-01A *Alnion glutinosae* Malcuit 1929
- > ALN-01B *Frangulo alni-Fraxinion oxycarpae* Poldini, Sburlino et Venanzoni in Biondi et al. 2015
- > ALN-02A *Salici pentandrae-Betulion pubescentis* Clausnitzer in Dengler et al. 2004

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Carex elongata</i>	54
<i>Alnus glutinosa</i>	47
<i>Thelypteris palustris</i>	43
<i>Calamagrostis canescens</i>	39
<i>Peucedanum palustre</i>	37
<i>Carex pseudocyperus</i>	33

<i>Lysimachia vulgaris</i>	32
<i>Solanum dulcamara</i>	31
<i>Mnium hornum</i>	27
<i>Lycopus europaeus</i>	27
<i>Galium palustre</i> aggr.	25
<i>Scutellaria galericulata</i>	25
<i>Carex paniculata</i>	25
<i>Iris pseudacorus</i>	24
<i>Sphagnum squarrosum</i>	23
<i>Lysimachia thyrsiflora</i>	22
<i>Carex acutiformis</i>	22
<i>Dryopteris carthusiana</i> aggr.	21
<i>Carex elata</i>	21
<i>Hottonia palustris</i>	20
<i>Calla palustris</i>	20
<i>Calliergon cordifolium</i>	20
<i>Frangula alnus</i>	20
<i>Calliergonella cuspidata</i>	19
<i>Salix cinerea</i> subsp. <i>cinerea</i>	17
<i>Ribes nigrum</i>	17

Constant species (percentage frequencies)

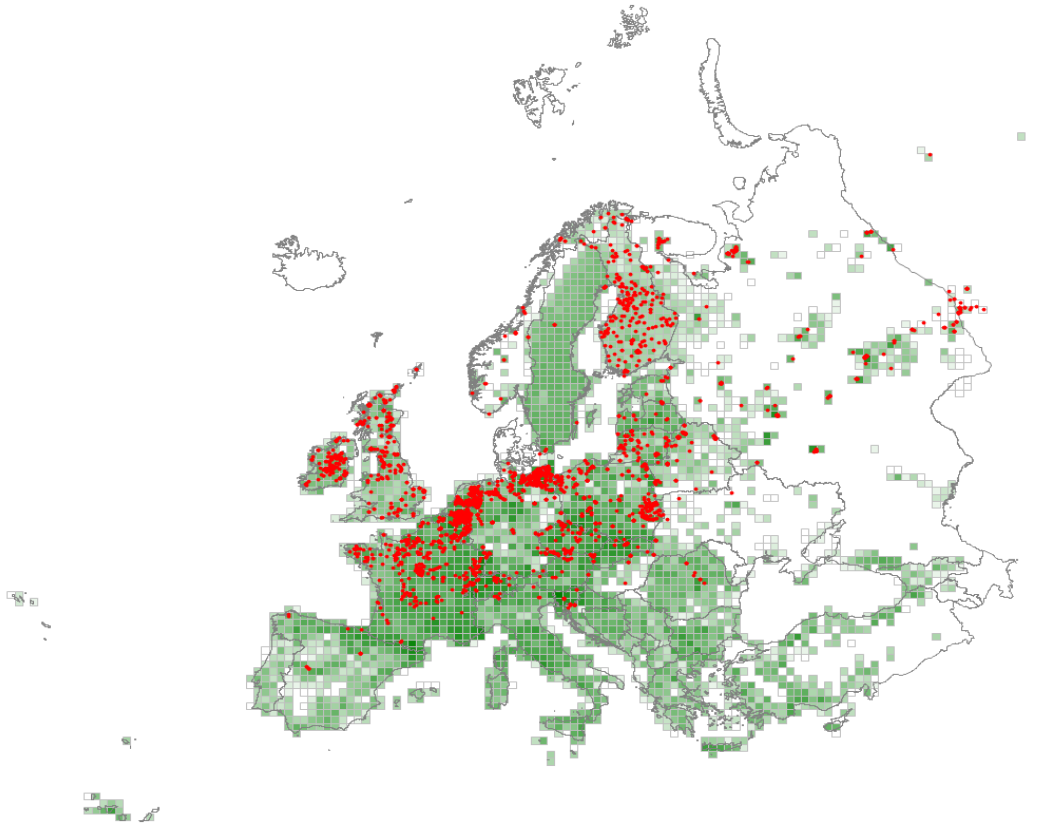
<i>Alnus glutinosa</i>	100
<i>Lysimachia vulgaris</i>	69
<i>Dryopteris carthusiana</i> aggr.	63
<i>Galium palustre</i> aggr.	61
<i>Solanum dulcamara</i>	56
<i>Peucedanum palustre</i>	52
<i>Frangula alnus</i>	50
<i>Carex elongata</i>	50
<i>Lycopus europaeus</i>	49
<i>Calamagrostis canescens</i>	49
<i>Thelypteris palustris</i>	48
<i>Iris pseudacorus</i>	37
<i>Calliergonella cuspidata</i>	37
<i>Mnium hornum</i>	36
<i>Betula pubescens</i>	36
<i>Sorbus aucuparia</i>	31
<i>Lythrum salicaria</i>	30
<i>Carex acutiformis</i>	30
<i>Scutellaria galericulata</i>	29
<i>Salix cinerea</i> subsp. <i>cinerea</i>	28
<i>Phragmites australis</i>	28
<i>Juncus effusus</i>	27
<i>Athyrium filix-femina</i>	27
<i>Rubus fruticosus</i> aggr.	25
<i>Carex pseudocyperus</i>	25
<i>Carex elata</i>	25
<i>Rubus idaeus</i>	24
<i>Lysimachia thyrsiflora</i>	23
<i>Deschampsia cespitosa</i> aggr.	23
<i>Carex paniculata</i>	23
<i>Viola palustris</i>	21
<i>Equisetum fluviatile</i>	21
<i>Cirsium palustre</i>	21

<i>Sphagnum squarrosum</i>	20
<i>Plagiomnium affine</i> aggr.	20
<i>Caltha palustris</i>	20
<i>Brachythecium rutabulum</i>	20
<i>Urtica dioica</i>	19
<i>Sphagnum palustre</i> aggr.	19
<i>Molinia caerulea</i> aggr.	18
<i>Quercus robur</i>	17
<i>Oxalis acetosella</i>	17
<i>Filipendula ulmaria</i>	16
<i>Kindbergia praelonga</i>	15
<i>Comarum palustre</i>	15
<i>Mentha aquatica</i>	14
<i>Eupatorium cannabinum</i>	14
<i>Climacium dendroides</i>	14
<i>Plagiothecium denticulatum</i>	13
<i>Myosotis scorpioides</i> aggr.	13
<i>Lemna minor</i>	13
<i>Carex canescens</i>	13
<i>Calliergon cordifolium</i>	13
<i>Polytrichastrum formosum</i>	12
<i>Picea abies</i>	12
<i>Lonicera periclymenum</i>	12
<i>Epilobium palustre</i>	12
<i>Poa trivialis</i>	11
<i>Glyceria maxima</i>	11
<i>Carex rostrata</i>	11
<i>Calla palustris</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Alnus glutinosa 100

T16 – Broadleaved mire forest on acid peat

Deciduous broadleaved or mixed forest on acid peat on or around active bogs and poor fens with nutrient-poor ground waters occurring through the Atlantic region and the boreal zone and locally, where ground conditions permit, also in the continental zone. It is usually dominated by birch (*Betula pubescens*).



Corresponding alliances in EuroVegChecklist 2016

= ALN-03A *Betulion pubescentis* Lohmeyer et Tx. ex Oberd. 1957

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Betula pubescens</i>	29
<i>Sphagnum palustre</i> aggr.	21
<i>Sphagnum fimbriatum</i>	21
<i>Molinia caerulea</i> aggr.	18
<i>Frangula alnus</i>	17
<i>Sphagnum recurvum</i> aggr.	15

Constant species (percentage frequencies)

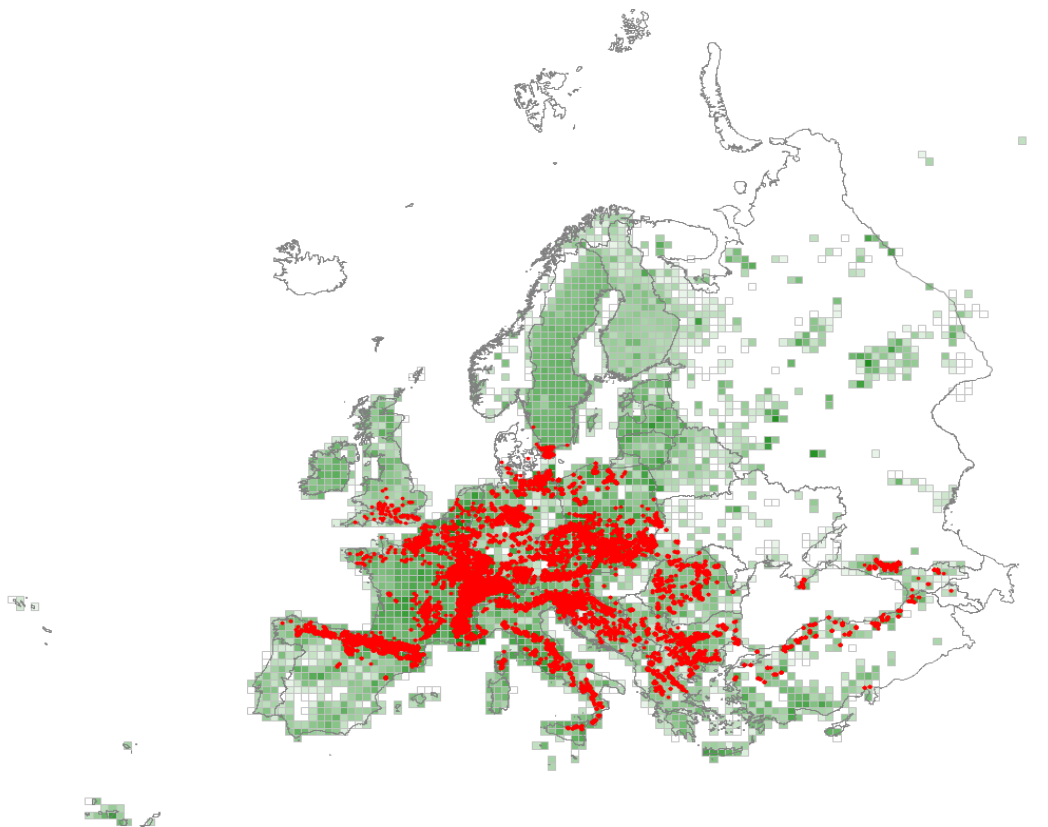
<i>Betula pubescens</i>	81
<i>Molinia caerulea</i> aggr.	65
<i>Frangula alnus</i>	43
<i>Pinus sylvestris</i>	37
<i>Dryopteris carthusiana</i> aggr.	37
<i>Vaccinium myrtillus</i>	35
<i>Quercus robur</i>	33
<i>Betula pendula</i>	33
<i>Sphagnum recurvum</i> aggr.	31
<i>Sphagnum palustre</i> aggr.	29
<i>Sorbus aucuparia</i>	29
<i>Polytrichum commune</i>	27
<i>Pleurozium schreberi</i>	26
<i>Aulacomnium palustre</i>	26
<i>Eriophorum vaginatum</i>	25
<i>Avenella flexuosa</i>	25
<i>Rubus fruticosus</i> aggr.	22
<i>Calluna vulgaris</i>	22
<i>Picea abies</i>	20
<i>Vaccinium oxycoccos</i>	18
<i>Salix cinerea</i> subsp. <i>cinerea</i>	18
<i>Lysimachia vulgaris</i>	18
<i>Carex nigra</i>	18
<i>Vaccinium uliginosum</i>	17
<i>Juncus effusus</i>	17
<i>Hypnum cupressiforme</i> aggr.	17
<i>Dicranum scoparium</i>	17
<i>Vaccinium vitis-idaea</i>	16
<i>Potentilla erecta</i>	16
<i>Lonicera periclymenum</i>	16
<i>Calamagrostis canescens</i>	16
<i>Alnus glutinosa</i>	16
<i>Sphagnum fimbriatum</i>	15
<i>Salix aurita</i>	14
<i>Comarum palustre</i>	14
<i>Polytrichastrum formosum</i>	13
<i>Carex rostrata</i>	13
<i>Carex canescens</i>	13
<i>Trientalis europaea</i>	12
<i>Rhododendron tomentosum</i>	12
<i>Polytrichum strictum</i>	12
<i>Phragmites australis</i>	12
<i>Mnium hornum</i>	12
<i>Hylocomium splendens</i>	12
<i>Galium palustre</i> aggr.	12
<i>Agrostis canina</i>	12
<i>Sphagnum magellanicum</i> aggr.	11
<i>Populus tremula</i>	11
<i>Pohlia nutans</i>	11
<i>Eriophorum angustifolium</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Betula pubescens</i>	62
<i>Molinia caerulea</i> aggr.	32

T17 – *Fagus* forest on non-acid soils

Forest dominated by beech (*Fagus sylvatica* and *Fagus orientalis*) on base-rich to neutral, mesotrophic to eutrophic, mineral soils. It occurs through the Atlantic and continental areas of Europe and, at higher altitudes, in the submediterranean zone. Associated trees, including evergreen conifers like fir (*Abies alba*) and spruce (*Picea abies*) which figures at the altitudinal limit, are always subordinate in cover and usually in height, though broadleaved associates are more extensive and diverse on richer soils and, like the usually sparse shrub layer, show regional climate-related variation. The field layer can be species-rich.



Corresponding alliances in EuroVegChecklist 2016

- ◁ FAG-02A Aremonio-Fagion (Horvat 1950) Borhidi in Török et al. 1989
- ◁ FAG-02B Fagion sylvaticae Luquet 1926
- ◁ FAG-02C Geranio striati-Fagion Gentile 1970
- ◁ FAG-06A Fagion orientalis Soó 1964
- > FAG-06B Dentario quinquefoliae-Fagion Didukh 1996

Characteristic species combination

Diagnostic species (phi coefficient * 100)

Fagus sylvatica

<i>Galium odoratum</i>	31
<i>Cardamine bulbifera</i>	21
<i>Lamium galeobdolon</i>	20
<i>Mercurialis perennis</i>	19
<i>Acer pseudoplatanus</i>	19
<i>Viola reichenbachiana</i>	19
<i>Carex sylvatica</i>	17
<i>Dryopteris filix-mas</i>	16
<i>Anemone nemorosa</i>	15

Constant species (percentage frequencies)

<i>Fagus sylvatica</i>	97
<i>Galium odoratum</i>	54
<i>Acer pseudoplatanus</i>	45
<i>Viola reichenbachiana</i>	42
<i>Oxalis acetosella</i>	41
<i>Lamium galeobdolon</i>	40
<i>Dryopteris filix-mas</i>	40
<i>Mercurialis perennis</i>	37
<i>Lactuca muralis</i>	32
<i>Hedera helix</i> aggr.	32
<i>Fraxinus excelsior</i>	32
<i>Anemone nemorosa</i>	31
<i>Athyrium filix-femina</i>	30
<i>Rubus fruticosus</i> aggr.	28
<i>Carex sylvatica</i>	27
<i>Euphorbia amygdaloides</i>	25
<i>Prenanthes purpurea</i>	24
<i>Poa nemoralis</i>	24
<i>Picea abies</i>	24
<i>Fragaria vesca</i>	24
<i>Abies alba</i>	24
<i>Geranium robertianum</i>	23
<i>Corylus avellana</i>	23
<i>Melica uniflora</i>	21
<i>Cardamine bulbifera</i>	21
<i>Senecio nemorensis</i> aggr.	20
<i>Hieracium murorum</i>	20
<i>Hepatica nobilis</i>	20
<i>Daphne mezereum</i>	20
<i>Carex digitata</i>	20
<i>Brachypodium sylvaticum</i>	20
<i>Sorbus aucuparia</i>	19
<i>Sanicula europaea</i>	19
<i>Milium effusum</i>	19
<i>Carpinus betulus</i>	19
<i>Lonicera xylosteum</i>	18
<i>Lathyrus vernus</i>	18
<i>Solidago virgaurea</i>	17
<i>Rubus idaeus</i>	17
<i>Polygonatum multiflorum</i>	17
<i>Acer campestre</i>	17
<i>Sorbus aria</i> aggr.	16
<i>Paris quadrifolia</i>	16
<i>Dryopteris carthusiana</i> aggr.	16

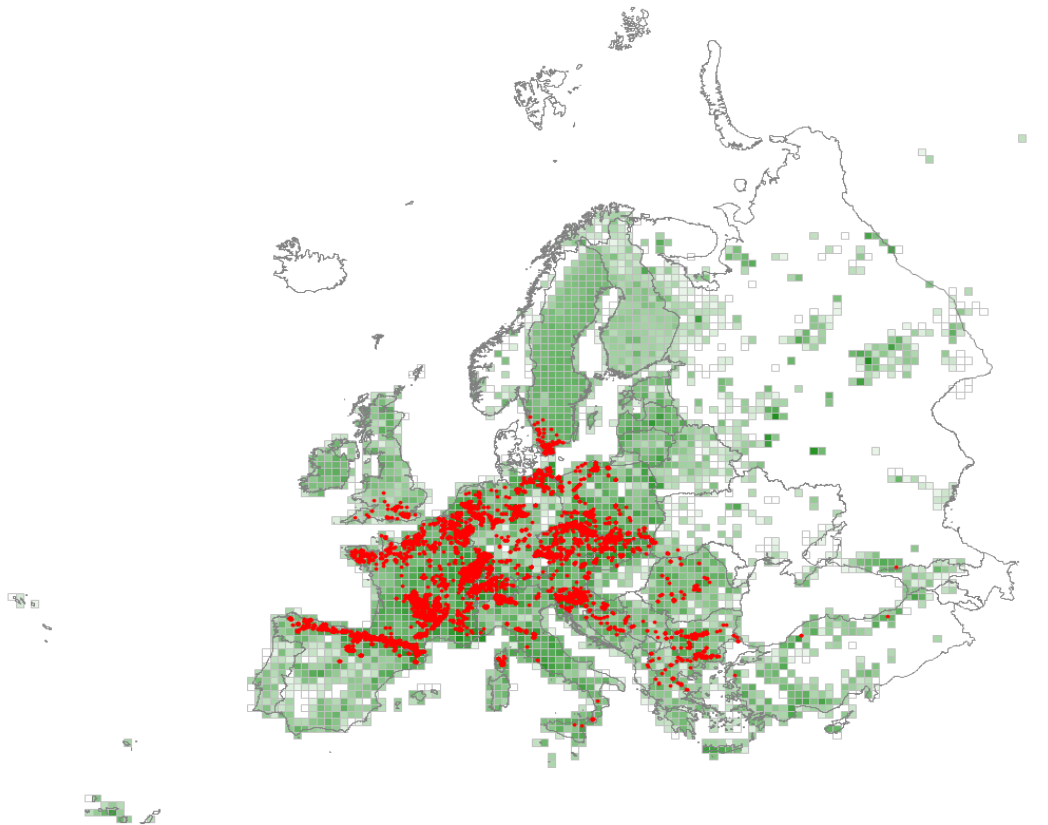
<i>Acer platanoides</i>	16
<i>Quercus petraea</i>	15
<i>Prunus avium</i>	14
<i>Epilobium montanum</i>	14
<i>Crataegus monogyna</i>	14
<i>Asarum europaeum</i>	14
<i>Ajuga reptans</i>	14
<i>Actaea spicata</i>	14
<i>Phyteuma spicatum</i>	13
<i>Neottia nidus-avis</i>	13
<i>Vicia sepium</i>	12
<i>Urtica dioica</i>	12
<i>Polystichum aculeatum</i>	12
<i>Polygonatum verticillatum</i>	12
<i>Ulmus glabra</i>	11
<i>Sambucus nigra</i>	11
<i>Rosa arvensis</i>	11
<i>Melica nutans</i>	11
<i>Maianthemum bifolium</i>	11
<i>Luzula luzuloides</i>	11
<i>Lilium martagon</i>	11
<i>Circaea lutetiana</i>	11
<i>Campanula trachelium</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Fagus sylvatica</i>	97
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T18 – *Fagus* forest on acid soils

Forest dominated by beech (*Fagus sylvatica* and *Fagus orientalis*) on oligotrophic, base-poor mineral soils. It occurs through the Atlantic and continental areas of Europe and, at higher altitudes, in the submediterranean zone. Associated broadleaved trees are few and always subordinate in cover, though oaks may be co-dominant. Evergreen conifers like fir (*Abies alba*) and, at the altitudinal limit, spruce (*Picea abies*) can figure as minority canopy components. The field layer is generally species-poor.



Corresponding alliances in EuroVegChecklist 2016

- <> FAG-01A Luzulo-Fagion sylvaticae Lohmeyer et Tx. in Tx. 1954
- > FAG-01B Ilici-Fagion sylvaticae Br.-Bl. 1967
- > FAG-01C Galio rotundifolii-Fagion Gamisans 1975

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Fagus sylvatica</i>	33
<i>Polytrichastrum formosum</i>	22
<i>Dicranella heteromalla</i>	19
<i>Luzula luzuloides</i>	18

Constant species (percentage frequencies)

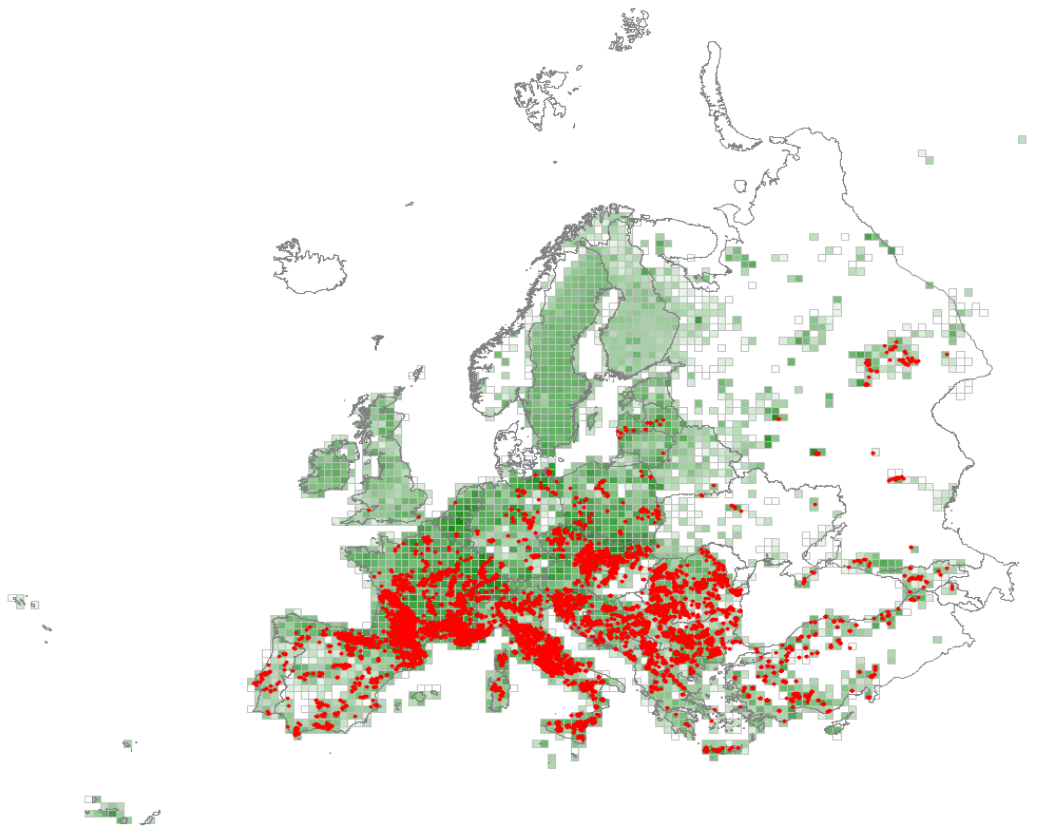
<i>Fagus sylvatica</i>	100
<i>Avenella flexuosa</i>	59
<i>Vaccinium myrtillus</i>	52
<i>Polytrichastrum formosum</i>	47
<i>Sorbus aucuparia</i>	38
<i>Luzula luzuloides</i>	34
<i>Pteridium aquilinum</i>	33
<i>Oxalis acetosella</i>	32
<i>Quercus petraea</i>	29
<i>Dryopteris carthusiana</i> aggr.	29
<i>Picea abies</i>	28
<i>Hieracium murorum</i>	25
<i>Dicranum scoparium</i>	24
<i>Carex pilulifera</i>	24
<i>Rubus fruticosus</i> aggr.	23
<i>Ilex aquifolium</i>	22
<i>Maianthemum bifolium</i>	20
<i>Dicranella heteromalla</i>	20
<i>Athyrium filix-femina</i>	20
<i>Hypnum cupressiforme</i> aggr.	19
<i>Quercus robur</i>	18
<i>Abies alba</i>	18
<i>Prenanthes purpurea</i>	17
<i>Calamagrostis arundinacea</i>	16
<i>Acer pseudoplatanus</i>	16
<i>Rubus idaeus</i>	15
<i>Poa nemoralis</i>	15
<i>Luzula pilosa</i>	15
<i>Veronica officinalis</i>	14
<i>Pinus sylvestris</i>	14
<i>Luzula sylvatica</i>	14
<i>Lonicera periclymenum</i>	14
<i>Betula pendula</i>	14
<i>Solidago virgaurea</i>	13
<i>Mnium hornum</i>	13
<i>Hedera helix</i> aggr.	13
<i>Leucobryum glaucum</i>	12
<i>Atrichum undulatum</i>	12
<i>Blechnum spicant</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Fagus sylvatica</i>	100
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T19 – Temperate and submediterranean thermophilous deciduous forest

These thermophilous broadleaved deciduous forests form a wide, but interrupted, belt across the submediterranean zone of Europe, with milder winters and warmer drought-prone summers than sustain the broadleaved temperate forests, but colder, intermittently frosty and snowy winters than are typical for the evergreen broadleaved forests and scrub of the Mediterranean. To the north, they tend to occupy low-altitude, drier and warmer sites, and to the south, rainier sites at higher altitudes.



Corresponding alliances in EuroVegChecklist 2016

- > PUB-01A *Quercion petraeae* Issler 1931
- > PUB-01B *Quercion pubescenti-petraeae* Br.-Bl. 1932 nom. mut.
- > PUB-01C *Aceri tatarici-Quercion Zólyomi* 1957
- > PUB-01D *Lathyro pisiformis-Quercion roboris* Solomeshch et Grigoriev in Willner et al. 2015
- > PUB-01E *Aceri granatensis-Quercion fagineae* (Rivas Goday, Rigual et Rivas-Mart. 1960) Rivas-Mart. 1987
- > PUB-01F *Fraxino omni-Ostryion* Tomažič 1940
- > PUB-01G *Carpinion orientalis* Horvat 1958
- > PUB-01H *Syringo-Carpinion orientalis* Jakucs (1959) 1960
- > PUB-01I *Elytrigio nodosae-Quercion pubescentis* Didukh 1996
- > PUB-01K *Physospermo-Quercion petraeae* A.O. Horvát 1976
- > PUB-01L *Crataego laevigatae-Quercion cerridis* Arrigoni 1997

- > PUB-01M Pino calabricae-Quercion congestae S. Brullo et al. 1999
- > PUB-01N Quercion confertae Horvat 1958
- > PUB-01O Quercion petraeo-cerridis Lakušić et B. Jovanović in B. Jovanović et al. ex Čarni et Mucina 2015
- > PUB-01P Melitto albidiae-Quercion Barbero et Quézel 1976

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cornus mas</i>	28
<i>Quercus cerris</i>	27
<i>Quercus pubescens</i>	25
<i>Aegonychon purpurocaeruleum</i>	23
<i>Carpinus orientalis</i>	23
<i>Sorbus torminalis</i>	22
<i>Fraxinus ornus</i>	22
<i>Quercus frainetto</i>	22
<i>Lathyrus niger</i>	20
<i>Acer campestre</i>	20
<i>Crataegus monogyna</i>	19
<i>Melittis melissophyllum</i>	18
<i>Ostrya carpinifolia</i>	17
<i>Ligustrum vulgare</i>	17
<i>Viburnum lantana</i>	15

Constant species (percentage frequencies)

<i>Crataegus monogyna</i>	59
<i>Quercus pubescens</i>	56
<i>Hedera helix</i> aggr.	40
<i>Fraxinus ornus</i>	40
<i>Dactylis glomerata</i>	36
<i>Acer campestre</i>	36
<i>Ligustrum vulgare</i>	34
<i>Quercus cerris</i>	31
<i>Teucrium chamaedrys</i>	30
<i>Brachypodium sylvaticum</i>	30
<i>Prunus spinosa</i>	29
<i>Cornus sanguinea</i>	29
<i>Cornus mas</i>	29
<i>Rosa canina</i> aggr.	26
<i>Fragaria vesca</i>	26
<i>Rubia peregrina</i>	25
<i>Sorbus torminalis</i>	24
<i>Ostrya carpinifolia</i>	24
<i>Juniperus communis</i> subsp. <i>communis</i>	24
<i>Dioscorea communis</i>	24
<i>Clinopodium vulgare</i>	24
<i>Vincetoxicum hirundinaria</i>	22
<i>Viburnum lantana</i>	22
<i>Brachypodium pinnatum</i>	22
<i>Ruscus aculeatus</i>	21
<i>Corylus avellana</i>	21
<i>Quercus petraea</i>	20
<i>Melittis melissophyllum</i>	20

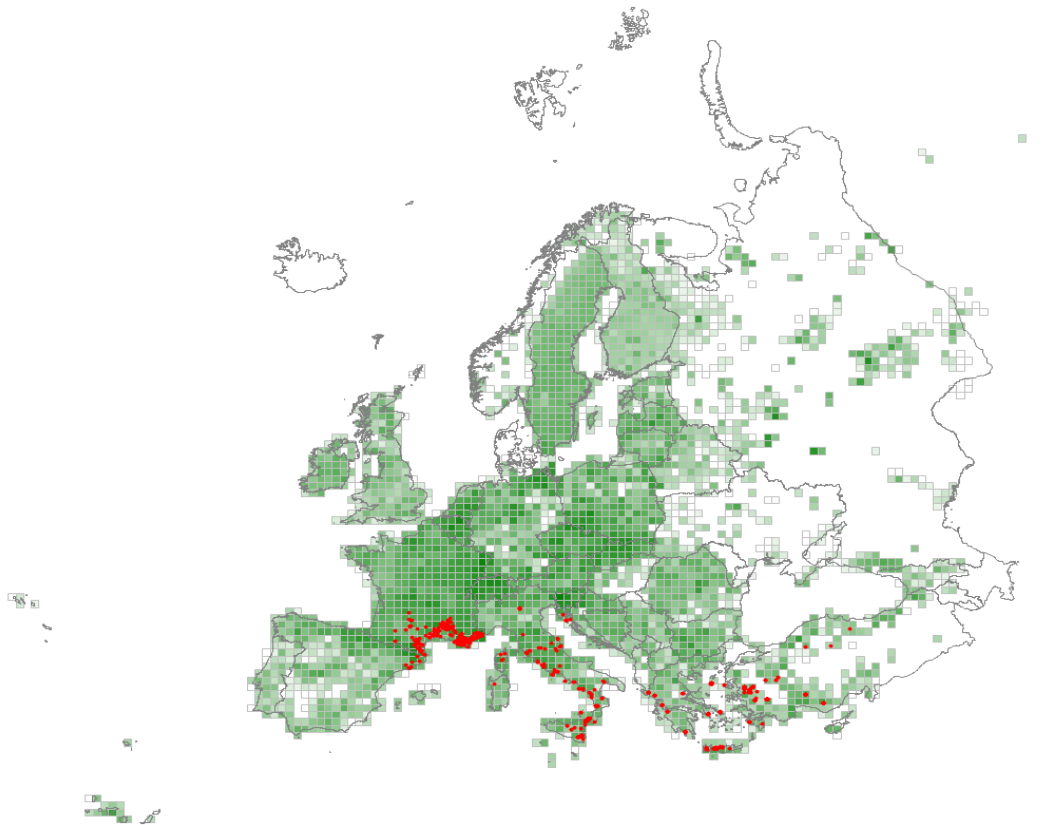
<i>Hippocrepis emerus</i>	20
<i>Carex flacca</i>	20
<i>Rubus ulmifolius</i>	19
<i>Poa nemoralis</i>	19
<i>Festuca heterophylla</i>	19
<i>Clematis vitalba</i>	19
<i>Viola alba</i>	18
<i>Tanacetum corymbosum</i>	18
<i>Sorbus aria</i> aggr.	18
<i>Melica uniflora</i>	18
<i>Veronica chamaedrys</i> aggr.	17
<i>Stachys officinalis</i>	17
<i>Aegonychon purpureocaeruleum</i>	17
<i>Rubus fruticosus</i> aggr.	16
<i>Geum urbanum</i>	16
<i>Euphorbia cyparissias</i>	16
<i>Carpinus betulus</i>	16
<i>Viola reichenbachiana</i>	15
<i>Euphorbia amygdaloides</i>	15
<i>Cruciata glabra</i>	15
<i>Carpinus orientalis</i>	15
<i>Viola hirta</i>	14
<i>Pyrus communis</i>	14
<i>Prunus avium</i>	14
<i>Lonicera xylosteum</i>	14
<i>Hieracium murorum</i>	14
<i>Euonymus europaeus</i>	14
<i>Rosa arvensis</i>	13
<i>Polygonatum odoratum</i>	13
<i>Lathyrus niger</i>	13
<i>Hepatica nobilis</i>	13
<i>Galium mollugo</i> aggr.	13
<i>Asparagus acutifolius</i>	13
<i>Acer opalus</i> aggr.	13
<i>Acer monspessulanum</i>	13
<i>Sorbus domestica</i>	12
<i>Quercus ilex</i>	12
<i>Rhamnus cathartica</i>	11
<i>Prunus mahaleb</i>	11
<i>Lonicera etrusca</i>	11
<i>Hypericum perforatum</i>	11
<i>Daphne laureola</i>	11
<i>Campanula trachelium</i>	11
<i>Campanula persicifolia</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Quercus pubescens</i>	35
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T1A – Mediterranean thermophilous deciduous forest

Mediterranean deciduous forests usually dominated by *Quercus pubescens* or, in the Eastern Mediterranean, by *Quercus ithaburensis* subsp. *macrolepis*. The canopy is open, either pure or with other oaks. Stands are mostly developed on shallow soil, usually at altitudes of less than 700 m.



Corresponding alliances in EuroVegChecklist 2016

- > PUB-01T *Quercion macrolepidis* Zohary ex Di Pietro et al. ined.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Quercus ithaburensis</i>	54
<i>Quercus pubescens</i>	35
<i>Quercus ilex</i>	24
<i>Sorbus domestica</i>	21
<i>Rubia peregrina</i>	21
<i>Phillyrea latifolia</i>	20
<i>Pistacia terebinthus</i>	18
<i>Asparagus acutifolius</i>	18
<i>Rosa sempervirens</i>	17

<i>Clematis flammula</i>	16
<i>Arbutus unedo</i>	16
<i>Lonicera etrusca</i>	16
<i>Ruscus aculeatus</i>	16
<i>Lonicera implexa</i>	15

Constant species (percentage frequencies)

<i>Quercus pubescens</i>	75
<i>Rubia peregrina</i>	63
<i>Quercus ilex</i>	52
<i>Asparagus acutifolius</i>	49
<i>Dactylis glomerata</i>	43
<i>Hedera helix</i> aggr.	39
<i>Crataegus monogyna</i>	38
<i>Smilax aspera</i>	37
<i>Rubus ulmifolius</i>	37
<i>Phillyrea latifolia</i>	34
<i>Juniperus oxycedrus</i> aggr.	34
<i>Teucrium chamaedrys</i>	32
<i>Quercus ithaburensis</i>	32
<i>Ruscus aculeatus</i>	31
<i>Erica arborea</i>	25
<i>Arbutus unedo</i>	25
<i>Pistacia terebinthus</i>	24
<i>Clematis flammula</i>	23
<i>Rhamnus alaternus</i>	22
<i>Lonicera implexa</i>	22
<i>Brachypodium sylvaticum</i>	22
<i>Brachypodium phoenicoides</i>	20
<i>Rosa sempervirens</i>	19
<i>Pistacia lentiscus</i>	19
<i>Cornus sanguinea</i>	19
<i>Carex flacca</i>	19
<i>Sorbus domestica</i>	18
<i>Prunus spinosa</i>	18
<i>Lonicera etrusca</i>	18
<i>Carex halleriana</i>	18
<i>Brachypodium retusum</i>	18
<i>Asplenium adiantum-nigrum</i>	18
<i>Viola alba</i>	17
<i>Viburnum tinus</i>	17
<i>Thymus vulgaris</i>	17
<i>Phillyrea angustifolia</i>	17
<i>Osyris alba</i>	17
<i>Quercus coccifera</i>	16
<i>Ligustrum vulgare</i>	16
<i>Hippocrepis emerus</i>	16
<i>Dorycnium pentaphyllum</i>	16
<i>Dioscorea communis</i>	16
<i>Spartium junceum</i>	15
<i>Sanguisorba minor</i> aggr.	15
<i>Juniperus communis</i> subsp. <i>communis</i>	15
<i>Brachypodium pinnatum</i>	15
<i>Pinus halepensis</i>	14
<i>Bituminaria bituminosa</i>	14

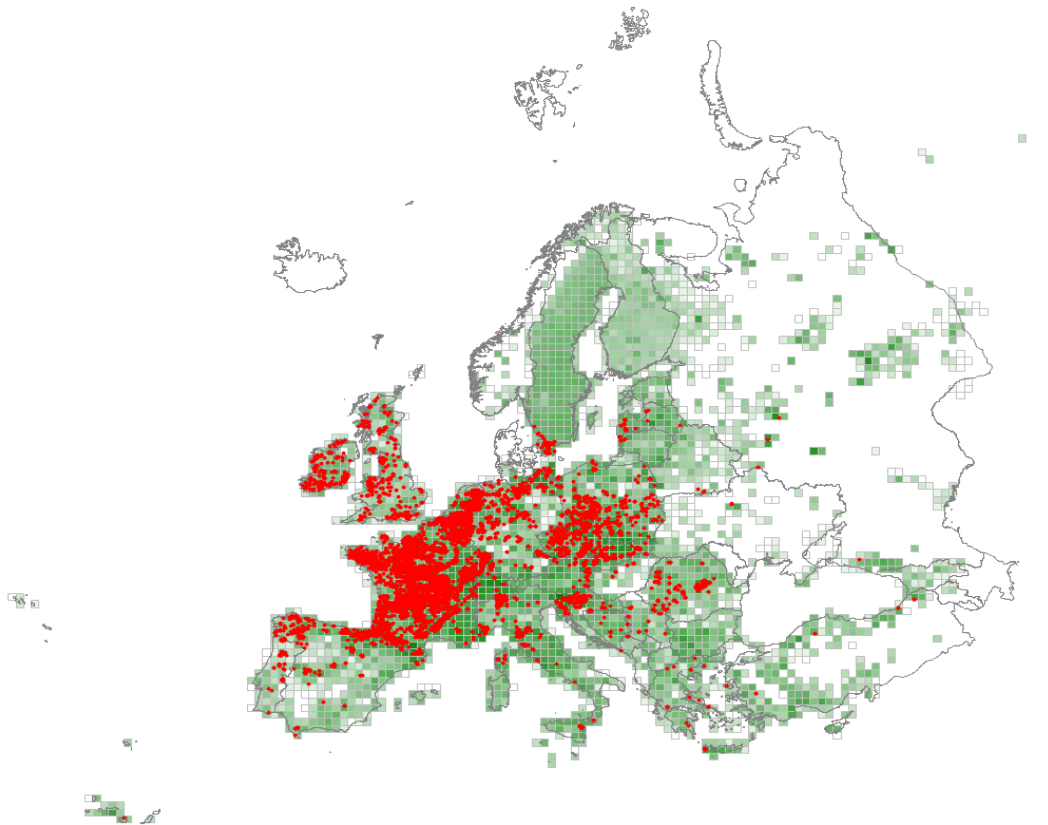
<i>Stachys officinalis</i>	13
<i>Pteridium aquilinum</i>	13
<i>Fraxinus ornus</i>	13
<i>Euphorbia characias</i>	13
<i>Clinopodium vulgare</i>	13
<i>Cistus salviifolius</i>	13
<i>Buxus sempervirens</i>	13
<i>Amelanchier ovalis</i>	13
<i>Rosa canina</i> aggr.	12
<i>Bromopsis erecta</i>	12
<i>Aphyllanthes monspeliensis</i>	12
<i>Clematis vitalba</i>	11
<i>Carex distachya</i>	11
<i>Calicotome spinosa</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Quercus pubescens</i>	66
<i>Quercus ithaburensis</i>	31

T1B – Acidophilous *Quercus* forest

Oak-dominated forest (mainly *Quercus robur* and *Quercus petraea* but also other regional species) of acid soils through the Atlantic and continental regions, where European beech (*Fagus sylvatica*) is a potential competitor and extending northwards into the boreal zone, where Scots pine (*Pinus sylvestris*) increasingly figures in the canopy. Associated floras are generally rather poor but show some regional distinctiveness and towards the very humid western Atlantic seaboard have extraordinary richness of ferns and cryptogams.



Corresponding alliances in EuroVegChecklist 2016

- > QUE-01A Hymenophyllo-Quercion petraeae Pallas 2000
- <> QUE-01B Quercion roboris Malcuit 1929
- > QUE-01C Agrostio-Quercion petraeae Scamoni et Passarge 1959
- > QUE-01D Quercion pyrenaicae Rivas Goday ex Rivas-Martínez 1965
- > QUE-01E Castaneo-Quercion petraeae Soó 1964

Characteristic species combination

Diagnostic species (phi coefficient * 100)

Quercus petraea 29

Castanea sativa 21

<i>Polytrichastrum formosum</i>	20
<i>Lonicera periclymenum</i>	19
<i>Pteridium aquilinum</i>	15
<i>Quercus robur</i>	15

Constant species (percentage frequencies)

<i>Avenella flexuosa</i>	57
<i>Quercus petraea</i>	55
<i>Pteridium aquilinum</i>	55
<i>Quercus robur</i>	46
<i>Polytrichastrum formosum</i>	43
<i>Lonicera periclymenum</i>	41
<i>Fagus sylvatica</i>	40
<i>Rubus fruticosus</i> aggr.	36
<i>Vaccinium myrtillus</i>	34
<i>Sorbus aucuparia</i>	34
<i>Frangula alnus</i>	33
<i>Castanea sativa</i>	33
<i>Betula pendula</i>	32
<i>Ilex aquifolium</i>	29
<i>Teucrium scorodonia</i>	27
<i>Dicranum scoparium</i>	26
<i>Melampyrum pratense</i>	25
<i>Hedera helix</i> aggr.	24
<i>Calluna vulgaris</i>	24
<i>Molinia caerulea</i> aggr.	23
<i>Hypnum cupressiforme</i> aggr.	23
<i>Holcus mollis</i>	23
<i>Carex pilulifera</i>	23
<i>Corylus avellana</i>	22
<i>Carpinus betulus</i>	20
<i>Pinus sylvestris</i>	19
<i>Luzula luzuloides</i>	16
<i>Thuidium tamariscinum</i>	15
<i>Hieracium murorum</i>	15
<i>Cytisus scoparius</i>	15
<i>Leucobryum glaucum</i>	14
<i>Dryopteris carthusiana</i> aggr.	14
<i>Agrostis capillaris</i>	14
<i>Pseudoscleropodium purum</i>	13
<i>Poa nemoralis</i>	13
<i>Betula pubescens</i>	13
<i>Solidago virgaurea</i>	12
<i>Pleurozium schreberi</i>	12
<i>Anthoxanthum odoratum</i> aggr.	12
<i>Festuca ovina</i>	11
<i>Dicranella heteromalla</i>	11

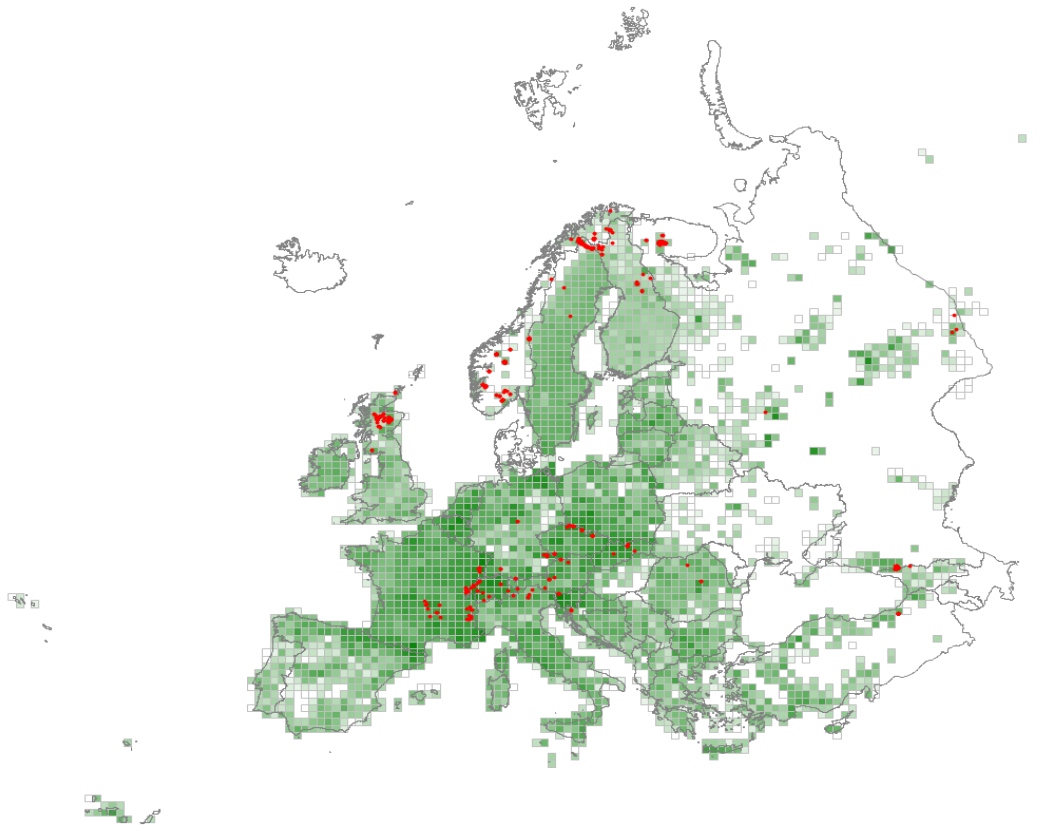
Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Quercus petraea</i>	48
<i>Quercus robur</i>	34

T1C – Temperate and boreal mountain *Betula* and *Populus tremula* forest on mineral soils

Open, low canopy climax birch (*Betula litwinowii*, *Betula pubescens* var. *glabrata*, *Betula pubescens* var. *pumila*) and aspen (*Populus tremula*) forests with a heathy or herb-rich field layer in the boreal zone, temperate mountain ranges including the Caucasus, and temperate zone of Eastern European lowlands.

Remark: Non-mountain closed, secondary birch and aspen forests of the boreal and temperate zones of Eastern Europe also belong to this habitat, which may require a change of the habitat name.



Corresponding alliances in EuroVegChecklist 2016

- <> BRA-01B *Veronico teucrii*-*Pinion sylvestris* Ermakov et Solomeshch in Ermakov et al. 2000
- <> BRA-01C *Trollio europaei*-*Pinion sylvestris* Fedorov in Ermakov et al. 2000
- <> BRA-02A *Fragario vescae*-*Populion tremulae* Willner et Mucina ined.
- > PIC-04B *Empetro hermaphroditi*-*Betulion pumilae* Mucina, Willner et Grabherr ined.
- <> QUE-02B *Lonicero periclymeni*-*Betulion pubescentis* Géhu 2006
- <> VIR-04A *Rhododendro caucasici*-*Betulion litwinowii* Onipchenko 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Betula pubescens</i> var. <i>pumila</i>	32
<i>Betula litwinowii</i>	26
<i>Alchemilla glomerulans</i>	24
<i>Alchemilla acutidens</i>	21
<i>Betula pubescens</i>	20
<i>Betula pubescens</i> var. <i>glabrata</i>	20
<i>Trientalis europaea</i>	19
<i>Sciuro-hypnum reflexum</i>	19
<i>Gnaphalium norvegicum</i>	17
<i>Vaccinium myrtillus</i>	17
<i>Barbilophozia lycopodioides</i>	16
<i>Orthocaulis attenuatus</i>	16
<i>Cladonia degenerans</i>	16
<i>Vaccinium vitis-idaea</i>	15
<i>Avenella flexuosa</i>	15
<i>Brachythecium salebrosum</i>	15
<i>Pyrola minor</i>	15

Constant species (percentage frequencies)

<i>Vaccinium myrtillus</i>	76
<i>Avenella flexuosa</i>	71
<i>Vaccinium vitis-idaea</i>	62
<i>Betula pubescens</i>	58
<i>Solidago virgaurea</i>	48
<i>Trientalis europaea</i>	41
<i>Empetrum nigrum</i> aggr.	37
<i>Sorbus aucuparia</i>	31
<i>Geranium sylvaticum</i> aggr.	30
<i>Pleurozium schreberi</i>	29
<i>Juniperus communis</i> subsp. <i>communis</i>	29
<i>Dicranum scoparium</i>	28
<i>Hylocomium splendens</i>	27
<i>Anthoxanthum odoratum</i> aggr.	26
<i>Linnaea borealis</i>	25
<i>Gymnocarpium dryopteris</i>	24
<i>Vaccinium uliginosum</i>	23
<i>Luzula pilosa</i>	23
<i>Betula pubescens</i> var. <i>pumila</i>	23
<i>Oxalis acetosella</i>	22
<i>Festuca ovina</i>	19
<i>Ranunculus acris</i> aggr.	18
<i>Melampyrum pratense</i>	18
<i>Pyrola minor</i>	16
<i>Melampyrum sylvaticum</i>	16
<i>Epilobium angustifolium</i>	16
<i>Rubus saxatilis</i>	15
<i>Lycopodium annotinum</i>	15
<i>Deschampsia cespitosa</i> aggr.	15
<i>Pedicularis lapponica</i>	14
<i>Cladonia arbuscula</i> aggr.	14
<i>Carex vaginata</i>	14
<i>Barbilophozia lycopodioides</i>	14

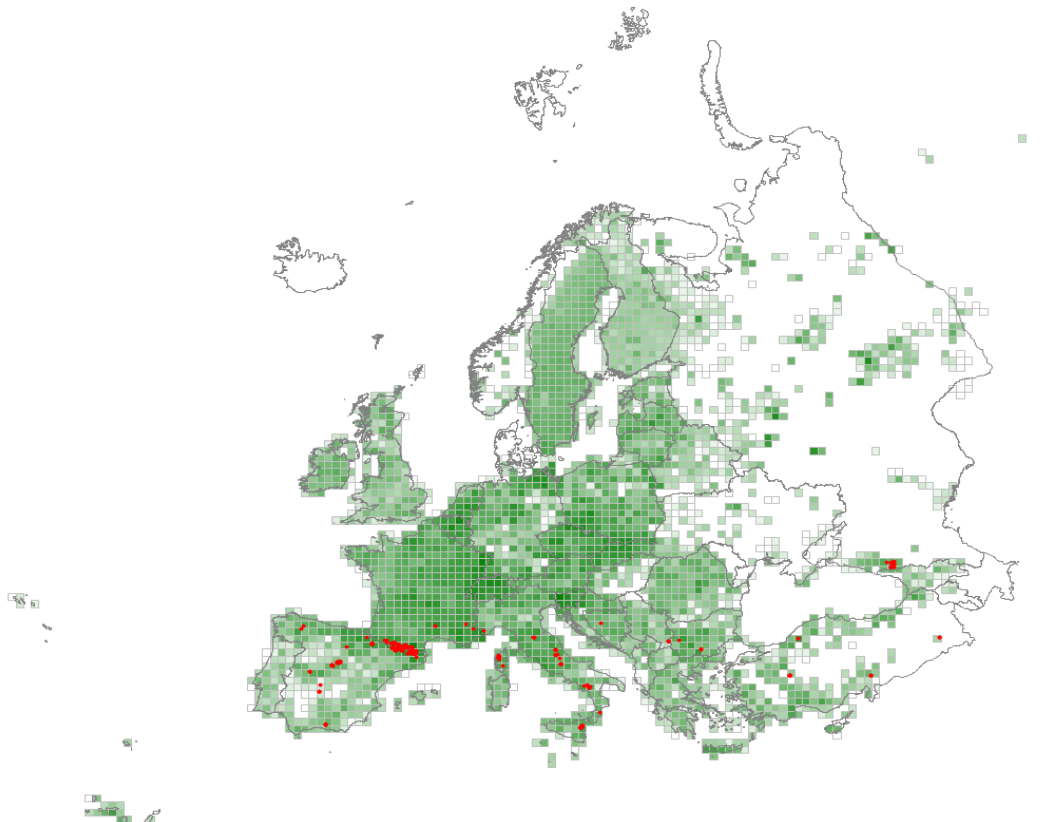
<i>Agrostis capillaris</i>	14
<i>Saussurea alpina</i> aggr.	13
<i>Potentilla erecta</i>	13
<i>Polytrichum juniperinum</i>	13
<i>Picea abies</i>	13
<i>Maianthemum bifolium</i>	13
<i>Sciuro-hypnum reflexum</i>	12
<i>Rhytidiadelphus triquetrus</i>	12
<i>Populus tremula</i>	12
<i>Poa nemoralis</i>	12
<i>Milium effusum</i>	12
<i>Calluna vulgaris</i>	12
<i>Rumex arifolius</i>	11
<i>Cornus suecica</i>	11
<i>Cladonia rangiferina</i>	11
<i>Cladonia coccifera</i> aggr.	11
<i>Campanula rotundifolia</i>	11
<i>Brachythecium salebrosum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Betula pubescens</i>	47
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T1D – Southern European mountain *Betula* and *Populus tremula* forest on mineral soils

Diverse climax and paraclimax forests dominated by birch (*Betula pendula* and closely related species) or aspen (*Populus tremula*) on usually acidic mineral soils in humid ravines and gorges and on unstable substrates in the montane to subalpine belts of the Pyrenees, Corsica, Apennines, Sicily and the southern Balkans.



Corresponding alliances in EuroVegChecklist 2016

- <> BRA-02A *Fragario vescae*-*Populion tremulae* Willner et Mucina ined.
- > PIC-04A *Betulion carpatico-pubescentis* Rivas-Mart. et M. Costa in Rivas-Mart. et al. 2002
- > QUE-02A *Betulion fontquerio-celtibericae* Rivas-Mart. et M. Costa in Rivas-Mart. et al. 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Quercus congesta</i>	34
<i>Betula pendula</i> var. <i>fontqueri</i>	26
<i>Genista aetnensis</i>	26
<i>Astracantha sicula</i>	24
<i>Erysimum smyrnaeum</i>	24

<i>Betula pendula</i>	23
<i>Populus tremula</i>	22
<i>Veronica grisebachii</i>	22
<i>Achillea ligustica</i>	22
<i>Adenocarpus complicatus</i>	19
<i>Silene compacta</i>	19
<i>Pinus nigra</i>	19
<i>Saponaria glutinosa</i>	19
<i>Verbascum splendidum</i>	18
<i>Cephalanthera longifolia</i>	17
<i>Festuca circummediterranea</i>	16
<i>Crepis leontodontoides</i>	15

Constant species (percentage frequencies)

<i>Betula pendula</i>	62
<i>Populus tremula</i>	42
<i>Pteridium aquilinum</i>	35
<i>Poa nemoralis</i>	32
<i>Pinus nigra</i>	31
<i>Fagus sylvatica</i>	28
<i>Corylus avellana</i>	27
<i>Juniperus communis</i> subsp. <i>communis</i>	24
<i>Festuca circummediterranea</i>	24
<i>Fragaria vesca</i>	23
<i>Sorbus aucuparia</i>	22
<i>Avenella flexuosa</i>	22
<i>Rubus fruticosus</i> aggr.	21
<i>Cruciata glabra</i>	21
<i>Hepatica nobilis</i>	19
<i>Vaccinium myrtillus</i>	18
<i>Silene italica</i> aggr.	18
<i>Crataegus monogyna</i>	17
<i>Rosa canina</i> aggr.	16
<i>Quercus congesta</i>	16
<i>Astracantha sicula</i>	16
<i>Achillea ligustica</i>	16
<i>Salix caprea</i>	15
<i>Rubus idaeus</i>	15
<i>Quercus cerris</i>	15
<i>Dactylis glomerata</i>	15
<i>Sorbus aria</i> aggr.	14
<i>Pinus sylvestris</i>	14
<i>Viola reichenbachiana</i>	13
<i>Veronica officinalis</i>	13
<i>Veronica chamaedrys</i> aggr.	13
<i>Crepis leontodontoides</i>	13
<i>Cephalanthera longifolia</i>	13
<i>Brachypodium sylvaticum</i>	13
<i>Abies alba</i>	13
<i>Viola canina</i>	12
<i>Teucrium scorodonia</i>	12
<i>Stellaria holostea</i>	12
<i>Quercus petraea</i>	12
<i>Lathyrus linifolius</i>	12
<i>Ilex aquifolium</i>	12

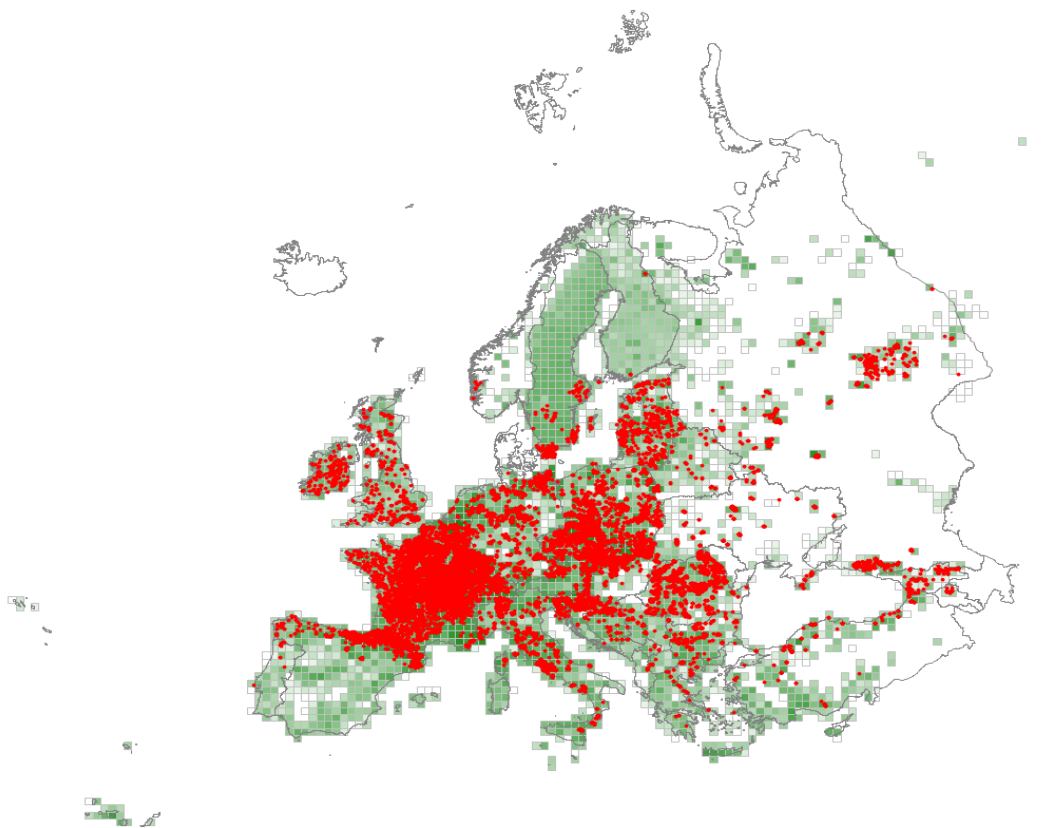
<i>Fraxinus excelsior</i>	12
<i>Anthoxanthum odoratum</i> aggr.	12
<i>Clinopodium vulgare</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Betula pendula</i>	57
<i>Populus tremula</i>	36

T1E – *Carpinus* and *Quercus* mesic deciduous forest

Deciduous broadleaved forests typical of brown or grey soils of quite low to high base-status and moderate to high nutrient content. They occur across the lowlands and foothills of the temperate zone of Western, Central, Eastern and Southern Europe, with local extensions into regions characterised by submediterranean and boreal climate. Partially this includes alluvial *Quercus/Carpinus*-dominated forests in mountain valleys with infrequent inundation. The canopy is usually of mixed composition with oaks figuring prominently, notably *Quercus petraea* and *Quercus robur* but with regional contributions from other oaks, along with *Acer campestre*, *Acer platanoides*, *Carpinus betulus*, *Fraxinus excelsior*, *Tilia cordata*, *Tilia tomentosa* and *Ulmus glabra*. Non-riparian and non-ravine forests of *Acer platanoides*, *Fraxinus excelsior*, *Tilia cordata* and *Ulmus glabra* (without *Quercus* species and *Carpinus betulus*) also belong to this habitat. The canopy can have a complex, multi-layered structure including shrubs and lianas while the herb layer can be species-rich with much regional variation in composition.



Corresponding alliances in EuroVegChecklist 2016

- <> FAG-03A *Carpinion betuli* Issler 1931
- <> FAG-03B *Pulmonario longifoliae-Quercion roboris* Rivas-Mart. et Izco in Rivas-Mart. et al. 2002
- > FAG-03C *Erythronio-Carpinion* (Horvat 1958) Marinček in Wallnöfer et al. 1993

- > FAG-03D Castaneo sativae-Carpinion orientalis Quézel, Barbero et Akman ex Quézel et al. 1993
- > FAG-03E Paeonio dauricae-Quercion petraeae Didukh 1996
- > FAG-03F Quercu roboris-Tilion cordatae Solomeshch et Laiviņš ex Bulokhov et Solomeshch in Bulokhov et Semenishchenkov 2015
- > FAG-03G Scillo sibericae-Quercion roboris Onyshchenko 2009
- > FAG-03H Aconito lycoctoni-Tilion cordatae Solomeshch et Grigoriev in Willner et al. 2016
- > FAG-04A Crataego-Carpinion caucasicae Passarge 1981
- > FAG-04B Astrantio-Carpinion caucasicae Passarge 1981

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Carpinus betulus</i>	38
<i>Tilia cordata</i>	24
<i>Polygonatum multiflorum</i>	22
<i>Acer campestre</i>	22
<i>Carex pilosa</i>	21
<i>Stellaria holostea</i>	20
<i>Quercus petraea</i>	19
<i>Corylus avellana</i>	19
<i>Prunus avium</i>	17
<i>Pulmonaria obscura</i>	17
<i>Quercus robur</i>	17
<i>Anemone nemorosa</i>	17
<i>Lamium galeobdolon</i>	16
<i>Crataegus laevigata</i>	16
<i>Carex sylvatica</i>	16
<i>Asarum europaeum</i>	16
<i>Fraxinus excelsior</i>	16
<i>Convallaria majalis</i>	16
<i>Viola reichenbachiana</i>	16

Constant species (percentage frequencies)

<i>Carpinus betulus</i>	66
<i>Corylus avellana</i>	55
<i>Quercus robur</i>	50
<i>Hedera helix</i> aggr.	46
<i>Fraxinus excelsior</i>	40
<i>Acer campestre</i>	40
<i>Crataegus monogyna</i>	39
<i>Quercus petraea</i>	38
<i>Viola reichenbachiana</i>	36
<i>Stellaria holostea</i>	33
<i>Lamium galeobdolon</i>	33
<i>Anemone nemorosa</i>	33
<i>Rubus fruticosus</i> aggr.	32
<i>Fagus sylvatica</i>	32
<i>Polygonatum multiflorum</i>	31
<i>Brachypodium sylvaticum</i>	31
<i>Geum urbanum</i>	30
<i>Poa nemoralis</i>	29
<i>Prunus avium</i>	28

<i>Tilia cordata</i>	26
<i>Fragaria vesca</i>	26
<i>Carex sylvatica</i>	26
<i>Galium odoratum</i>	25
<i>Euonymus europaeus</i>	25
<i>Cornus sanguinea</i>	25
<i>Ligustrum vulgare</i>	24
<i>Dryopteris filix-mas</i>	24
<i>Milium effusum</i>	22
<i>Convallaria majalis</i>	22
<i>Ajuga reptans</i>	21
<i>Aegopodium podagraria</i>	21
<i>Mercurialis perennis</i>	20
<i>Lonicera xylosteum</i>	20
<i>Lathyrus vernus</i>	20
<i>Asarum europaeum</i>	20
<i>Acer platanoides</i>	20
<i>Melica uniflora</i>	19
<i>Euphorbia amygdaloides</i>	19
<i>Dactylis glomerata</i>	19
<i>Rosa arvensis</i>	18
<i>Lonicera periclymenum</i>	18
<i>Crataegus laevigata</i>	18
<i>Veronica chamaedrys</i> aggr.	17
<i>Oxalis acetosella</i>	17
<i>Geranium robertianum</i>	17
<i>Atrichum undulatum</i>	16
<i>Urtica dioica</i>	15
<i>Sorbus aucuparia</i>	15
<i>Melica nutans</i>	15
<i>Sorbus torminalis</i>	14
<i>Pulmonaria obscura</i>	14
<i>Prunus spinosa</i>	14
<i>Populus tremula</i>	14
<i>Maianthemum bifolium</i>	14
<i>Luzula pilosa</i>	14
<i>Glechoma hederacea</i>	14
<i>Ficaria verna</i>	14
<i>Carex digitata</i>	14
<i>Acer pseudoplatanus</i>	14
<i>Vicia sepium</i>	13
<i>Viburnum opulus</i>	13
<i>Pteridium aquilinum</i>	13
<i>Lactuca muralis</i>	13
<i>Hepatica nobilis</i>	13
<i>Deschampsia cespitosa</i> aggr.	13
<i>Carex pilosa</i>	13
<i>Campanula trachelium</i>	13
<i>Athyrium filix-femina</i>	13
<i>Sanicula europaea</i>	12
<i>Sambucus nigra</i>	12
<i>Ranunculus auricomus</i> aggr.	12
<i>Moehringia trinervia</i>	12
<i>Galium aparine</i>	12
<i>Eurhynchium striatum</i>	12

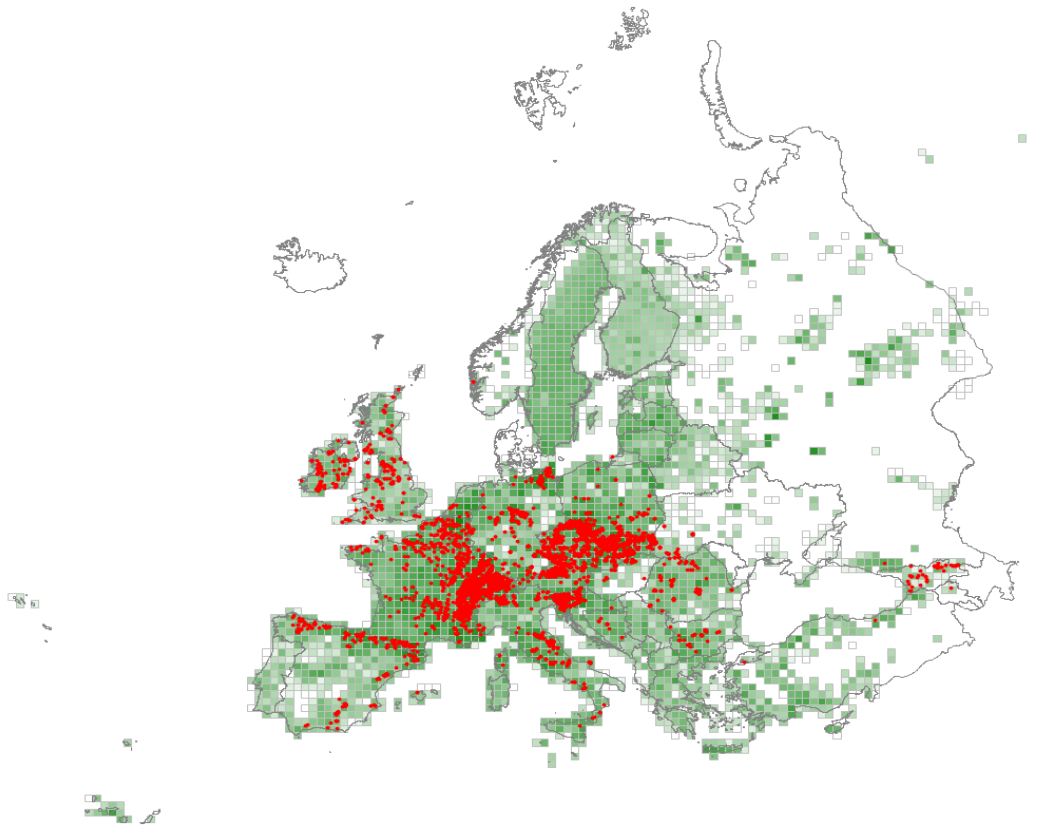
<i>Dryopteris carthusiana</i> aggr.	12
<i>Betula pendula</i>	12
<i>Arum maculatum</i>	12
<i>Stachys sylvatica</i>	11
<i>Scrophularia nodosa</i>	11
<i>Rosa canina</i> aggr.	11
<i>Pulmonaria officinalis</i>	11
<i>Polytrichastrum formosum</i>	11
<i>Paris quadrifolia</i>	11
<i>Hieracium murorum</i>	11
<i>Castanea sativa</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Carpinus betulus</i>	41
<i>Quercus robur</i>	26

T1F – Ravine forest

Forests on steep slopes, frequently in ravines, where deep, well-drained and fertile soils develop which allow trees such as *Acer platanoides*, *Acer pseudoplatanus*, *Fraxinus excelsior*, *Fraxinus ornus*, *Ostrya carpinifolia*, *Tilia cordata*, *Tilia platyphyllos* and *Ulmus glabra*, to outcompete trees such as *Fagus sylvatica* and *Quercus* spp. The herb layer is dominated by luxuriant nitrophilous herbs such as *Aegopodium podagraria*, *Impatiens noli-tangere* and *Urtica dioica*, moisture-loving vernal plants like *Allium ursinum* and, on base-rich soils, *Brachypodium sylvaticum*, *Circaea lutetiana*, *Geranium robertianum* and *Mercurialis perennis*. In the southern part of its distribution, thermophilous species appear, such as *Arabis turrata*, *Cornus mas*, *Dioscorea communis* and *Ligustrum vulgare*. Another group of thermophilous species (e.g. *Anthericum ramosum*, *Cotoneaster integerrimus*, *Sesleria caerulea* and *Vincetoxicum hirundinaria*) is typical of steep rocky slopes.



Corresponding alliances in EuroVegChecklist 2016

- <> FAG-05A Tilio-Acerion Klika 1955
- > FAG-05B Melico-Tilion platyphylli Passarge et G. Hofmann 1968
- > FAG-05C Dryopterido affinis-Fraxinion excelsioris Vanden Berghen ex Bœuf et al. in Bœuf 2011

- > FAG-05D Fraxino excelsioris-Acerion pseudoplatani P. Fukarek 1969
- > FAG-05E Ostryo carpinifoliae-Tilion platyphylli (Košir et al. 2008) Čarni in Willner et al. 2016
- > FAG-05F Tilio pseudorubrae-Ostryion carpinifoliae S. Brullo et al. 2001

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Tilia platyphyllos</i>	39
<i>Acer pseudoplatanus</i>	37
<i>Ulmus glabra</i>	33
<i>Lunaria rediviva</i>	33
<i>Lamium galeobdolon</i>	31
<i>Mercurialis perennis</i>	30
<i>Fraxinus excelsior</i>	26
<i>Galium odoratum</i>	25
<i>Actaea spicata</i>	25
<i>Dryopteris filix-mas</i>	24
<i>Polystichum aculeatum</i>	24
<i>Asplenium scolopendrium</i>	24
<i>Aruncus dioicus</i>	23
<i>Acer platanoides</i>	23
<i>Asarum europaeum</i>	19
<i>Cardamine pentaphyllos</i>	19
<i>Geranium robertianum</i>	18
<i>Polygonatum multiflorum</i>	18
<i>Paris quadrifolia</i>	18
<i>Corylus avellana</i>	18
<i>Lonicera xylosteum</i>	18
<i>Senecio nemorensis</i> aggr.	17
<i>Petasites albus</i>	17
<i>Fagus sylvatica</i>	16
<i>Impatiens noli-tangere</i>	16
<i>Corydalis cava</i>	15

Constant species (percentage frequencies)

<i>Acer pseudoplatanus</i>	86
<i>Fraxinus excelsior</i>	64
<i>Lamium galeobdolon</i>	60
<i>Dryopteris filix-mas</i>	59
<i>Mercurialis perennis</i>	57
<i>Fagus sylvatica</i>	52
<i>Corylus avellana</i>	52
<i>Geranium robertianum</i>	47
<i>Galium odoratum</i>	44
<i>Tilia platyphyllos</i>	40
<i>Urtica dioica</i>	38
<i>Ulmus glabra</i>	38
<i>Oxalis acetosella</i>	37
<i>Hedera helix</i> aggr.	36
<i>Senecio nemorensis</i> aggr.	33
<i>Athyrium filix-femina</i>	32
<i>Lonicera xylosteum</i>	30
<i>Acer platanoides</i>	30

<i>Sambucus nigra</i>	29
<i>Paris quadrifolia</i>	27
<i>Polygonatum multiflorum</i>	25
<i>Viola reichenbachiana</i>	24
<i>Rubus fruticosus</i> aggr.	24
<i>Polystichum aculeatum</i>	24
<i>Poa nemoralis</i>	24
<i>Picea abies</i>	24
<i>Lactuca muralis</i>	24
<i>Carpinus betulus</i>	24
<i>Brachypodium sylvaticum</i>	24
<i>Asarum europaeum</i>	24
<i>Actaea spicata</i>	24
<i>Aegopodium podagraria</i>	23
<i>Asplenium scolopendrium</i>	22
<i>Impatiens noli-tangere</i>	21
<i>Dryopteris carthusiana</i> aggr.	21
<i>Rubus idaeus</i>	20
<i>Acer campestre</i>	20
<i>Sorbus aucuparia</i>	19
<i>Geum urbanum</i>	19
<i>Anemone nemorosa</i>	19
<i>Milium effusum</i>	18
<i>Lunaria rediviva</i>	18
<i>Abies alba</i>	18
<i>Lathyrus vernus</i>	17
<i>Crataegus monogyna</i>	17
<i>Campanula trachelium</i>	17
<i>Asplenium trichomanes</i>	17
<i>Arum maculatum</i>	17
<i>Salvia glutinosa</i>	16
<i>Fragaria vesca</i>	16
<i>Epilobium montanum</i>	16
<i>Carex sylvatica</i>	16
<i>Aruncus dioicus</i>	16
<i>Tilia cordata</i>	15
<i>Stachys sylvatica</i>	15
<i>Prenanthes purpurea</i>	15
<i>Polypodium vulgare</i>	15
<i>Petasites albus</i>	15
<i>Melica nutans</i>	15
<i>Heracleum sphondylium</i>	15
<i>Stellaria nemorum</i>	14
<i>Sorbus aria</i> aggr.	14
<i>Lilium martagon</i>	14
<i>Hepatica nobilis</i>	14
<i>Euonymus europaeus</i>	14
<i>Daphne mezereum</i>	14
<i>Cornus sanguinea</i>	14
<i>Carex digitata</i>	14
<i>Cardamine bulbifera</i>	14
<i>Polygonatum verticillatum</i>	13
<i>Plagiomnium undulatum</i>	13
<i>Melica uniflora</i>	13
<i>Circaea lutetiana</i>	13

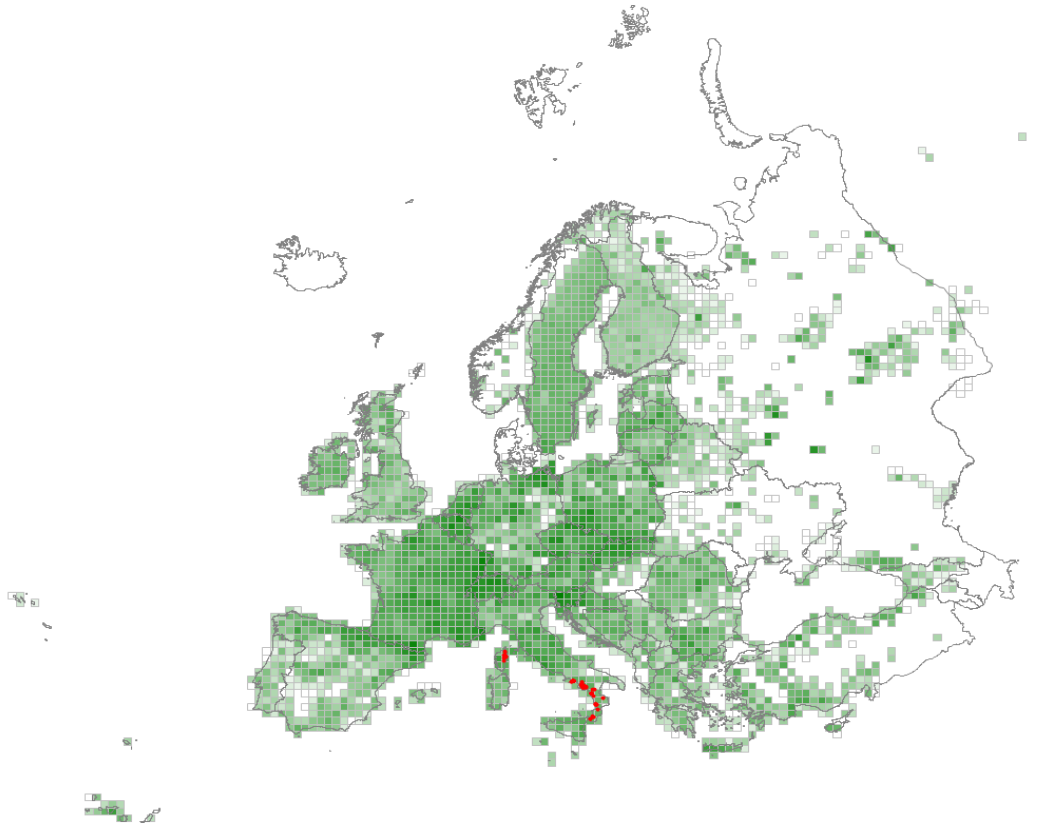
<i>Adoxa moschatellina</i>	13
<i>Aconitum lycoctonum</i>	13
<i>Solidago virgaurea</i>	12
<i>Pulmonaria officinalis</i>	12
<i>Prunus avium</i>	12
<i>Primula elatior</i>	12
<i>Phyteuma spicatum</i>	12
<i>Clematis vitalba</i>	12
<i>Ctenidium molluscum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Acer pseudoplatanus</i>	54
<i>Fraxinus excelsior</i>	25

T1G – *Alnus cordata* forest

Temperate non-riparian, non-marshy forest dominated by Italian alder (*Alnus cordata*).



Corresponding alliances in EuroVegChecklist 2016

- <> FAG-02C Geranio striati-Fagion Gentile 1970
- <> POP-02A Alnion incanae Pawłowski et al. 1928

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Alnus cordata</i>	96
<i>Geranium versicolor</i>	41
<i>Lamium flexuosum</i>	40
<i>Anemone apennina</i>	39
<i>Ranunculus lanuginosus</i>	37
<i>Vinca minor</i>	34
<i>Arisarum proboscideum</i>	32
<i>Polystichum setiferum</i>	32
<i>Scutellaria columnae</i>	29
<i>Clematis vitalba</i>	28

<i>Clinopodium menthifolium</i>	28
<i>Stachys sylvatica</i>	28
<i>Lathyrus venetus</i>	26
<i>Brachypodium sylvaticum</i>	26
<i>Chaerophyllum temulum</i>	26
<i>Salvia glutinosa</i>	26
<i>Potentilla micrantha</i>	26
<i>Viola alba</i>	24
<i>Symphytum tuberosum</i> aggr.	23
<i>Rubus ulmifolius</i>	22
<i>Festuca heterophylla</i>	22
<i>Asperula taurina</i>	22
<i>Rumex sanguineus</i>	21
<i>Geranium robertianum</i>	21
<i>Pteridium aquilinum</i>	21
<i>Helleborus foetidus</i>	20
<i>Castanea sativa</i>	20
<i>Carex pendula</i>	20
<i>Vinca major</i>	20
<i>Acer opalus</i> aggr.	20
<i>Lactuca muralis</i>	20
<i>Digitalis lutea</i>	20
<i>Hypericum hircinum</i>	19
<i>Calystegia silvatica</i>	19
<i>Drymochloa drymeja</i>	19
<i>Ostrya carpinifolia</i>	18
<i>Dioscorea communis</i>	18
<i>Bryonia dioica</i>	18
<i>Aremonia agrimonoides</i>	18
<i>Viola reichenbachiana</i>	17
<i>Ranunculus brutius</i>	17
<i>Daphne laureola</i>	16
<i>Geum urbanum</i>	15

Constant species (percentage frequencies)

<i>Alnus cordata</i>	100
<i>Brachypodium sylvaticum</i>	76
<i>Pteridium aquilinum</i>	74
<i>Rubus ulmifolius</i>	62
<i>Clematis vitalba</i>	59
<i>Geranium robertianum</i>	54
<i>Hedera helix</i> aggr.	50
<i>Crataegus monogyna</i>	46
<i>Ranunculus lanuginosus</i>	43
<i>Lactuca muralis</i>	43
<i>Stachys sylvatica</i>	42
<i>Polystichum setiferum</i>	42
<i>Poa trivialis</i>	42
<i>Rubus fruticosus</i> aggr.	41
<i>Viola reichenbachiana</i>	39
<i>Dioscorea communis</i>	39
<i>Geum urbanum</i>	36
<i>Viola alba</i>	32
<i>Geranium versicolor</i>	32
<i>Castanea sativa</i>	32

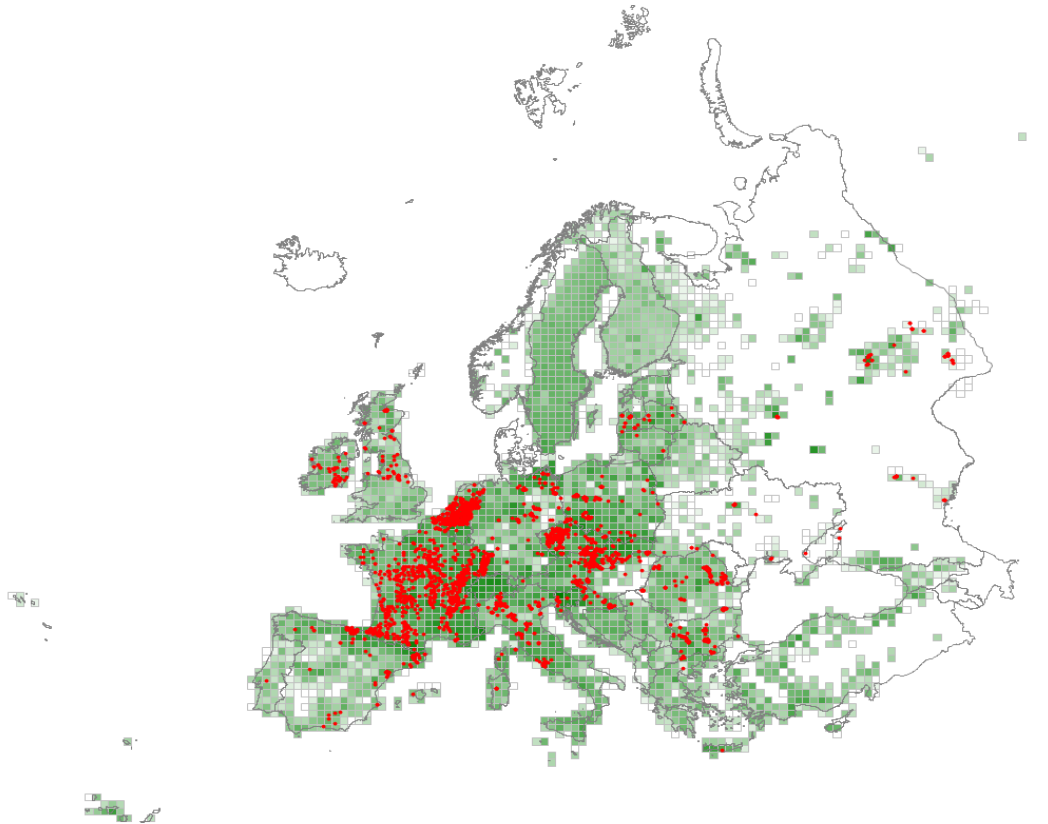
<i>Urtica dioica</i>	31
<i>Festuca heterophylla</i>	31
<i>Salvia glutinosa</i>	30
<i>Lamium flexuosum</i>	30
<i>Helleborus foetidus</i>	28
<i>Symphytum tuberosum</i> aggr.	26
<i>Vinca minor</i>	25
<i>Potentilla micrantha</i>	25
<i>Ostrya carpinifolia</i>	25
<i>Chaerophyllum temulum</i>	25
<i>Anemone apennina</i>	25
<i>Acer opalus</i> aggr.	25
<i>Galium aparine</i>	24
<i>Fraxinus ornus</i>	24
<i>Stellaria media</i>	23
<i>Fragaria vesca</i>	23
<i>Daphne laureola</i>	23
<i>Lathyrus venetus</i>	22
<i>Euphorbia amygdaloides</i>	22
<i>Aremonia agrimonoides</i>	22
<i>Sanicula europaea</i>	20
<i>Quercus pubescens</i>	20
<i>Melica uniflora</i>	20
<i>Rumex sanguineus</i>	19
<i>Luzula forsteri</i>	18
<i>Carex pendula</i>	18
<i>Quercus ilex</i>	17
<i>Clinopodium vulgare</i>	17
<i>Clinopodium menthifolium</i>	17
<i>Bryonia dioica</i>	17
<i>Digitalis lutea</i>	16
<i>Scutellaria columnae</i>	15
<i>Dactylis glomerata</i>	15
<i>Moehringia trinervia</i>	14
<i>Drymochloa drymeja</i>	14
<i>Vincetoxicum hirundinaria</i>	13
<i>Primula acaulis</i>	13
<i>Ficus carica</i>	13
<i>Arum italicum</i>	13
<i>Quercus cerris</i>	12
<i>Mercurialis perennis</i>	12
<i>Cyclamen hederifolium</i>	12
<i>Crepis leontodontoides</i>	12
<i>Circaea lutetiana</i>	12
<i>Arisarum proboscideum</i>	12
<i>Ajuga reptans</i>	12
<i>Solanum dulcamara</i>	11
<i>Prunella vulgaris</i>	11
<i>Populus nigra</i>	11
<i>Malus sylvestris</i>	11
<i>Ilex aquifolium</i>	11
<i>Hypericum hircinum</i>	11
<i>Cruciata laevipes</i>	11
<i>Cornus sanguinea</i>	11
<i>Bellis perennis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Alnus cordata</i>	100
<i>Pteridium aquilinum</i>	26

T1H – Broadleaved deciduous plantation of non site-native trees

Cultivated deciduous broadleaved tree formations planted for the production of wood, composed of exotic species or of native tree species out of their natural range.



Corresponding alliances in EuroVegChecklist 2016

- > ROB-02B *Balloto nigrae*-Robinion pseudoacaciae Hadač et Sofron 1980
- > ROB-02C *Chelidonio majoris*-Robinion pseudoacaciae Hadač et Sofron ex Vítková in Chytrý 2013
- > ROB-02D *Euphorbio cyparissiae*-Robinion pseudoacaciae Vítková in Kolbek et al. 2003

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Robinia pseudoacacia</i>	48
<i>Populus x canadensis</i>	29
<i>Quercus rubra</i>	22
<i>Sambucus nigra</i>	19

Constant species (percentage frequencies)

<i>Robinia pseudoacacia</i>	53
<i>Urtica dioica</i>	42

<i>Sambucus nigra</i>	39
<i>Rubus fruticosus</i> aggr.	35
<i>Galium aparine</i>	35
<i>Geum urbanum</i>	31
<i>Crataegus monogyna</i>	30
<i>Hedera helix</i> aggr.	28
<i>Quercus robur</i>	27
<i>Fraxinus excelsior</i>	23
<i>Corylus avellana</i>	22
<i>Quercus rubra</i>	19
<i>Brachypodium sylvaticum</i>	19
<i>Glechoma hederacea</i>	18
<i>Rubus caesius</i>	17
<i>Euonymus europaeus</i>	17
<i>Cornus sanguinea</i>	17
<i>Populus x canadensis</i>	16
<i>Prunus spinosa</i>	15
<i>Poa nemoralis</i>	15
<i>Dactylis glomerata</i>	15
<i>Geranium robertianum</i>	14
<i>Chelidonium majus</i>	14
<i>Rosa canina</i> aggr.	13
<i>Poa trivialis</i>	13
<i>Lonicera periclymenum</i>	13
<i>Alliaria petiolata</i>	13
<i>Acer pseudoplatanus</i>	13
<i>Sorbus aucuparia</i>	12
<i>Ligustrum vulgare</i>	12
<i>Fagus sylvatica</i>	12
<i>Dryopteris carthusiana</i> aggr.	12
<i>Clematis vitalba</i>	12
<i>Castanea sativa</i>	12
<i>Acer campestre</i>	12
<i>Prunus avium</i>	11
<i>Carpinus betulus</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)
Robinia pseudoacacia 49

T1J – Deciduous self-sown forest of non site-native trees

[This habitat could not be formally defined in the expert system because self-sown forests cannot be distinguished from plantations based on the vegetation-plot data.]

Non-planted stands dominated by non-native deciduous tree species such as *Acer negundo*, *Ailanthus altissima* and *Robinia pseudoacacia*.

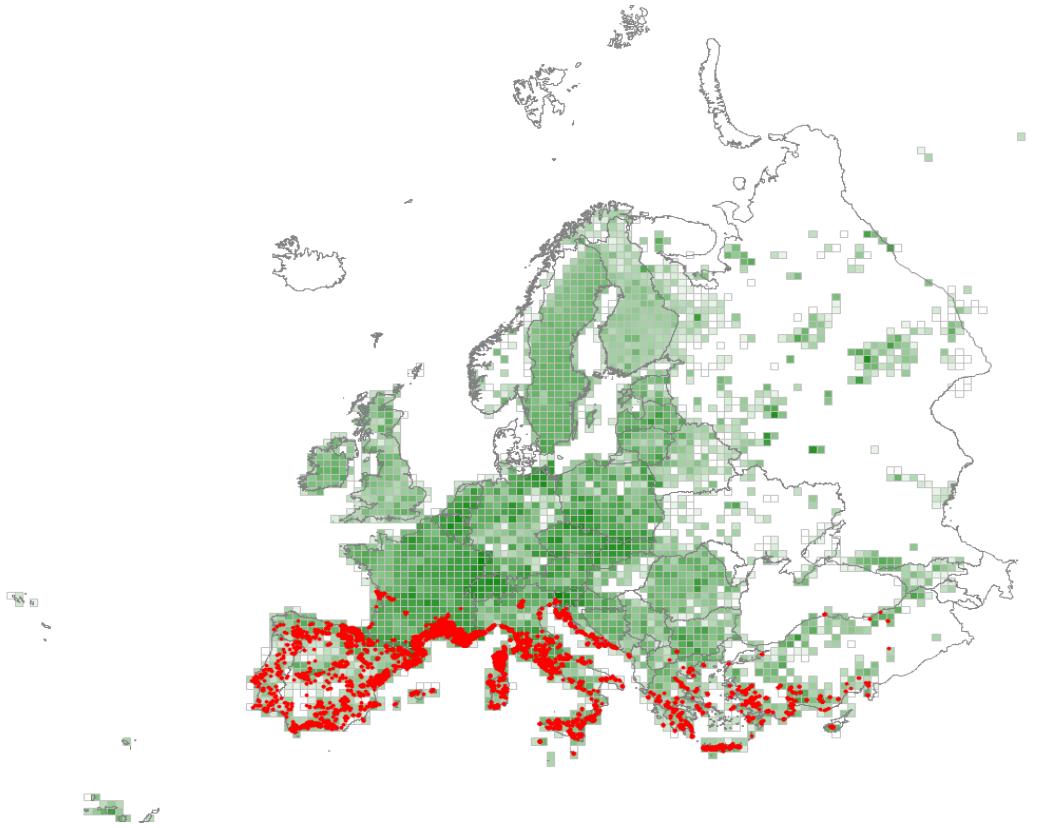
T1K – Broadleaved deciduous plantation of site-native trees

[This habitat could not be formally defined in the expert system, because plantations of site-native trees cannot be distinguished from natural forests based on the vegetation-plot data.]

Cultivated stands of broadleaved deciduous trees planted for the production of wood, composed of site-native broadleaved deciduous tree species.

T21 – Mediterranean evergreen *Quercus* forest

Forest dominated by evergreen broadleaved oaks (most widely *Quercus ilex*) with associated sclerophyllous and laurophyllous trees and shrubs in the summer-drought climate of the Mediterranean lowlands and foothills. The tree canopy is often low and much modified, with widespread transitions to maquis/matorral and open dehesa/montado wood pasture.



Corresponding alliances in EuroVegChecklist 2016

- > QUI-01A *Quercion ilicis* Br.-Bl. ex Molinier 1934
- > QUI-01B *Oleo sylvestris-Quercion rotundifoliae* Barbero, Quézel et Rivas-Mart. in Rivas-Mart. et al. 1986 nom. invers. propos.
- > QUI-01C *Quercion broteroi* Br.-Bl. et al. 1956 corr. Rivas-Mart. 1972
- <> QUI-01D *Fraxino orni-Quercion ilicis* Biondi, Casavecchia et Gigante in Biondi et al. 2013
- > QUI-01E *Erico-Quercion ilicis* S. Brullo et al. 1977
- > QUI-01G *Cyclamini cretici-Quercion ilicis* Barbero et Quézel in Quézel et al. 1993
- > QUI-01H *Arbuto andrachnes-Quercion cocciferae* Barbero et Quézel 1979
- > QUI-02A *Quercion calliprini* Zohary 1955
- > QUI-02C *Quercion alnifoliae* Barbero et Quézel ex Bergmeier, Mucina et Theurillat in Willner et al. 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Quercus ilex</i>	31
<i>Phillyrea latifolia</i>	25
<i>Rubia peregrina</i>	22
<i>Arbutus unedo</i>	21
<i>Ruscus aculeatus</i>	21
<i>Quercus suber</i>	19
<i>Carex distachya</i>	17
<i>Smilax aspera</i>	17
<i>Asparagus acutifolius</i>	16
<i>Quercus rotundifolia</i>	16
<i>Asplenium adiantum-nigrum</i>	16
<i>Lonicera implexa</i>	15

Constant species (percentage frequencies)

<i>Rubia peregrina</i>	68
<i>Quercus ilex</i>	67
<i>Smilax aspera</i>	45
<i>Asparagus acutifolius</i>	45
<i>Phillyrea latifolia</i>	43
<i>Ruscus aculeatus</i>	40
<i>Hedera helix</i> aggr.	37
<i>Arbutus unedo</i>	33
<i>Erica arborea</i>	29
<i>Asplenium adiantum-nigrum</i>	29
<i>Pistacia lentiscus</i>	27
<i>Dioscorea communis</i>	25
<i>Crataegus monogyna</i>	25
<i>Rubus ulmifolius</i>	24
<i>Quercus pubescens</i>	24
<i>Lonicera implexa</i>	22
<i>Brachypodium retusum</i>	22
<i>Rhamnus alaternus</i>	21
<i>Juniperus oxycedrus</i> aggr.	21
<i>Fraxinus ornus</i>	21
<i>Quercus coccifera</i>	20
<i>Teucrium chamaedrys</i>	19
<i>Dactylis glomerata</i>	18
<i>Viburnum tinus</i>	17
<i>Pistacia terebinthus</i>	17
<i>Carex distachya</i>	17
<i>Quercus rotundifolia</i>	16
<i>Clematis flammula</i>	16
<i>Viola alba</i>	15
<i>Rosa sempervirens</i>	15
<i>Quercus suber</i>	15
<i>Carex halleriana</i>	15
<i>Brachypodium sylvaticum</i>	15
<i>Phillyrea angustifolia</i>	14
<i>Osyris alba</i>	14
<i>Cistus salviifolius</i>	14
<i>Myrtus communis</i>	13
<i>Lonicera etrusca</i>	13

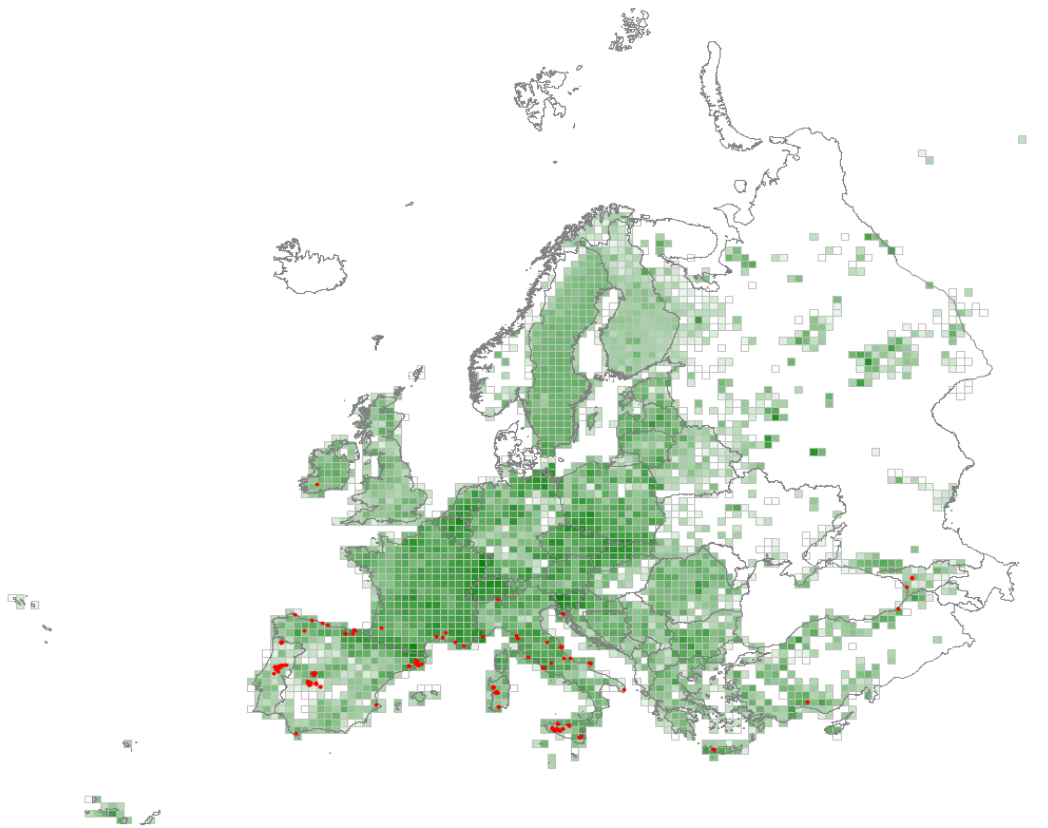
<i>Hippocrepis emerus</i>	13
<i>Daphne gnidium</i>	13
<i>Cyclamen repandum</i>	13
<i>Euphorbia characias</i>	12
<i>Thymus vulgaris</i>	11
<i>Buxus sempervirens</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Quercus ilex</i>	63
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T22 – Mainland laurophyllous forest

Patches of evergreen laurophyllous forests and thickets dominated by bay (*Laurus nobilis*), firetree (*Morella faya*) and Portugal laurel (*Prunus lusitanica* subsp. *lusitanica*) in oceanic and hyper-humid situations, now surviving as small relics in sheltered situations like ravines along the Atlantic coast of Portugal and Spain and in Sardinia, southern Italy and Sicily. Typically species-poor with an associated flora similar to T21.



Corresponding alliances in EuroVegChecklist 2016

- > QUI-01I Arbuto unedonis-Laurion nobilis Rivas-Mart. et al. 1999

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Laurus nobilis</i>	59
<i>Prunus lusitanica</i> subsp. <i>lusitanica</i>	57
<i>Acanthus mollis</i>	34
<i>Ruscus aculeatus</i>	32
<i>Celtis australis</i>	25
<i>Hedera helix</i> aggr.	24
<i>Carex reuteriana</i>	23

<i>Cyclamen hederifolium</i>	22
<i>Asplenium adiantum-nigrum</i>	21
<i>Dioscorea communis</i>	20
<i>Urtica rupestris</i>	20
<i>Arum italicum</i>	19
<i>Hypericum androsaemum</i>	19
<i>Polystichum setiferum</i>	19
<i>Orobanche hederæ</i>	18
<i>Rosa sempervirens</i>	18
<i>Viburnum tinus</i>	18
<i>Dryopteris affinis</i> aggr.	16
<i>Rubus ulmifolius</i>	16
<i>Fraxinus angustifolia</i>	16
<i>Ficus carica</i>	16

Constant species (percentage frequencies)

<i>Hedera helix</i> aggr.	81
<i>Ruscus aculeatus</i>	63
<i>Laurus nobilis</i>	62
<i>Rubia peregrina</i>	47
<i>Rubus ulmifolius</i>	46
<i>Dioscorea communis</i>	42
<i>Asplenium adiantum-nigrum</i>	39
<i>Smilax aspera</i>	38
<i>Prunus lusitanica</i> subsp. <i>lusitanica</i>	34
<i>Lonicera periclymenum</i>	32
<i>Brachypodium sylvaticum</i>	31
<i>Asparagus acutifolius</i>	27
<i>Viburnum tinus</i>	26
<i>Rhamnus alaternus</i>	25
<i>Polystichum setiferum</i>	25
<i>Rubus fruticosus</i> aggr.	24
<i>Athyrium filix-femina</i>	24
<i>Pteridium aquilinum</i>	22
<i>Clematis vitalba</i>	22
<i>Arum italicum</i>	22
<i>Alnus glutinosa</i>	22
<i>Cyclamen hederifolium</i>	21
<i>Acanthus mollis</i>	21
<i>Rosa sempervirens</i>	20
<i>Quercus ilex</i>	20
<i>Arbutus unedo</i>	20
<i>Blechnum spicant</i>	19
<i>Crataegus monogyna</i>	18
<i>Ilex aquifolium</i>	17
<i>Sambucus nigra</i>	16
<i>Fraxinus angustifolia</i>	16
<i>Erica arborea</i>	16
<i>Asplenium trichomanes</i>	16
<i>Phillyrea latifolia</i>	15
<i>Ficus carica</i>	15
<i>Dryopteris affinis</i> aggr.	15
<i>Corylus avellana</i>	15
<i>Ulmus minor</i>	14
<i>Teucrium scorodonia</i>	14

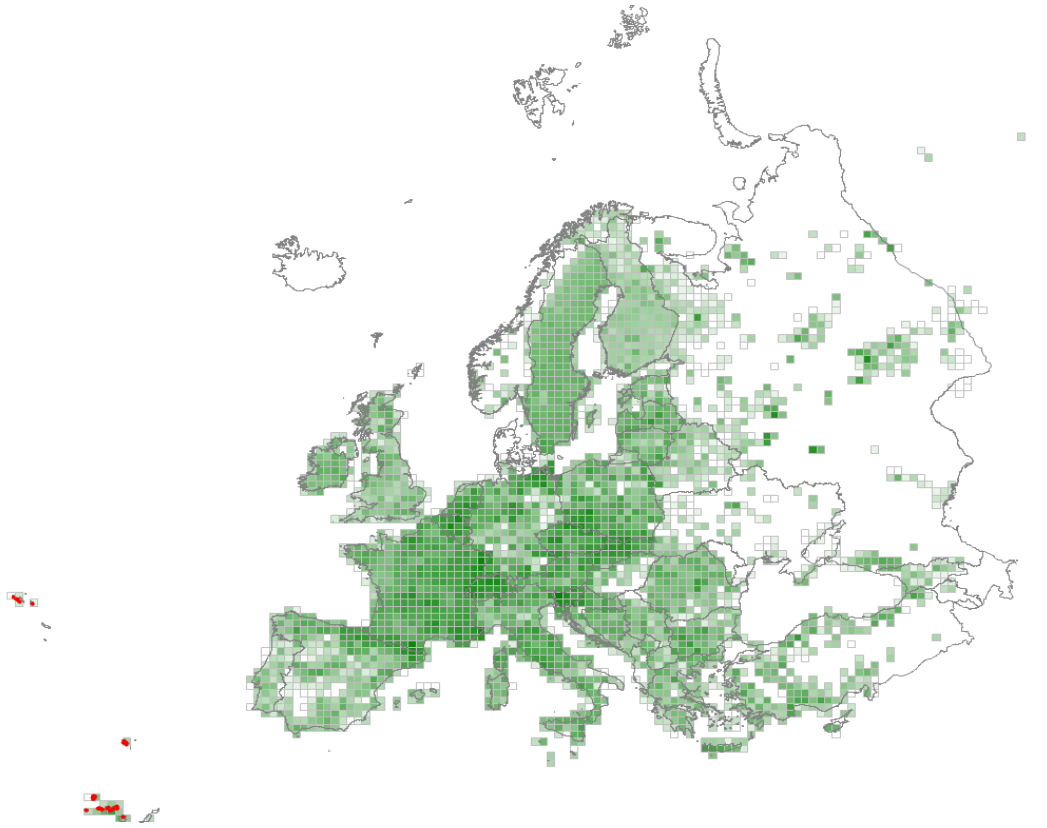
<i>Quercus pubescens</i>	14
<i>Frangula alnus</i>	14
<i>Vitis vinifera</i>	12
<i>Hypericum androsaemum</i>	12
<i>Celtis australis</i>	12
<i>Osyris alba</i>	11
<i>Castanea sativa</i>	11
<i>Carex reuteriana</i>	11
<i>Arisarum vulgare</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Laurus nobilis</i>	61
<i>Prunus lusitanica</i> subsp. <i>lusitanica</i>	34

T23 – Macaronesian laurophyllous forest

Evergreen laurophyllous forest (laurisilva) on deep soils in the hyper-humid, frost-free fog belt mainly on the northern slopes in the mountains on some Macaronesian islands. The tree and shrub canopy is very diverse and rich in endemics, with striking differences related to climatic conditions across the different island groups, local topography and long isolation of the floras.



Corresponding alliances in EuroVegChecklist 2016

- > AZO-02A Dryopterido azoricae-Laurion azoricae Rivas-Mart. et al. 2002
- > AZO-02B Myrico fayae-Pittosporion undulati Lüpnitz 1976
- > LAU-02A Ixantho viscosae-Laurion azoricae Oberd. ex Santos in Rivas-Mart. et al. 1977
- > LAU-02B Sibthorpio peregrinae-Clethrion arborea Capelo et al. 2000
- > LAU-02C Visneo mocanerae-Apollonion barbujae Rivas-Mart. in Capelo et al. 2000

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Laurus azorica</i>	61
<i>Persea indica</i>	52
<i>Dryopteris oligodonta</i>	51

<i>Ilex canariensis</i>	46
<i>Morella faya</i>	43
<i>Pericallis papyracea</i>	41
<i>Ageratina adenophora</i>	37
<i>Ixanthus viscosus</i>	37
<i>Ocotea foetens</i>	35
<i>Picconia excelsa</i>	34
<i>Pericallis appendiculata</i>	34
<i>Prunus lusitanica</i> subsp. <i>hixa</i>	33
<i>Canarina canariensis</i>	33
<i>Ageratina riparia</i>	32
<i>Galium scabrum</i>	32
<i>Hypericum xylosteifolium</i>	31
<i>Apollonias barbujana</i>	31
<i>Cedronella canariensis</i>	30
<i>Diplazium caudatum</i>	28
<i>Semele androgyna</i>	28
<i>Viburnum tinus</i>	28
<i>Urtica morifolia</i>	27
<i>Asplenium hemionitis</i>	26
<i>Asplenium adiantum-nigrum</i>	26
<i>Erica arborea</i>	25
<i>Ilex perado</i>	25
<i>Geranium reuteri</i>	24
<i>Dryopteris intermedia</i>	24
<i>Heberdenia excelsa</i>	23
<i>Hypericum grandifolium</i>	22
<i>Cryptotaenia elegans</i>	22
<i>Pteris incompleta</i>	22
<i>Phyllis nobla</i>	22
<i>Woodwardia radicans</i>	20
<i>Rubus palmensis</i>	20
<i>Carex vulcani</i>	20
<i>Visnea mocanera</i>	20
<i>Trichomanes speciosum</i>	20
<i>Bosea yervamora</i>	19
<i>Culcita macrocarpa</i>	19
<i>Hypericum glandulosum</i>	19
<i>Jasminum odoratissimum</i>	19
<i>Rhamnus glandulosa</i>	18
<i>Convolvulus canariensis</i>	18
<i>Dryopteris crispifolia</i>	18
<i>Drymochloa donax</i>	17
<i>Frangula azorica</i>	17
<i>Gesnouinia arborea</i>	16
<i>Laurus novocanariensis</i>	16
<i>Isoplexis canariensis</i>	16

Constant species (percentage frequencies)

<i>Laurus azorica</i>	66
<i>Erica arborea</i>	64
<i>Morella faya</i>	61
<i>Ilex canariensis</i>	55
<i>Dryopteris oligodonta</i>	50
<i>Asplenium adiantum-nigrum</i>	47

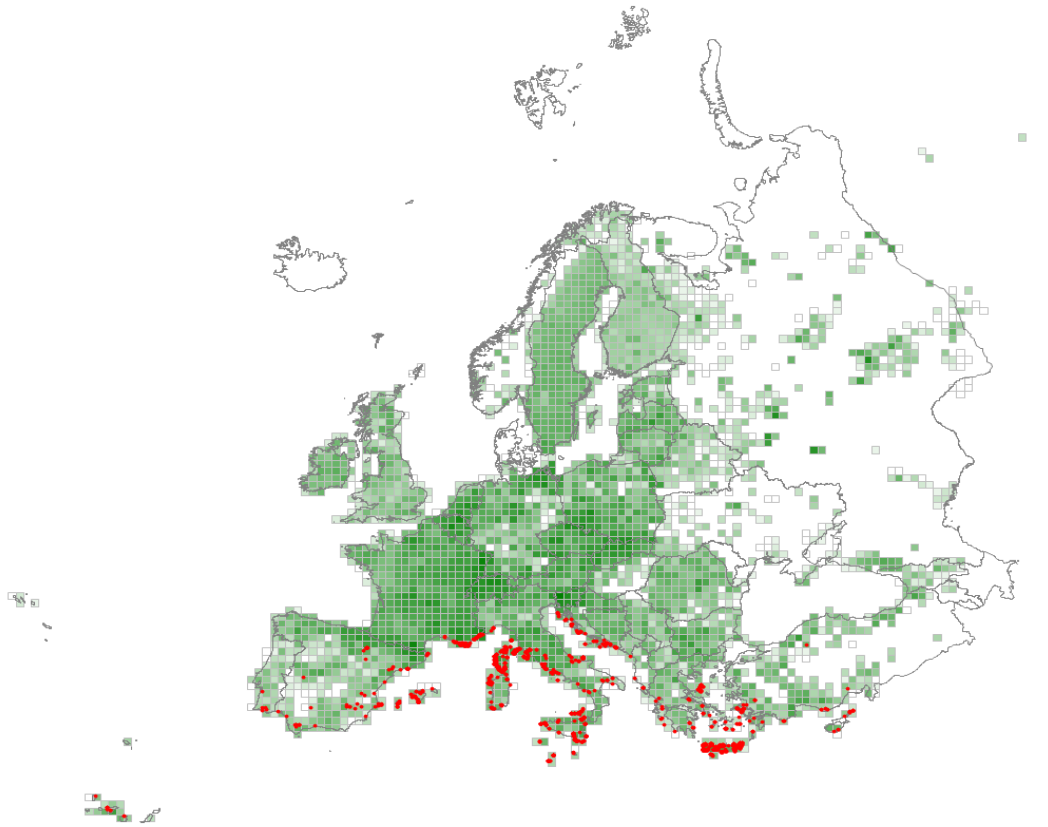
<i>Viburnum tinus</i>	41
<i>Pteridium aquilinum</i>	36
<i>Persea indica</i>	32
<i>Galium scabrum</i>	31
<i>Hypericum xylosteifolium</i>	29
<i>Brachypodium sylvaticum</i>	29
<i>Ageratina adenophora</i>	29
<i>Rubia peregrina</i>	25
<i>Picconia excelsa</i>	25
<i>Phyllis nobla</i>	24
<i>Hedera helix</i> aggr.	23
<i>Ixanthus viscosus</i>	21
<i>Rubus ulmifolius</i>	20
<i>Apollonias barbujana</i>	20
<i>Pericallis papyracea</i>	19
<i>Hypericum grandifolium</i>	19
<i>Diplazium caudatum</i>	18
<i>Ocotea foetens</i>	17
<i>Urtica morifolia</i>	16
<i>Prunus lusitanica</i> subsp. <i>hixa</i>	16
<i>Polystichum setiferum</i>	16
<i>Pericallis appendiculata</i>	16
<i>Ilex perado</i>	16
<i>Erica scoparia</i>	16
<i>Dioscorea communis</i>	16
<i>Cedronella canariensis</i>	16
<i>Woodwardia radicans</i>	15
<i>Ranunculus cortusifolius</i>	15
<i>Davallia canariensis</i>	15
<i>Heberdenia excelsa</i>	14
<i>Geranium reuteri</i>	14
<i>Semele androgyna</i>	12
<i>Globularia salicina</i>	12
<i>Canarina canariensis</i>	12
<i>Visnea mocanera</i>	11
<i>Laurus novocanariensis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Laurus azorica</i>	44
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T24 – *Olea europaea*-*Ceratonia siliqua* forest

Olive (*Olea europaea*), carob (*Ceratonia siliqua*) and mastic (*Pistacia lentiscus*) forest or bush with a closed tree canopy in the drought-prone lowlands and foothills of the Mediterranean and Macaronesia.



Corresponding alliances in EuroVegChecklist 2016

- <> OLE-01A Mayteno canariensis-Juniperion canariensis Santos et F. Galván ex Santos 1983 corr. Rivas-Mart. et al. 1993
- > OLE-01B Retamion rhodorhizoidis Del Arco et al. 2009
- > OLE-01C Oleo maderensis-Maytenion umbellatae Capelo et al. 2000
- <> QUI-04H Oleo-Ceratonion siliquae Br.-Bl. ex Guinochet et Drouineau 1944
- <> QUI-04L Ceratonio-Pistacion lentisci Zohary et Orshan 1959

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pistacia lentiscus</i>	39
<i>Olea europaea</i>	27
<i>Ceratonia siliqua</i>	23
<i>Arisarum vulgare</i>	19
<i>Prasium majus</i>	18

<i>Smilax aspera</i>	17
<i>Brachypodium retusum</i>	16
<i>Asparagus acutifolius</i>	16

Constant species (percentage frequencies)

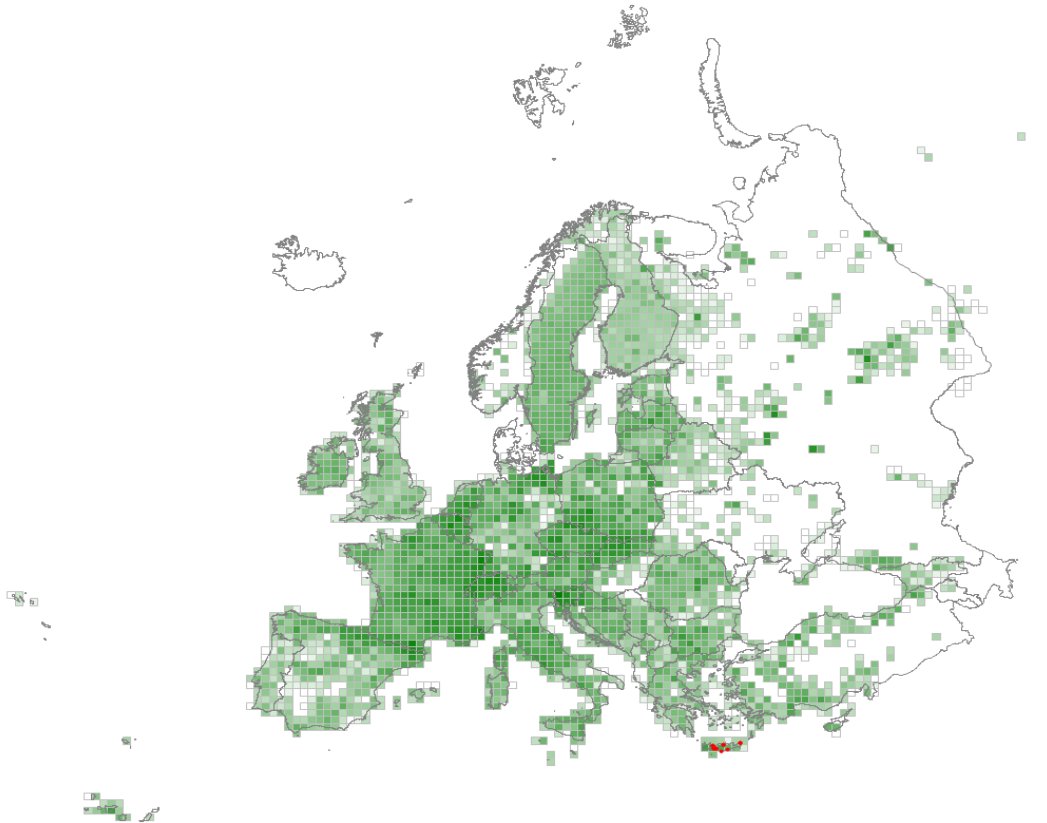
<i>Pistacia lentiscus</i>	98
<i>Smilax aspera</i>	43
<i>Asparagus acutifolius</i>	42
<i>Rubia peregrina</i>	41
<i>Brachypodium retusum</i>	41
<i>Olea europaea</i>	39
<i>Arisarum vulgare</i>	33
<i>Prasium majus</i>	28
<i>Rhamnus alaternus</i>	23
<i>Dactylis glomerata</i>	21
<i>Ceratonia siliqua</i>	20
<i>Myrtus communis</i>	19
<i>Phillyrea latifolia</i>	18
<i>Lonicera implexa</i>	18
<i>Juniperus phoenicea</i>	18
<i>Rosmarinus officinalis</i>	16
<i>Pinus halepensis</i>	16
<i>Phillyrea angustifolia</i>	15
<i>Euphorbia dendroides</i>	15
<i>Drimia maritima</i> aggr.	15
<i>Cistus monspeliensis</i>	15
<i>Calicotome villosa</i>	15
<i>Piptatherum miliaceum</i>	14
<i>Clematis flammula</i>	14
<i>Asparagus aphyllus</i>	13
<i>Quercus ilex</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pistacia lentiscus</i>	95
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T25 – *Phoenix theophrasti* vegetation

Sparse groves with the palm tree *Phoenix theophrasti*, found on the island of Crete and in south-western Anatolia. The habitat may be riparian (with the palm forming temporarily inundated gallery forest along permanent fresh or brackish waters) or related to seasonally or episodically flooded valleys.



Corresponding alliances in EuroVegChecklist 2016

<> NER-01F *Rubo sancti-Nerion oleandri* Brullo et al. 2004

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Phoenix theophrasti</i>	99
<i>Juncus heldreichianus</i>	60
<i>Ballota pseudodictamnus</i>	41
<i>Nerium oleander</i>	40
<i>Centaurea redempta</i>	38
<i>Oxalis pes-caprae</i>	38
<i>Malva unguiculata</i>	35
<i>Malcolmia flexuosa</i>	30
<i>Anthemis chia</i>	27

<i>Petromarula pinnata</i>	26
<i>Stachys spinulosa</i>	26
<i>Vitex agnus-castus</i>	26
<i>Piptatherum miliaceum</i>	26
<i>Rubus sanctus</i>	26
<i>Asparagus aphyllus</i>	25
<i>Capparis spinosa</i>	24
<i>Silene sedoides</i>	24
<i>Aristolochia cretica</i>	24
<i>Parietaria cretica</i>	24
<i>Arisarum vulgare</i>	24
<i>Theligonum cynocrambe</i>	24
<i>Tordylium apulum</i>	23
<i>Ficus carica</i>	23
<i>Carex hispida</i>	23
<i>Alcea biennis</i>	23
<i>Brassica cretica</i>	22
<i>Orlaya daucooides</i>	22
<i>Geranium purpureum</i>	22
<i>Phlomis lanata</i>	21
<i>Anogramma leptophylla</i>	19
<i>Arum concinatum</i>	19
<i>Asphodeline lutea</i>	19
<i>Urtica pilulifera</i>	19
<i>Arum creticum</i>	19
<i>Urospermum picroides</i>	18
<i>Salvia fruticosa</i>	17
<i>Ceratonia siliqua</i>	17
<i>Eucalyptus camaldulensis</i>	16
<i>Cirsium creticum</i>	16
<i>Cichorium spinosum</i>	16
<i>Pistacia lentiscus</i>	15
<i>Securigera securidaca</i>	15

Constant species (percentage frequencies)

<i>Phoenix theophrasti</i>	100
<i>Nerium oleander</i>	44
<i>Pistacia lentiscus</i>	41
<i>Piptatherum miliaceum</i>	41
<i>Juncus heldreichianus</i>	41
<i>Arisarum vulgare</i>	41
<i>Smilax aspera</i>	37
<i>Oxalis pes-caprae</i>	37
<i>Geranium purpureum</i>	33
<i>Asparagus aphyllus</i>	30
<i>Schoenus nigricans</i>	26
<i>Dioscorea communis</i>	26
<i>Ballota pseudodictamnus</i>	26
<i>Vitex agnus-castus</i>	22
<i>Tordylium apulum</i>	22
<i>Scirpoides holoschoenus</i>	22
<i>Prasium majus</i>	22
<i>Myrtus communis</i>	22
<i>Ficus carica</i>	22
<i>Anagallis arvensis</i>	22

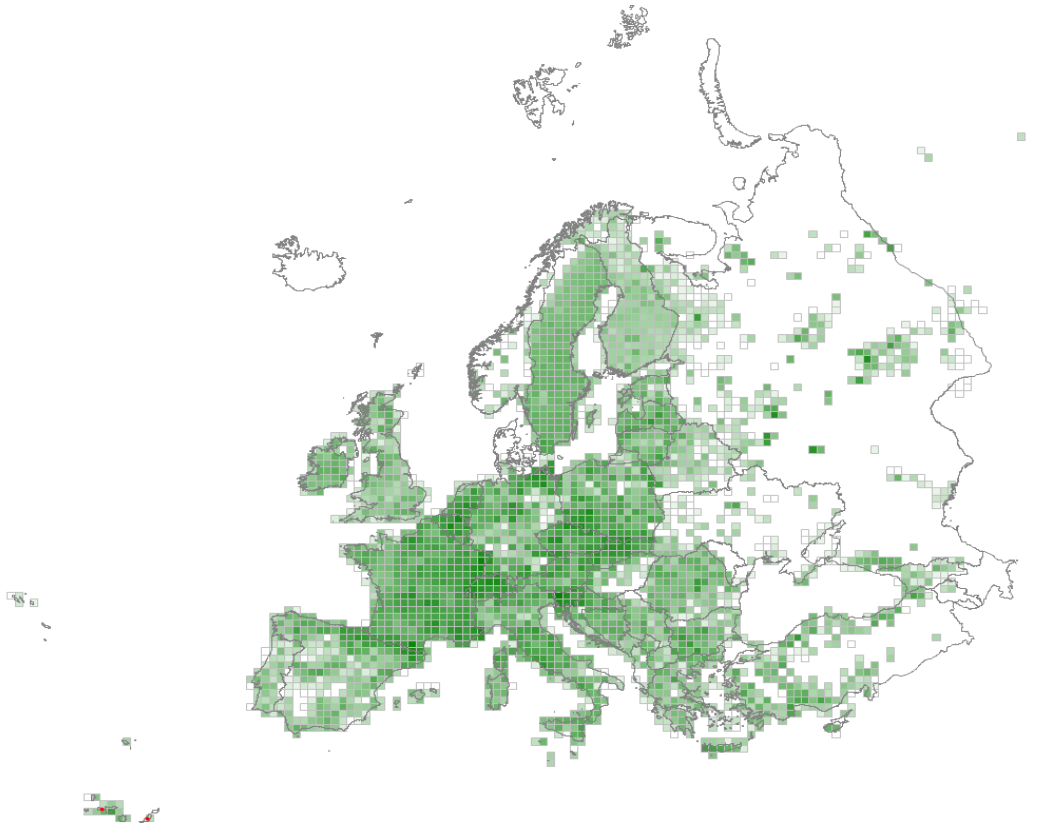
<i>Urospermum picroides</i>	19
<i>Trifolium campestre</i>	19
<i>Theligonum cynocrambe</i>	19
<i>Sonchus bulbosus</i>	19
<i>Rubus sanctus</i>	19
<i>Reichardia picroides</i>	19
<i>Leontodon tuberosus</i>	19
<i>Anthemis chia</i>	19
<i>Trifolium stellatum</i>	15
<i>Spartium junceum</i>	15
<i>Silene sedoides</i>	15
<i>Petromarula pinnata</i>	15
<i>Parietaria cretica</i>	15
<i>Orlaya daucooides</i>	15
<i>Malva unguiculata</i>	15
<i>Malcolmia flexuosa</i>	15
<i>Leopoldia comosa</i>	15
<i>Galium aparine</i>	15
<i>Euphorbia dendroides</i>	15
<i>Dittrichia viscosa</i>	15
<i>Cynodon dactylon</i>	15
<i>Ceratonía siliqua</i>	15
<i>Centaurea redempta</i>	15
<i>Capparis spinosa</i>	15
<i>Bituminaria bituminosa</i>	15
<i>Asphodeline lutea</i>	15
<i>Asparagus acutifolius</i>	15
<i>Torilis nodosa</i>	11
<i>Sarcopoterium spinosum</i>	11
<i>Samolus valerandi</i>	11
<i>Salvia fruticosa</i>	11
<i>Rostraria cristata</i>	11
<i>Phlomis lanata</i>	11
<i>Equisetum ramosissimum</i>	11
<i>Drimia maritima</i> aggr.	11
<i>Carex hispida</i>	11
<i>Carex flacca</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Phoenix theophrasti</i>	100
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T26 – *Phoenix canariensis* vegetation

Sparse *Phoenix canariensis* groves (palmares) of colluvial deposits, mostly on flat mid-slope sites or at the base of irregular temporary streams. Endemic to the Canary Islands, they are dependent on brief, temporary water-tables present in sporadic torrential flows during the winter. Thus, they are azonal vegetation in the dry to arid infra- and thermomediterranean belts.



Corresponding alliances in EuroVegChecklist 2016

- > OLE-01D *Phoenix canariensis* Rivas-Mart. et Del Arco in Rivas-Mart. et al. 2011

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Phoenix canariensis</i>	99
<i>Sideritis cretica</i>	80
<i>Vicia cirrhosa</i>	78
<i>Euphorbia berthelotii</i>	78
<i>Descurainia millefolia</i>	77
<i>Echium aculeatum</i>	74
<i>Periploca angustifolia</i>	56
<i>Micromeria varia</i>	55

<i>Ricinus communis</i>	52
<i>Phagnalon saxatile</i>	52
<i>Dittrichia viscosa</i>	52
<i>Pallenis spinosa</i>	51
<i>Nicotiana glauca</i>	45
<i>Hyparrhenia hirta</i>	36
<i>Cistus monspeliensis</i>	34
<i>Bituminaria bituminosa</i>	33
<i>Lycium intricatum</i>	32
<i>Euphorbia regis-jubae</i>	27
<i>Launaea arborescens</i>	26

Constant species (percentage frequencies)

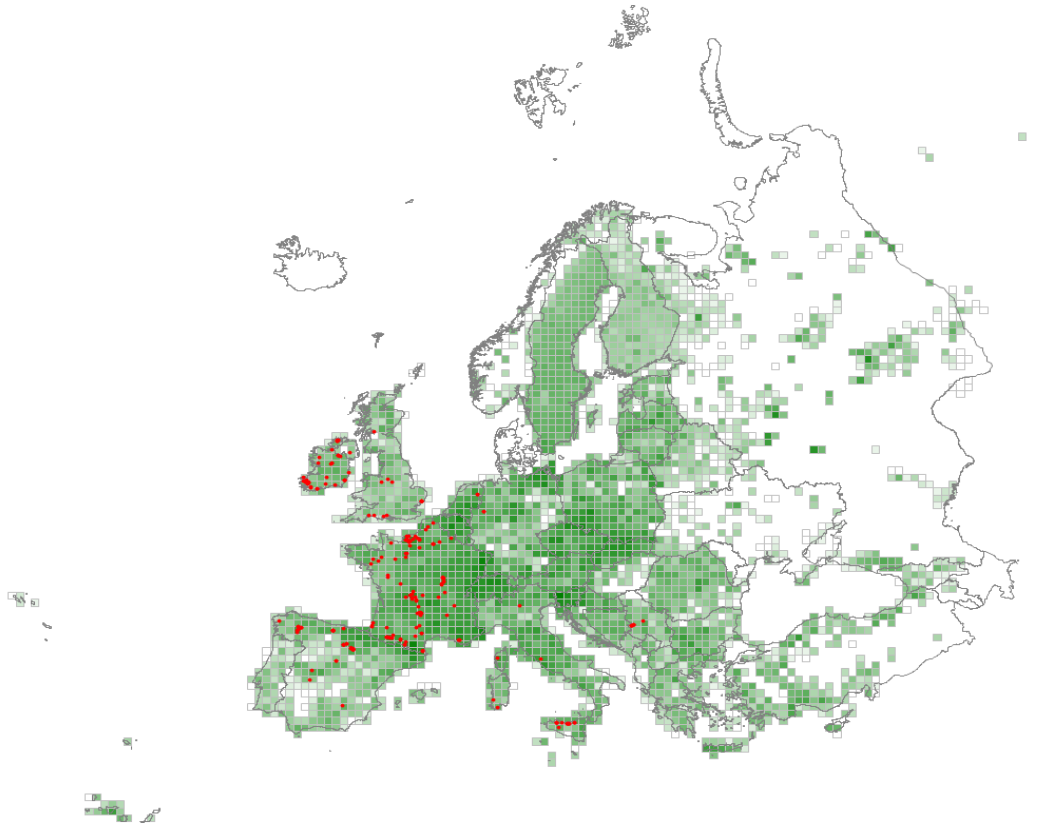
<i>Phoenix canariensis</i>	100
<i>Dittrichia viscosa</i>	100
<i>Vicia cirrhosa</i>	67
<i>Sideritis cretica</i>	67
<i>Phagnalon saxatile</i>	67
<i>Periploca angustifolia</i>	67
<i>Pallenis spinosa</i>	67
<i>Micromeria varia</i>	67
<i>Hyparrhenia hirta</i>	67
<i>Euphorbia berthelotii</i>	67
<i>Echium aculeatum</i>	67
<i>Descurainia millefolia</i>	67
<i>Cistus monspeliensis</i>	67
<i>Bituminaria bituminosa</i>	67
<i>Ricinus communis</i>	33
<i>Nicotiana glauca</i>	33
<i>Lycium intricatum</i>	33
<i>Launaea arborescens</i>	33
<i>Euphorbia regis-jubae</i>	33

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Phoenix canariensis</i>	100
<i>Dittrichia viscosa</i>	33

T27 – *Ilex aquifolium* forest

Patches of holly (*Ilex aquifolium*) occurring in scattered localities across European forests, especially in the temperate zone and in the Mediterranean mountains.



Corresponding alliances in EuroVegChecklist 2016

- <> FAG-01A Luzulo-Fagion sylvaticae Lohmeyer et Tx. in Tx. 1954
- <> FAG-02B Fagion sylvaticae Luquet 1926
- <> FAG-03A Carpinion betuli Issler 1931
- <> FAG-03B Pulmonario longifoliae-Quercion roboris Rivas-Mart. et Izco in Rivas-Mart. et al. 2002
- <> QUE-01B Quercion roboris Malcuit 1929
- <> QUI-01D Fraxino orni-Quercion ilicis Biondi, Casavecchia et Gigante in Biondi et al. 2013

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Ilex aquifolium</i>	49
<i>Isotheicum myosuroides</i>	23
<i>Lonicera periclymenum</i>	18
<i>Quercus petraea</i>	16

Fagus sylvatica 15

Constant species (percentage frequencies)

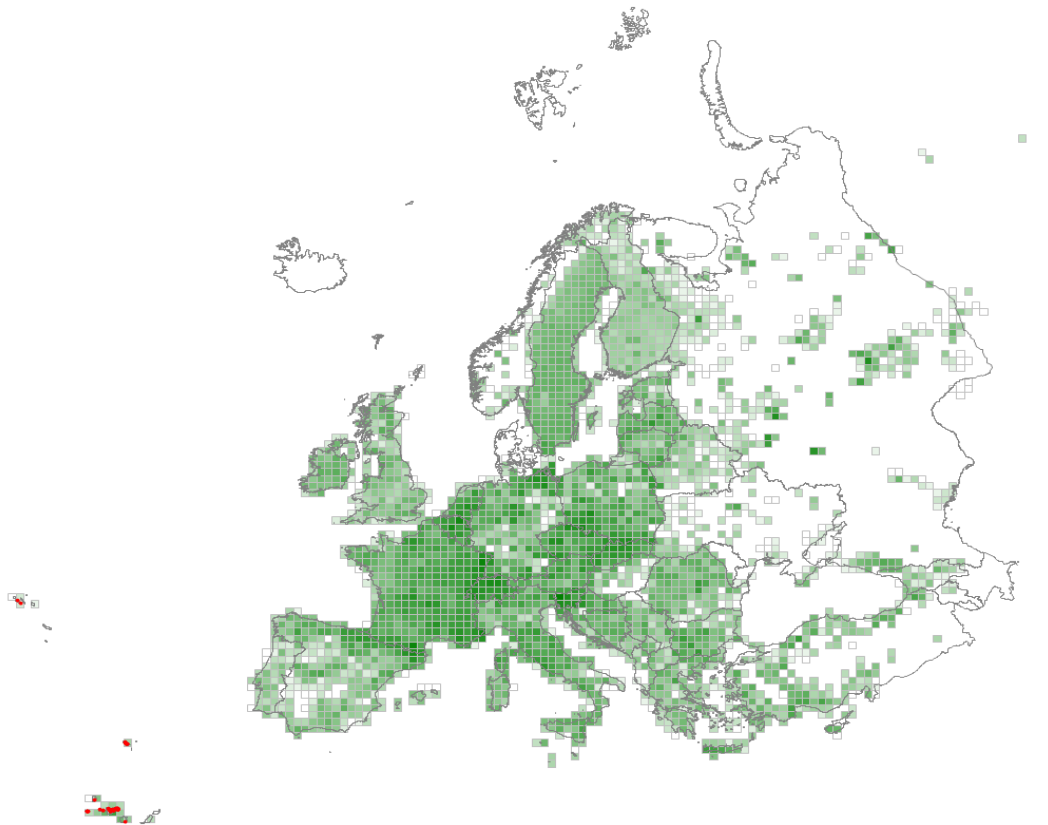
<i>Ilex aquifolium</i>	100
<i>Pteridium aquilinum</i>	50
<i>Hedera helix</i> aggr.	50
<i>Fagus sylvatica</i>	49
<i>Rubus fruticosus</i> aggr.	41
<i>Lonicera periclymenum</i>	39
<i>Quercus petraea</i>	31
<i>Corylus avellana</i>	29
<i>Crataegus monogyna</i>	28
<i>Sorbus aucuparia</i>	25
<i>Dryopteris carthusiana</i> aggr.	24
<i>Quercus robur</i>	23
<i>Vaccinium myrtillus</i>	20
<i>Thuidium tamariscinum</i>	20
<i>Oxalis acetosella</i>	20
<i>Avenella flexuosa</i>	20
<i>Polytrichastrum formosum</i>	18
<i>Hypnum cupressiforme</i> aggr.	18
<i>Betula pubescens</i>	18
<i>Sanicula europaea</i>	17
<i>Geranium robertianum</i>	17
<i>Ruscus aculeatus</i>	15
<i>Mnium hornum</i>	14
<i>Blechnum spicant</i>	14
<i>Melica uniflora</i>	13
<i>Isoetecium myosuroides</i>	13
<i>Fraxinus excelsior</i>	13
<i>Dicranum scoparium</i>	13
<i>Teucrium scorodonia</i>	12
<i>Rubus ulmifolius</i>	12
<i>Luzula sylvatica</i>	12
<i>Kindbergia praelonga</i>	12
<i>Frangula alnus</i>	12
<i>Dryopteris filix-mas</i>	12
<i>Dioscorea communis</i>	12
<i>Castanea sativa</i>	12
<i>Urtica dioica</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

Ilex aquifolium 100

T28 – Macaronesian heathy forest

Small-stature woodland (high matorral) variously dominated by arborescent ericoids, strawberry tree (*Arbutus canariensis*) and Canary holly (*Ilex canariensis*) in situations that range from cold and hyper-humid slopes and exposed fog-bound outcrops to sub-humid and dry foothills of Madeira and the Canary Islands.



Corresponding alliances in EuroVegChecklist 2016

- <> AZO-01A Juniperion brevifoliae Sjögren 1973
- <> LAU-01A Myrico fayae-Ericion arboreae Oberd. 1965
- <> LAU-01B Polysticho falcinelli-Ericion arboreae Rivas-Mart. et al. 2002
- > LAU-01E Euphorbion melliferae Capelo et al. 2003

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Morella faya</i>	54
<i>Ilex canariensis</i>	44
<i>Arbutus canariensis</i>	40
<i>Erica arborea</i>	31
<i>Habenaria tridactylites</i>	29
<i>Cistus chinamadensis</i>	28

<i>Laurus novocanariensis</i>	28
<i>Galium scabrum</i>	27
<i>Ilex perado</i>	25
<i>Visnea mocanera</i>	25
<i>Heberdenia excelsa</i>	24
<i>Prunus lusitanica</i>	24
<i>Hypericum canariense</i>	24
<i>Pericallis murrayi</i>	23
<i>Aeonium ciliatum</i>	23
<i>Erica scoparia</i>	22
<i>Smilax canariensis</i>	22
<i>Genista canariensis</i>	22
<i>Dryopteris oligodonta</i>	21
<i>Hypericum reflexum</i>	21
<i>Vaccinium padifolium</i>	21
<i>Davallia canariensis</i>	21
<i>Viburnum tinus</i>	20
<i>Ranunculus minor</i>	18
<i>Bystropogon canariensis</i>	18
<i>Asplenium adiantum-nigrum</i>	18
<i>Rubus bollei</i>	18
<i>Cistus symphytifolius</i>	17
<i>Sibthorpia peregrina</i>	17
<i>Hypericum xylosteifolium</i>	17
<i>Aeonium lindleyi</i>	17
<i>Pinus canariensis</i>	16
<i>Isoplexis canariensis</i>	16
<i>Viola stellata</i>	16
<i>Laurus azorica</i>	16
<i>Andryala pinnatifida</i>	15

Constant species (percentage frequencies)

<i>Erica arborea</i>	79
<i>Morella faya</i>	77
<i>Ilex canariensis</i>	53
<i>Erica scoparia</i>	37
<i>Pteridium aquilinum</i>	35
<i>Asplenium adiantum-nigrum</i>	33
<i>Viburnum tinus</i>	30
<i>Galium scabrum</i>	26
<i>Davallia canariensis</i>	26
<i>Pinus canariensis</i>	23
<i>Dryopteris oligodonta</i>	21
<i>Arbutus canariensis</i>	21
<i>Rubus ulmifolius</i>	19
<i>Laurus novocanariensis</i>	19
<i>Hypericum canariense</i>	19
<i>Cistus symphytifolius</i>	19
<i>Laurus azorica</i>	18
<i>Ilex perado</i>	16
<i>Hypericum xylosteifolium</i>	16
<i>Visnea mocanera</i>	14
<i>Phyllis nobla</i>	14
<i>Micromeria varia</i>	14
<i>Hypericum reflexum</i>	14

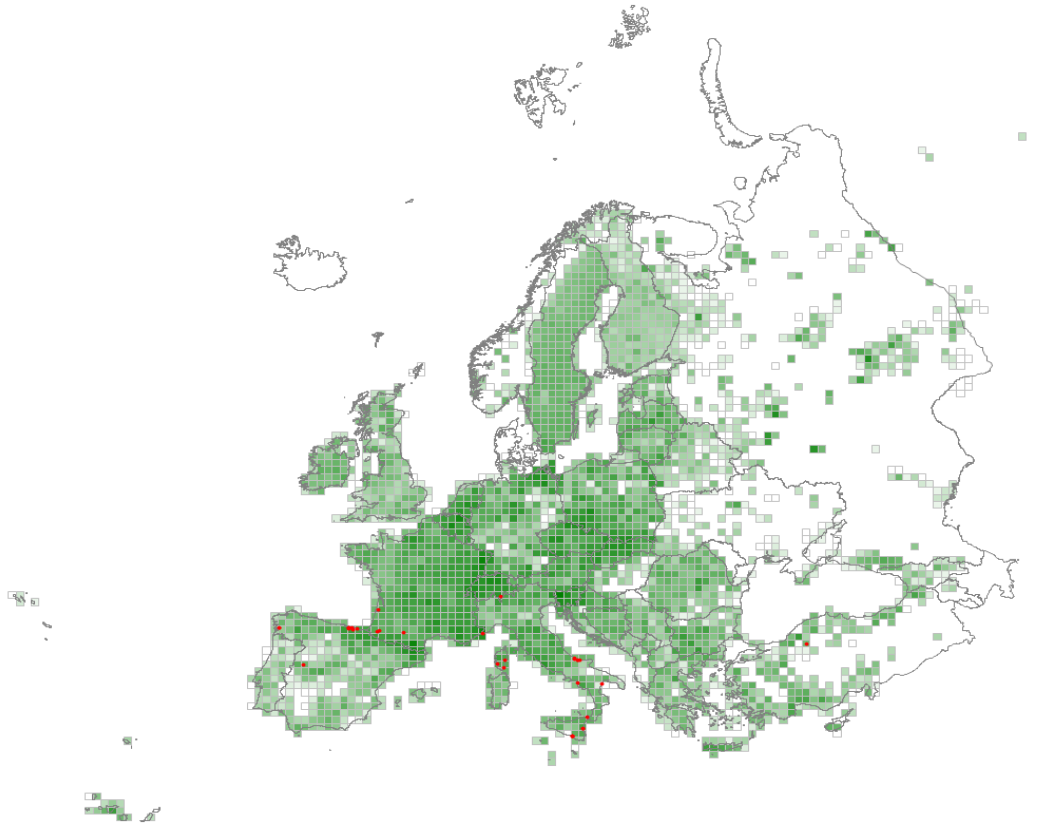
<i>Heberdenia excelsa</i>	14
<i>Habenaria tridactylites</i>	14
<i>Andryala pinnatifida</i>	14
<i>Micromeria hyssopifolia</i>	12
<i>Cytisus proliferus</i>	12
<i>Asphodelus aestivus</i>	12
<i>Smilax aspera</i>	11
<i>Pericallis murrayi</i>	11
<i>Genista canariensis</i>	11
<i>Brachypodium sylvaticum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Erica arborea</i>	67
<i>Erica scoparia</i>	28

T29 – Broadleaved evergreen plantation of non site-native trees

Cultivated evergreen broad-leaved tree formations planted for the production of wood, composed of exotic species, of native species out of their natural range, or of native species planted in clearly unnatural stands, often as monocultures.



Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Eucalyptus globulus</i>	52
<i>Acacia saligna</i>	50
<i>Pseudarrhenatherum longifolium</i>	31
<i>Eucalyptus camaldulensis</i>	29
<i>Centaurea sphaerocephala</i>	28
<i>Ephedra fragilis</i>	25
<i>Ulex gallii</i>	24
<i>Acacia melanoxylon</i>	23
<i>Acacia mearnsii</i>	23
<i>Retama raetam</i>	22
<i>Daboecia cantabrica</i>	22
<i>Pinus radiata</i>	21
<i>Tamarix gallica</i>	18
<i>Agrostis curtisii</i>	17

<i>Cupressus lusitanica</i>	16
<i>Conringia persica</i>	16
<i>Astragalus lagopoides</i>	16
<i>Astracantha diphtherites</i>	16
<i>Acacia karroo</i>	16
<i>Glandora prostrata</i>	16
<i>Trachycarpus fortunei</i>	16
<i>Hypericum lysimachioides</i>	16

Constant species (percentage frequencies)

<i>Pteridium aquilinum</i>	38
<i>Rubus ulmifolius</i>	35
<i>Rubia peregrina</i>	32
<i>Eucalyptus globulus</i>	32
<i>Acacia saligna</i>	32
<i>Asparagus acutifolius</i>	30
<i>Hedera helix</i> aggr.	27
<i>Smilax aspera</i>	22
<i>Quercus robur</i>	22
<i>Pinus pinaster</i>	22
<i>Pseudarrhenatherum longifolium</i>	19
<i>Piptatherum miliaceum</i>	19
<i>Viola riviniana</i>	16
<i>Teucrium scorodonia</i>	16
<i>Sonchus bulbosus</i>	16
<i>Ephedra fragilis</i>	16
<i>Centaurea sphaerocephala</i>	16
<i>Ulex gallii</i>	14
<i>Pinus halepensis</i>	14
<i>Eucalyptus camaldulensis</i>	14
<i>Erica arborea</i>	14
<i>Calluna vulgaris</i>	14
<i>Arbutus unedo</i>	14
<i>Ulex europaeus</i>	11
<i>Tamarix gallica</i>	11
<i>Retama raetam</i>	11
<i>Prasium majus</i>	11
<i>Lagurus ovatus</i>	11
<i>Holcus lanatus</i>	11
<i>Euphorbia terracina</i>	11
<i>Erica cinerea</i>	11
<i>Daucus carota</i>	11
<i>Dactylis glomerata</i>	11
<i>Daboecia cantabrica</i>	11
<i>Cutandia maritima</i>	11
<i>Cistus salviifolius</i>	11
<i>Castanea sativa</i>	11
<i>Brachypodium rupestre</i>	11
<i>Agrostis curtisii</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Acacia saligna</i>	30
<i>Eucalyptus globulus</i>	27

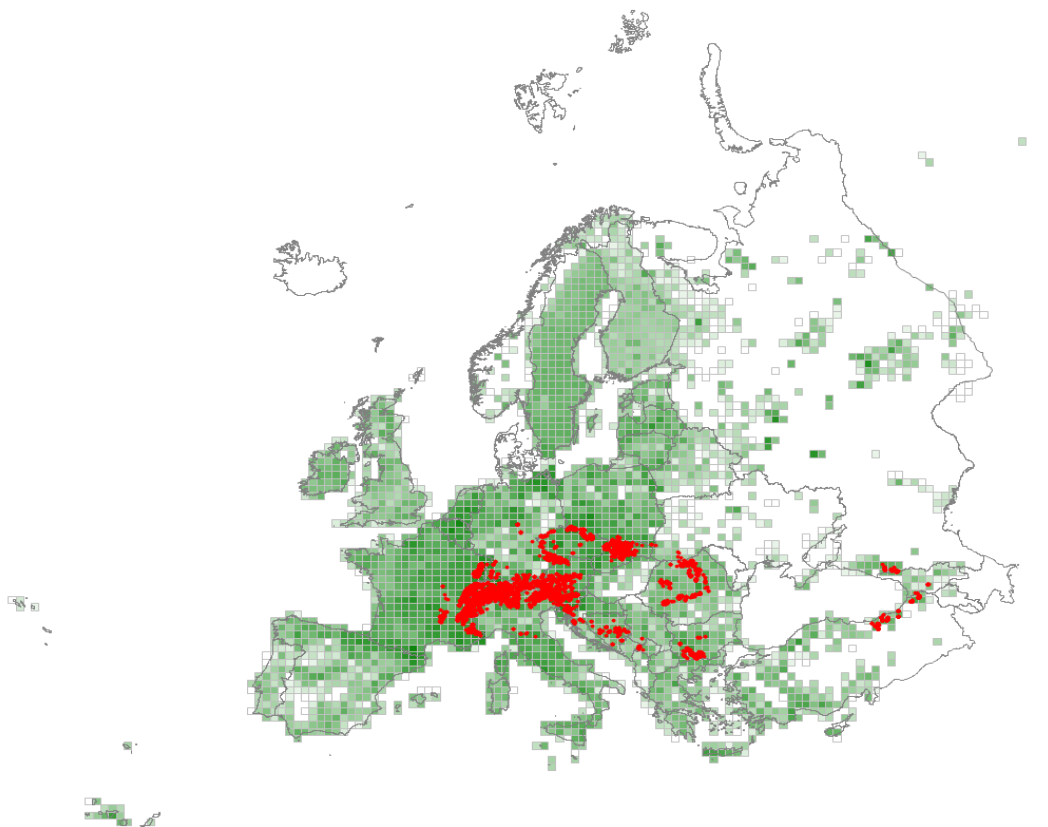
T2A – Broadleaved evergreen plantation of site-native trees

[This habitat could not be formally defined in the expert system, because plantations of site-native trees cannot be distinguished from natural forests based on the vegetation-plot data.]

Cultivated stands of broadleaved evergreen trees planted for the production of wood, composed of site-native broadleaved evergreen tree species.

T31 – Temperate mountain *Picea* forest

Evergreen coniferous forest dominated by spruce, including *Picea abies* in most temperate European mountain systems, relict *Picea omorika* in a restricted area in the Dinaric Mountains, and *Picea orientalis* in the Caucasus. Fir (*Abies alba*, *Abies nordmanniana*) can be admixed on acidic, even very oligotrophic, wet, cold or rocky soils in the montane and subalpine belts of the temperate mountain ranges of Europe.



Corresponding alliances in EuroVegChecklist 2016

- <> ASA-01A *Aconito septentrionalis*-*Piceion obovatae* Solomeshch, Grigoriev, Khaziakhmetov et Baisheva in Martynenko et al. 2008
- > ERI-01D *Erico carnea*-*Piceion omorikae* Mucina et Čarni in Mucina et al. 2016
- <> PIC-01A *Piceion excelsae* Pawłowski et al. 1928
- <> PIC-02A *Aconito rubicundi*-*Abietion sibiricae* Anenkhonov et Chytrý 1998
- <> PIC-06A *Chrysanthemo rotundifolii*-*Piceion* (Krajina 1933) Březina et Hadač in Hadač 1962
- <> PIC-06B *Abieti*-*Piceion* (Br.-Bl. in Br.-Bl. et al. 1939) Soó 1964

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Picea abies</i>	28
<i>Oxalis acetosella</i>	24
<i>Prenanthes purpurea</i>	22
<i>Lonicera nigra</i>	21
<i>Calamagrostis villosa</i>	21
<i>Luzula sylvatica</i>	20
<i>Luzula luzulina</i>	20
<i>Veronica urticifolia</i>	20
<i>Homogyne alpina</i>	20
<i>Polytrichastrum formosum</i>	18
<i>Polygonatum verticillatum</i>	18
<i>Sorbus aucuparia</i>	18
<i>Hieracium murorum</i>	18
<i>Abies alba</i>	17
<i>Dryopteris carthusiana</i> aggr.	17
<i>Melampyrum sylvaticum</i>	17
<i>Gentiana asclepiadea</i>	17
<i>Picea orientalis</i>	17
<i>Vaccinium myrtillus</i>	16
<i>Dicranum scoparium</i>	15

Constant species (percentage frequencies)

<i>Picea abies</i>	95
<i>Vaccinium myrtillus</i>	73
<i>Oxalis acetosella</i>	70
<i>Sorbus aucuparia</i>	64
<i>Dryopteris carthusiana</i> aggr.	52
<i>Dicranum scoparium</i>	50
<i>Hieracium murorum</i>	45
<i>Avenella flexuosa</i>	41
<i>Polytrichastrum formosum</i>	40
<i>Luzula sylvatica</i>	38
<i>Homogyne alpina</i>	37
<i>Athyrium filix-femina</i>	37
<i>Abies alba</i>	35
<i>Prenanthes purpurea</i>	34
<i>Hylocomium splendens</i>	34
<i>Fagus sylvatica</i>	34
<i>Rubus idaeus</i>	33
<i>Solidago virgaurea</i>	32
<i>Maianthemum bifolium</i>	31
<i>Calamagrostis villosa</i>	30
<i>Fragaria vesca</i>	29
<i>Vaccinium vitis-idaea</i>	28
<i>Melampyrum sylvaticum</i>	27
<i>Acer pseudoplatanus</i>	27
<i>Senecio nemorensis</i> aggr.	26
<i>Dryopteris filix-mas</i>	26
<i>Rhytidadelphus triquetrus</i>	25
<i>Polygonatum verticillatum</i>	25
<i>Luzula luzuloides</i>	23
<i>Pleurozium schreberi</i>	22

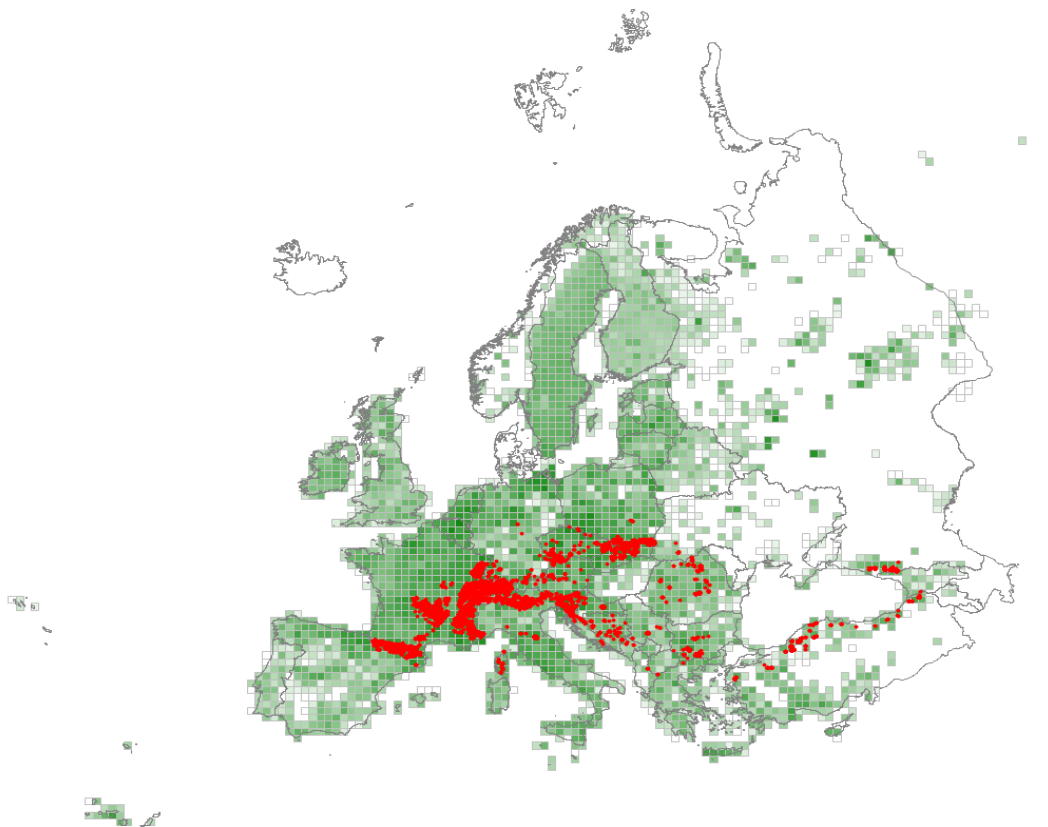
<i>Gymnocarpium dryopteris</i>	22
<i>Veronica urticifolia</i>	20
<i>Gentiana asclepiadea</i>	20
<i>Lonicera nigra</i>	19
<i>Lactuca muralis</i>	19
<i>Calamagrostis arundinacea</i>	18
<i>Phyteuma spicatum</i>	16
<i>Lamium galeobdolon</i>	16
<i>Viola reichenbachiana</i>	15
<i>Veronica officinalis</i>	15
<i>Valeriana tripteris</i>	15
<i>Lycopodium annotinum</i>	15
<i>Adenostyles alliariae</i>	15
<i>Rhytidiadelphus loreus</i>	14
<i>Luzula pilosa</i>	14
<i>Daphne mezereum</i>	14
<i>Viola biflora</i>	13
<i>Rosa pendulina</i>	13
<i>Paris quadrifolia</i>	13
<i>Luzula luzulina</i>	13
<i>Larix decidua</i>	13
<i>Hypnum cupressiforme</i> aggr.	13
<i>Huperzia selago</i>	13
<i>Carex digitata</i>	13
<i>Rubus fruticosus</i> aggr.	12
<i>Plagiochila asplenioides</i>	12
<i>Mercurialis perennis</i>	12
<i>Melica nutans</i>	12
<i>Epilobium montanum</i>	12
<i>Calamagrostis varia</i>	12
<i>Sanicula europaea</i>	11
<i>Rubus saxatilis</i>	11
<i>Phegopteris connectilis</i>	11
<i>Petasites albus</i>	11
<i>Galium rotundifolium</i>	11
<i>Galium odoratum</i>	11
<i>Ctenidium molluscum</i>	11
<i>Ajuga reptans</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Picea abies</i>	95
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T32 – Temperate mountain *Abies* forest

Forests of European silver fir (*Abies alba*) in temperate mountains, often with European beech (*Fagus sylvatica*), and Norway spruce (*Picea abies*) where site conditions are harsher at higher altitudes. In the southern Black Sea region and the Caucasus, the dominant species is Caucasian fir (*Abies nordmanniana*), often with an admixture of Oriental beech (*Fagus orientalis*) and Oriental spruce (*Picea orientalis*). At most sites, fir forests occur on acidic soils though extending on to more base-rich and mesotrophic soils where distinctive contingents of herbs augment or replace the usually heathy field layer.



Corresponding alliances in EuroVegChecklist 2016

- ◊ ASA-01A Aconito septentrionalis-Piceion obovatae Solomeshch, Grigoriev, Khaziakhmetov et Baisheva in Martynenko et al. 2008
- ◊ FAG-01A Luzulo-Fagion sylvaticae Lohmeyer et Tx. in Tx. 1954
- ◊ FAG-02A Aremonio-Fagion (Horvat 1950) Borhidi in Török et al. 1989
- ◊ FAG-02B Fagion sylvaticae Luquet 1926
- ◊ FAG-02C Geranio striati-Fagion Gentile 1970
- ◊ FAG-06A Fagion orientalis Soó 1964
- ◊ PIC-02A Aconito rubicundi-Abietion sibiricae Anenkhonov et Chytrý 1998
- ◊ PIC-06A Chrysanthemo rotundifolii-Piceion (Krajina 1933) Březina et Hadač in Hadač 1962
- ◊ PIC-06B Abieti-Piceion (Br.-Bl. in Br.-Bl. et al. 1939) Soó 1964

> PIC-06C Calamagrostio-Abietion Horvat 1962 nom. invers. propos.

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Abies alba</i>	47
<i>Prenanthes purpurea</i>	28
<i>Galium odoratum</i>	25
<i>Lonicera nigra</i>	24
<i>Abies nordmanniana</i>	23
<i>Drymochloa sylvatica</i>	23
<i>Fagus sylvatica</i>	23
<i>Oxalis acetosella</i>	22
<i>Cardamine heptaphylla</i>	21
<i>Dryopteris filix-mas</i>	20
<i>Luzula nivea</i>	18
<i>Galium rotundifolium</i>	18
<i>Athyrium filix-femina</i>	17
<i>Fagus orientalis</i>	16
<i>Epilobium montanum</i>	16
<i>Cirsium hypoleucum</i>	16
<i>Polygonatum verticillatum</i>	16
<i>Hieracium murorum</i>	15
<i>Lamium galeobdolon</i>	15
<i>Hordelymus europaeus</i>	15
<i>Daphne pontica</i>	15
<i>Lactuca muralis</i>	15
<i>Sanicula europaea</i>	15
<i>Sambucus racemosa</i>	15

Constant species (percentage frequencies)

<i>Abies alba</i>	91
<i>Fagus sylvatica</i>	70
<i>Oxalis acetosella</i>	65
<i>Sorbus aucuparia</i>	52
<i>Picea abies</i>	49
<i>Dryopteris filix-mas</i>	49
<i>Prenanthes purpurea</i>	45
<i>Galium odoratum</i>	44
<i>Fragaria vesca</i>	43
<i>Athyrium filix-femina</i>	43
<i>Dryopteris carthusiana</i> aggr.	41
<i>Vaccinium myrtillus</i>	40
<i>Hieracium murorum</i>	39
<i>Rubus idaeus</i>	38
<i>Rubus fruticosus</i> aggr.	38
<i>Viola reichenbachiana</i>	34
<i>Lactuca muralis</i>	34
<i>Acer pseudoplatanus</i>	32
<i>Lamium galeobdolon</i>	31
<i>Geranium robertianum</i>	31
<i>Corylus avellana</i>	31
<i>Epilobium montanum</i>	27
<i>Solidago virgaurea</i>	26

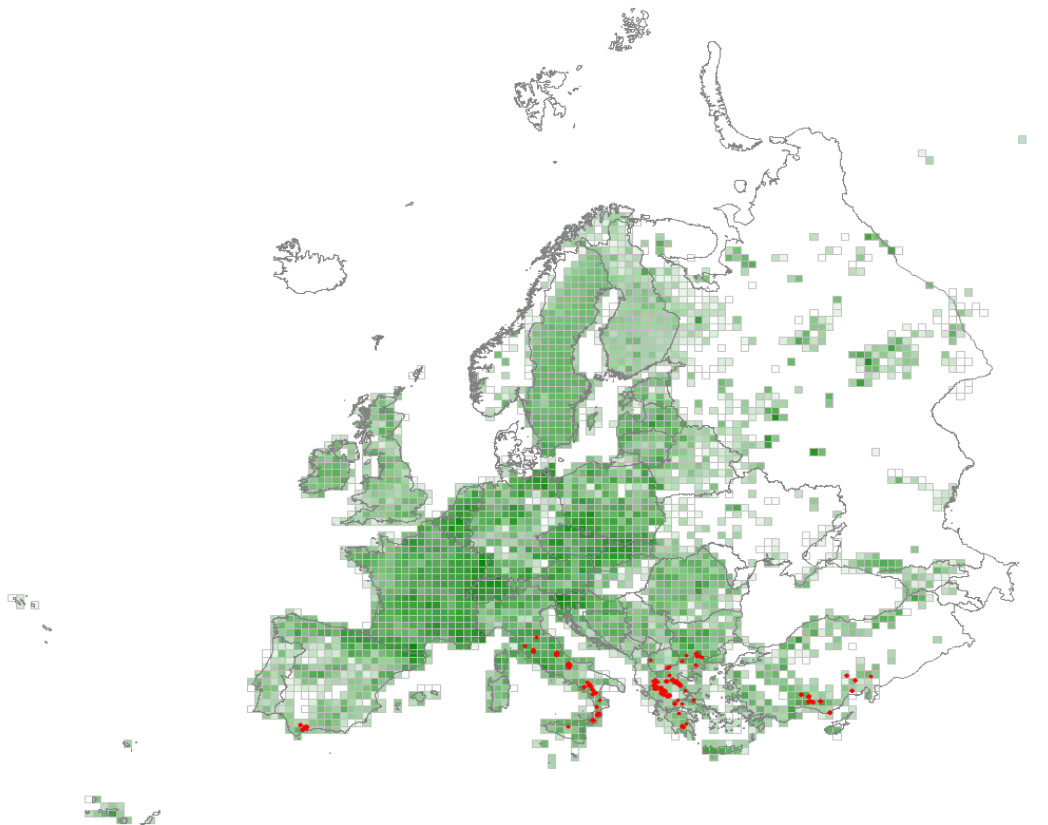
<i>Senecio nemorensis</i> aggr.	26
<i>Dicranum scoparium</i>	26
<i>Avenella flexuosa</i>	26
<i>Sanicula europaea</i>	24
<i>Polytrichastrum formosum</i>	24
<i>Galium rotundifolium</i>	23
<i>Carex sylvatica</i>	23
<i>Mercurialis perennis</i>	22
<i>Lonicera nigra</i>	22
<i>Polygonatum verticillatum</i>	21
<i>Hylocomium splendens</i>	21
<i>Lonicera xylosteum</i>	20
<i>Euphorbia amygdaloides</i>	20
<i>Veronica officinalis</i>	19
<i>Luzula sylvatica</i>	19
<i>Drymochloa sylvatica</i>	19
<i>Sorbus aria</i> aggr.	18
<i>Fraxinus excelsior</i>	18
<i>Paris quadrifolia</i>	17
<i>Maianthemum bifolium</i>	17
<i>Hepatica nobilis</i>	17
<i>Hedera helix</i> aggr.	17
<i>Carex digitata</i>	17
<i>Sambucus racemosa</i>	16
<i>Phyteuma spicatum</i>	16
<i>Luzula nivea</i>	16
<i>Ajuga reptans</i>	16
<i>Rhytidiadelphus triquetrus</i>	15
<i>Polystichum aculeatum</i>	15
<i>Luzula pilosa</i>	15
<i>Veronica urticifolia</i>	14
<i>Thuidium tamariscinum</i>	14
<i>Melica uniflora</i>	14
<i>Luzula luzuloides</i>	14
<i>Ilex aquifolium</i>	14
<i>Orthilia secunda</i>	13
<i>Rosa pendulina</i>	12
<i>Gymnocarpium dryopteris</i>	12
<i>Actaea spicata</i>	12
<i>Rhytidiadelphus loreus</i>	11
<i>Pteridium aquilinum</i>	11
<i>Polypodium vulgare</i>	11
<i>Pinus sylvestris</i>	11
<i>Neottia nidus-avis</i>	11
<i>Milium effusum</i>	11
<i>Eurhynchium striatum</i>	11
<i>Daphne mezereum</i>	11
<i>Daphne laureola</i>	11
<i>Cardamine heptaphylla</i>	11
<i>Anemone nemorosa</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Abies alba</i>	91
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T33 – Mediterranean mountain *Abies* forest

Evergreen coniferous forests of more sunless or fog-bound slopes and gullies in the lower to mid altitudinal belts of Mediterranean mountains where firs of very limited distribution dominate in highly distinctive relic stands: Spanish fir (*Abies pinsapo*), Greek fir (*Abies cephalonica*), King Boris fir (*Abies borisii-regis*), Apennine or Sicilian stands of silver fir (*Abies alba*) and Sicilian fir (*Abies nebrodensis*).



Corresponding alliances in EuroVegChecklist 2016

- <> FAG-02C Geranio striati-Fagion Gentile 1970
- > PUB-01Q Paeonio broteroi-Abietion pinsapo (Rivas-Mart. 1987) Rivas-Mart. et al. 2002
- > PUB-01S Abietion cephalonicae Horvat et al. 1974

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Abies borisii-regis</i>	49
<i>Abies cilicica</i>	35
<i>Aremonia agrimonoides</i>	32
<i>Lathyrus laxiflorus</i>	30
<i>Abies pinsapo</i>	30

<i>Juniperus drupacea</i>	25
<i>Galium rotundifolium</i>	22
<i>Galium peplidifolium</i>	22
<i>Helleborus odorus</i>	22
<i>Geranium versicolor</i>	21
<i>Campanula psilostachya</i>	21
<i>Doronicum orientale</i>	20
<i>Clinopodium grandiflorum</i>	20
<i>Cyclamen cilicium</i>	20
<i>Elymus panormitanus</i>	20
<i>Trifolium pignanii</i>	19
<i>Daphne laureola</i>	19
<i>Acer cappadocicum</i> aggr.	19
<i>Cicer isauricum</i>	18
<i>Arabis laxa</i>	18
<i>Pulmonaria vallarsae</i>	18
<i>Sanicula europaea</i>	18
<i>Cardamine graeca</i>	17
<i>Saponaria pinetorum</i>	16
<i>Ononis reuteri</i>	16
<i>Abies cephalonica</i>	16
<i>Corydalis tauricola</i>	16
<i>Lactuca muralis</i>	16
<i>Hieracium bracteolatum</i>	15

Constant species (percentage frequencies)

<i>Aremonia agrimonoides</i>	39
<i>Rubus fruticosus</i> aggr.	37
<i>Lactuca muralis</i>	35
<i>Fagus sylvatica</i>	34
<i>Pteridium aquilinum</i>	32
<i>Abies borisii-regis</i>	32
<i>Viola reichenbachiana</i>	31
<i>Brachypodium sylvaticum</i>	31
<i>Abies alba</i>	30
<i>Juniperus oxycedrus</i> aggr.	29
<i>Galium rotundifolium</i>	29
<i>Fragaria vesca</i>	28
<i>Sanicula europaea</i>	27
<i>Hedera helix</i> aggr.	27
<i>Daphne laureola</i>	27
<i>Abies cilicica</i>	26
<i>Clinopodium vulgare</i>	24
<i>Dactylis glomerata</i>	23
<i>Melica uniflora</i>	22
<i>Lathyrus laxiflorus</i>	22
<i>Silene italica</i> aggr.	21
<i>Veronica chamaedrys</i> aggr.	18
<i>Ilex aquifolium</i>	18
<i>Poa nemoralis</i>	17
<i>Galium peplidifolium</i>	17
<i>Galium odoratum</i>	17
<i>Geranium versicolor</i>	16
<i>Euphorbia amygdaloides</i>	16
<i>Doronicum orientale</i>	16

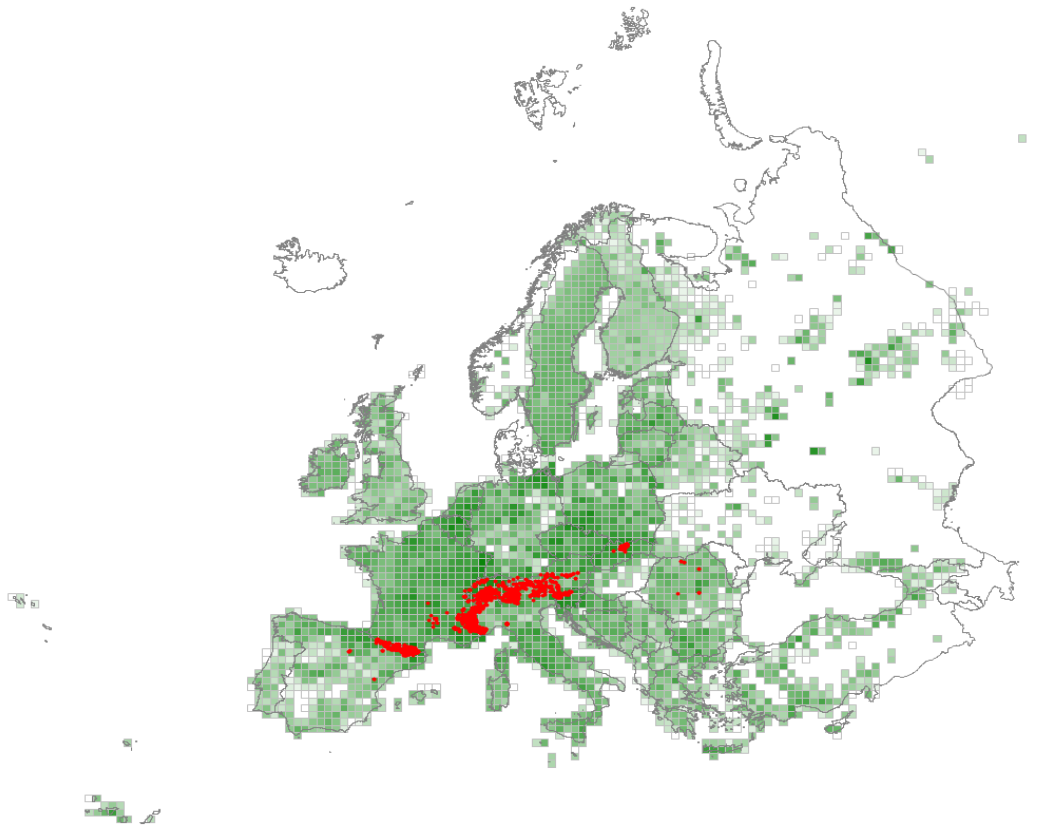
<i>Luzula sylvatica</i>	15
<i>Helleborus odorus</i>	15
<i>Geranium robertianum</i>	15
<i>Cardamine bulbifera</i>	15
<i>Quercus cerris</i>	14
<i>Luzula forsteri</i>	14
<i>Lapsana communis</i>	14
<i>Poa bulbosa</i>	13
<i>Lamium garganicum</i>	13
<i>Epipactis helleborine</i>	13
<i>Sorbus torminalis</i>	12
<i>Ostrya carpinifolia</i>	12
<i>Lathyrus venetus</i>	12
<i>Hieracium murorum</i>	12
<i>Clinopodium grandiflorum</i>	12
<i>Arabis alpina</i>	12
<i>Ruscus aculeatus</i>	11
<i>Rosa arvensis</i>	11
<i>Pinus nigra</i>	11
<i>Myosotis sylvatica</i>	11
<i>Juniperus drupacea</i>	11
<i>Cynosurus echinatus</i>	11
<i>Crataegus monogyna</i>	11
<i>Campanula spatulata</i>	11
<i>Acer opalus</i> aggr.	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Abies borisii-regis</i>	32
<i>Abies alba</i>	29
<i>Abies cilicica</i>	26

T34 – Temperate subalpine *Larix*, *Pinus cembra* and *Pinus uncinata* forest

Coniferous, in part deciduous, forest of European larch (*Larix decidua*) or Arolla pine (*Pinus cembra*) in the middle subalpine belt of temperate mountains in the central Alps and Carpathians with long but shallow snow-lie and a short growing season. Dwarf mountain pine (*Pinus mugo*), spruce (*Picea abies*), silver fir (*Abies alba*), rhododendrons and other sub-shrubs are never more than subordinate, but various whitebeam (*Sorbus*) species are characteristic associates.



Corresponding alliances in EuroVegChecklist 2016

- <> ERI-01A *Erico carnea*-Pinion Br.-Bl. in Br.-Bl. et al. 1939 nom. invers. propos.
- <> PIC-01A *Piceion excelsae* Pawłowski et al. 1928
- > PIC-06D *Seslerio caeruleae*-Pinion *uncinatae* Vigo 1974

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinus uncinata</i>	47
<i>Larix decidua</i>	46
<i>Pinus cembra</i>	36
<i>Rhododendron ferrugineum</i>	35

<i>Festuca flavescens</i>	21
<i>Homogyne alpina</i>	19
<i>Luzula nivea</i>	16
<i>Sorbus chamaemespilus</i>	15
<i>Calamagrostis villosa</i>	15

Constant species (percentage frequencies)

<i>Vaccinium myrtillus</i>	65
<i>Larix decidua</i>	53
<i>Pinus uncinata</i>	46
<i>Avenella flexuosa</i>	46
<i>Sorbus aucuparia</i>	41
<i>Rhododendron ferrugineum</i>	39
<i>Vaccinium vitis-idaea</i>	36
<i>Picea abies</i>	36
<i>Homogyne alpina</i>	35
<i>Hieracium murorum</i>	35
<i>Dicranum scoparium</i>	32
<i>Hylocomium splendens</i>	31
<i>Sesleria caerulea</i>	29
<i>Oxalis acetosella</i>	27
<i>Juniperus communis</i> subsp. <i>communis</i>	27
<i>Rhytidiadelphus triquetrus</i>	26
<i>Juniperus communis</i> subsp. <i>nana</i>	25
<i>Pinus cembra</i>	24
<i>Luzula sylvatica</i>	24
<i>Solidago virgaurea</i>	23
<i>Calamagrostis villosa</i>	22
<i>Rubus idaeus</i>	20
<i>Pleurozium schreberi</i>	19
<i>Melampyrum sylvaticum</i>	19
<i>Hepatica nobilis</i>	19
<i>Geranium sylvaticum</i> aggr.	19
<i>Rosa pendulina</i>	18
<i>Valeriana tripteris</i>	17
<i>Lotus corniculatus</i>	17
<i>Campanula scheuchzeri</i>	17
<i>Anthoxanthum odoratum</i> aggr.	17
<i>Fragaria vesca</i>	15
<i>Dryopteris carthusiana</i> aggr.	15
<i>Daphne mezereum</i>	15
<i>Abies alba</i>	15
<i>Luzula nivea</i>	14
<i>Festuca rubra</i> aggr.	14
<i>Cruciata glabra</i>	14
<i>Calluna vulgaris</i>	14
<i>Viola biflora</i>	13
<i>Vaccinium uliginosum</i>	13
<i>Polystichum lonchitis</i>	13
<i>Galium pumilum</i>	13
<i>Bellidiastrum michelii</i>	13
<i>Veratrum album</i>	12
<i>Sorbus chamaemespilus</i>	12
<i>Sorbus aria</i> aggr.	12
<i>Rubus saxatilis</i>	12

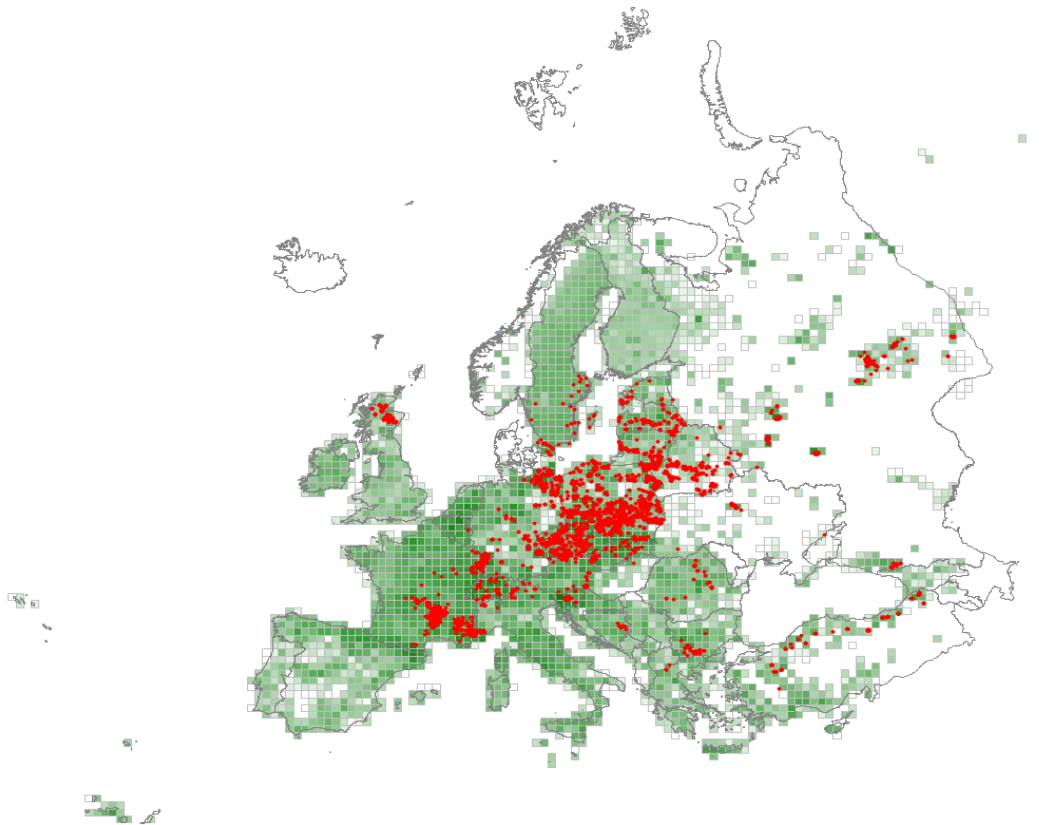
<i>Pulsatilla alpina</i>	12
<i>Polytrichastrum formosum</i>	12
<i>Pinus mugo</i> subsp. <i>mugo</i>	12
<i>Clematis alpina</i>	12
<i>Arctostaphylos uva-ursi</i>	12
<i>Tortella tortuosa</i>	11
<i>Rhododendron hirsutum</i>	11
<i>Prenanthes purpurea</i>	11
<i>Poa alpina</i>	11
<i>Melampyrum pratense</i>	11
<i>Carduus defloratus</i> aggr.	11
<i>Campanula rotundifolia</i>	11
<i>Calamagrostis varia</i>	11
<i>Achillea millefolium</i> aggr.	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus uncinata</i>	43
<i>Larix decidua</i>	40
<i>Vaccinium myrtillus</i>	29

T35 – Temperate continental *Pinus sylvestris* forest

Forests dominated by Scots pine (*Pinus sylvestris*), often with some birch (*Betula pendula*, *Betula pubescens*), aspen (*Populus tremula*) and common juniper (*Juniperus communis*), on acidic to base-rich soils through the north temperate and hemiboreal zones.



Corresponding alliances in EuroVegChecklist 2016

- > BRA-01A Caragano fruticis-Pinion sylvestris Solomeshch et al. 2002
- <> BRA-01B Veronico teucarii-Pinion sylvestris Ermakov et Solomeshch in Ermakov et al. 2000
- <> BRA-01C Trollio europaei-Pinion sylvestris Fedorov in Ermakov et al. 2000
- <> PIC-03A Dicrano-Pinion sylvestris (Libbert 1933) W. Matuszkiewicz 1962 nom. conserv. propos.
- > PYR-01A Ononido rotundifoliae-Pinion sylvestris Br.-Bl. 1950
- > PYR-02A Festuco-Pinion sylvestris Passarge 1968
- > PYR-03A Koelerio glaucae-Pinion sylvestris Ermakov 1999

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinus sylvestris</i>	28
<i>Dicranum polysetum</i>	24
<i>Dicranum spurium</i>	20
<i>Pleurozium schreberi</i>	19
<i>Chimaphila umbellata</i>	16
<i>Betula pendula</i>	16
<i>Carex ericetorum</i>	16

Constant species (percentage frequencies)

<i>Pinus sylvestris</i>	100
<i>Pleurozium schreberi</i>	68
<i>Vaccinium myrtillus</i>	61
<i>Vaccinium vitis-idaea</i>	49
<i>Calluna vulgaris</i>	46
<i>Betula pendula</i>	45
<i>Avenella flexuosa</i>	44
<i>Quercus robur</i>	42
<i>Sorbus aucuparia</i>	39
<i>Dicranum scoparium</i>	37
<i>Dicranum polysetum</i>	34
<i>Picea abies</i>	33
<i>Melampyrum pratense</i>	33
<i>Festuca ovina</i>	30
<i>Juniperus communis</i> subsp. <i>communis</i>	28
<i>Frangula alnus</i>	28
<i>Hylocomium splendens</i>	26
<i>Luzula pilosa</i>	24
<i>Pohlia nutans</i>	23
<i>Hypnum cupressiforme</i> aggr.	22
<i>Quercus petraea</i>	19
<i>Cladonia rangiferina</i>	19
<i>Agrostis capillaris</i>	19
<i>Pteridium aquilinum</i>	18
<i>Fragaria vesca</i>	18
<i>Solidago virgaurea</i>	17
<i>Rumex acetosella</i>	17
<i>Pilosella officinarum</i>	17
<i>Leucobryum glaucum</i>	17
<i>Dryopteris carthusiana</i> aggr.	17
<i>Cladonia arbuscula</i> aggr.	17
<i>Calamagrostis epigejos</i>	17
<i>Polytrichastrum formosum</i>	16
<i>Calamagrostis arundinacea</i>	16
<i>Rubus idaeus</i>	15
<i>Fagus sylvatica</i>	15
<i>Veronica officinalis</i>	14
<i>Trientalis europaea</i>	14
<i>Cladonia pyxidata</i> aggr.	14
<i>Convallaria majalis</i>	13
<i>Cladonia gracilis</i>	13
<i>Anthoxanthum odoratum</i> aggr.	13
<i>Rubus fruticosus</i> aggr.	12

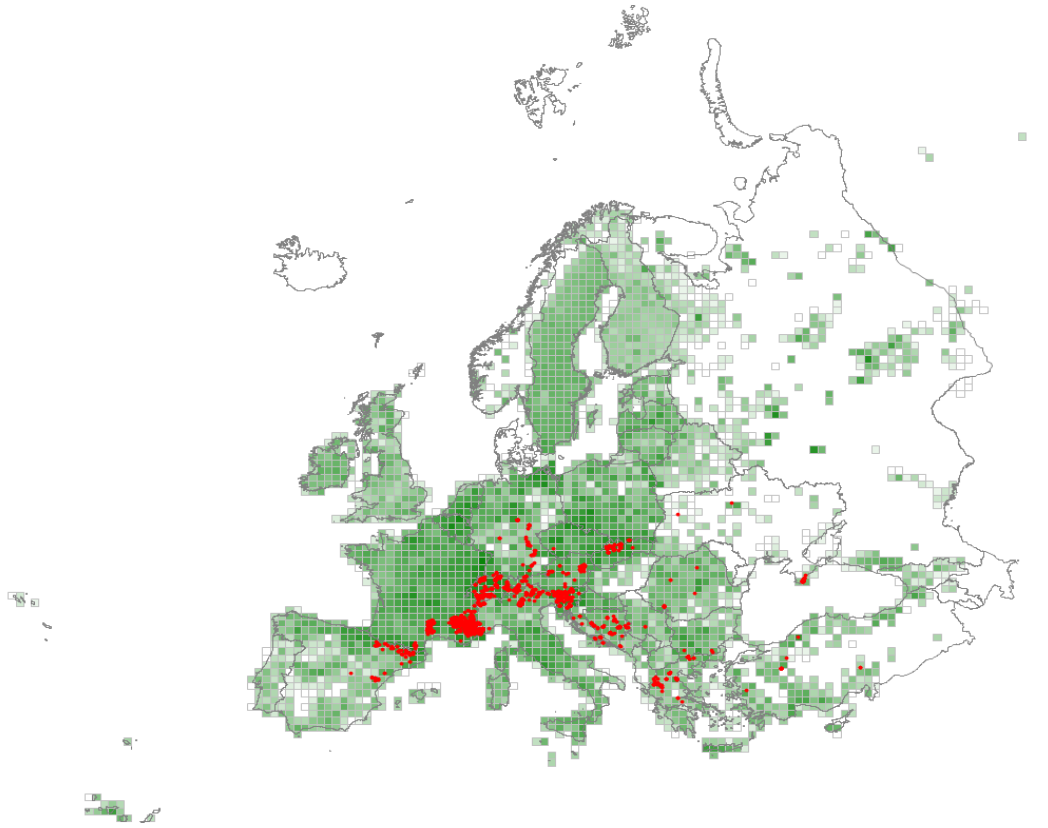
<i>Populus tremula</i>	12
<i>Polytrichum juniperinum</i>	12
<i>Pseudoscleropodium purum</i>	11
<i>Hieracium murorum</i>	11
<i>Dicranum undulatum</i>	11
<i>Carex ericetorum</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus sylvestris</i>	98
<i>Pleurozium schreberi</i>	35

T36 – Temperate and submediterranean montane *Pinus sylvestris*-*Pinus nigra* forest

Evergreen coniferous forests, generally dominated by either Scots pine (*Pinus sylvestris*) or black pine (*Pinus nigra* and, towards the southern limit, various subspecies), less commonly with some Norway spruce (*Picea abies*) and deciduous associates, often in isolated and small stands on base-rich soils through the mountains of the temperate and submediterranean zones.



Corresponding alliances in EuroVegChecklist 2016

- <> ERI-01A *Erico carnea*-Pinion Br.-Bl. in Br.-Bl. et al. 1939 nom. invers. propos.
- > ERI-01B *Pulsatillo slavicae*-Pinion Fajmonová 1978
- > ERI-01C *Seslerio rigidae*-Pinion Coldea ex Mucina et Čarni in Mucina et al. 2016
- > ERI-01E *Fraxino orni*-Pinion *nigrae* Em 1978
- > ERI-01F *Erico-Fraxinion orni* Horvat 1959 nom. invers. propos.
- > ERI-01G *Chamaecytiso hirsuti*-Pinion *pallasianae* Barbero et Quézel 1976 nom. invers. propos.
- > ERI-02A Pinion *pallasianae* Korzhenevsky 1998
- > ERI-02B *Libanotido intermediae*-Pinion *sylvestris* Didukh 2003

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Polygala chamaebuxus</i>	38
<i>Amelanchier ovalis</i>	35
<i>Sorbus aria</i> aggr.	32
<i>Epipactis atrorubens</i>	31
<i>Calamagrostis varia</i>	26
<i>Erica carnea</i>	25
<i>Berberis vulgaris</i>	24
<i>Viburnum lantana</i>	24
<i>Bupthalmum salicifolium</i>	23
<i>Cotoneaster tomentosus</i>	23
<i>Carex humilis</i>	22
<i>Cytisus purpureus</i>	22
<i>Pinus sylvestris</i>	22
<i>Leontodon incanus</i> aggr.	21
<i>Anthericum ramosum</i>	21
<i>Pinus nigra</i>	21
<i>Teucrium chamaedrys</i>	20
<i>Sesleria caerulea</i>	20
<i>Hieracium pictum</i>	19
<i>Cyclamen purpurascens</i>	19
<i>Carex alba</i>	18
<i>Achnatherum calamagrostis</i>	18
<i>Peucedanum oreoselinum</i>	17
<i>Juniperus communis</i> subsp. <i>communis</i>	17
<i>Campanula cespitosa</i>	17
<i>Teucrium montanum</i>	17
<i>Globularia cordifolia</i>	17
<i>Hieracium bifidum</i>	16
<i>Euphorbia variabilis</i>	16
<i>Viscum album</i>	15
<i>Vincetoxicum hirundinaria</i>	15

Constant species (percentage frequencies)

<i>Pinus sylvestris</i>	78
<i>Teucrium chamaedrys</i>	62
<i>Amelanchier ovalis</i>	62
<i>Sorbus aria</i> aggr.	61
<i>Juniperus communis</i> subsp. <i>communis</i>	53
<i>Carex humilis</i>	52
<i>Sesleria caerulea</i>	46
<i>Polygala chamaebuxus</i>	42
<i>Calamagrostis varia</i>	37
<i>Pinus nigra</i>	35
<i>Viburnum lantana</i>	34
<i>Teucrium montanum</i>	34
<i>Erica carnea</i>	33
<i>Epipactis atrorubens</i>	33
<i>Euphorbia cyparissias</i>	32
<i>Vincetoxicum hirundinaria</i>	31
<i>Quercus pubescens</i>	31
<i>Lotus corniculatus</i>	31
<i>Picea abies</i>	29

<i>Brachypodium pinnatum</i>	29
<i>Anthericum ramosum</i>	29
<i>Berberis vulgaris</i>	27
<i>Bupthalmum salicifolium</i>	26
<i>Hieracium murorum</i>	24
<i>Campanula rotundifolia</i>	23
<i>Globularia cordifolia</i>	21
<i>Ostrya carpinifolia</i>	20
<i>Crataegus monogyna</i>	20
<i>Corylus avellana</i>	20
<i>Carduus defloratus</i> aggr.	20
<i>Tortella tortuosa</i>	19
<i>Sanguisorba minor</i> aggr.	19
<i>Molinia caerulea</i> aggr.	19
<i>Hippocrepis emerus</i>	19
<i>Hippocrepis comosa</i>	19
<i>Fraxinus ornus</i>	19
<i>Fagus sylvatica</i>	19
<i>Peucedanum oreoselinum</i>	18
<i>Galium lucidum</i>	18
<i>Cyclamen purpurascens</i>	18
<i>Carex flacca</i>	18
<i>Polygonatum odoratum</i>	17
<i>Pimpinella saxifraga</i>	17
<i>Fragaria vesca</i>	17
<i>Buxus sempervirens</i>	17
<i>Bromopsis erecta</i>	17
<i>Acer pseudoplatanus</i>	17
<i>Viola hirta</i>	16
<i>Solidago virgaurea</i>	16
<i>Phyteuma orbiculare</i>	16
<i>Lonicera xylosteum</i>	16
<i>Ligustrum vulgare</i>	16
<i>Dorycnium pentaphyllum</i>	16
<i>Prunella grandiflora</i>	15
<i>Lavandula angustifolia</i>	15
<i>Helianthemum nummularium</i>	15
<i>Genista pilosa</i>	15
<i>Carlina vulgaris</i> aggr.	15
<i>Carlina acaulis</i>	15
<i>Carex alba</i>	15
<i>Asperula cynanchica</i>	15
<i>Achnatherum calamagrostis</i>	15
<i>Leontodon incanus</i> aggr.	14
<i>Hepatica nobilis</i>	14
<i>Galium mollugo</i> aggr.	14
<i>Cotoneaster tomentosus</i>	14
<i>Cornus sanguinea</i>	14
<i>Brachypodium rupestre</i>	14
<i>Thymus praecox</i>	13
<i>Scabiosa columbaria</i> aggr.	13
<i>Pseudoscleropodium purum</i>	13
<i>Pilosella officinarum</i>	13
<i>Hieracium bifidum</i>	13
<i>Cytisophyllum sessilifolium</i>	13

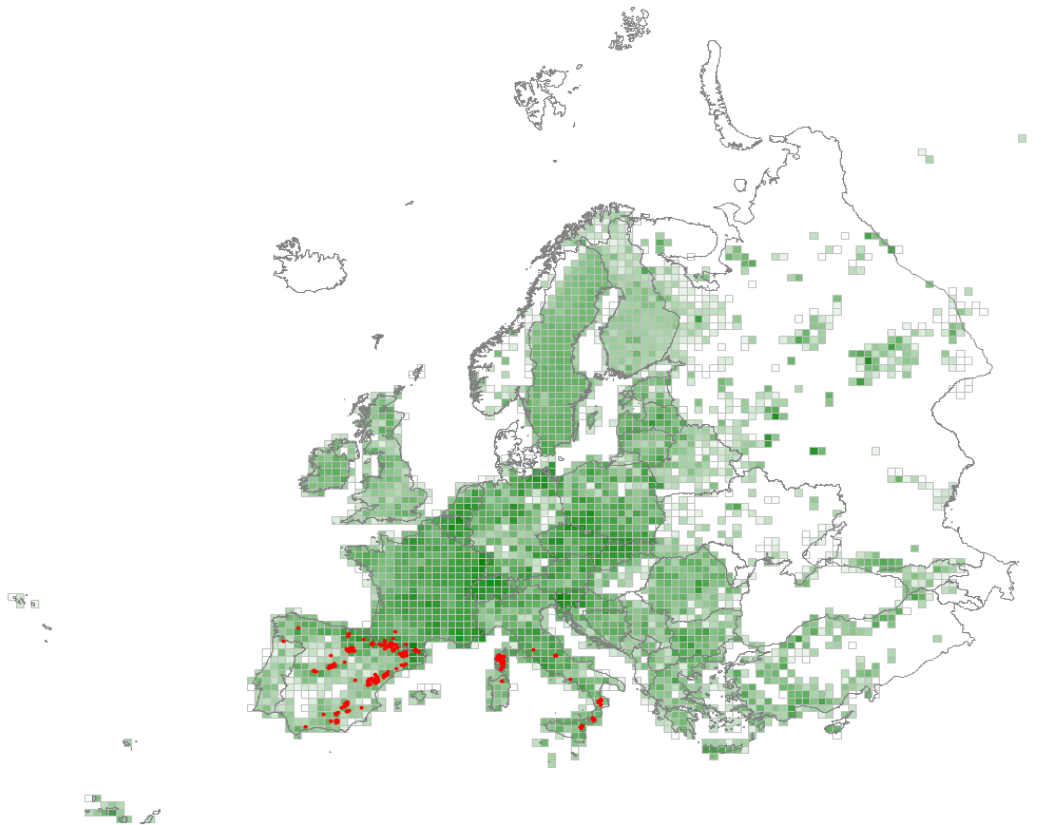
<i>Centaurea scabiosa</i>	13
<i>Acer opalus</i> aggr.	13
<i>Sorbus aucuparia</i>	12
<i>Rhamnus saxatilis</i>	12
<i>Galium verum</i>	12
<i>Fraxinus excelsior</i>	12
<i>Potentilla erecta</i>	11
<i>Laserpitium latifolium</i>	11
<i>Geranium sanguineum</i>	11
<i>Dactylis glomerata</i>	11
<i>Carex halleriana</i>	11
<i>Arctostaphylos uva-ursi</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus sylvestris</i>	72
<i>Pinus nigra</i>	27

T37 – Mediterranean montane *Pinus sylvestris*-*Pinus nigra* forest

Evergreen coniferous forest of more drought-prone situations at scattered localities through the mountains of the Mediterranean, dominated by black pine (*Pinus nigra*) and, except on Mediterranean islands, sometimes with subordinate Scots pine (*Pinus sylvestris*), both species often occurring as vicariant forms in different localities.



Corresponding alliances in EuroVegChecklist 2016

- > SAB-01A Junipero-Pinion sylvestris Rivas Goday in Rivas Goday et Borja 1961 nom. invers. propos.
- > SAB-01C Junipero hemisphaericae-Pinion sylvestris Rivas-Mart. 1983
- > SAB-01D Avenello ibericae-Pinion ibericae Rivas-Mart. et J.A. Molina in Rivas-Mart. et al. 1999
- > SAB-03A Berberido aetnensis-Pinion laricionis (S. Brullo et al. 2001) Mucina et Theurillat in Mucina et al. 2016

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinus nigra</i>	43
<i>Helleborus lividus</i>	27
<i>Galium rotundifolium</i>	26

<i>Viola willkommii</i>	23
<i>Luzula pedemontana</i>	21
<i>Geum sylvaticum</i>	17
<i>Helictochloa marginata</i>	17
<i>Festuca braun-blanquetii</i>	17
<i>Luzula forsteri</i>	17
<i>Ononis aragonensis</i>	16
<i>Cruciata glabra</i>	16
<i>Linaria nivea</i>	15

Constant species (percentage frequencies)

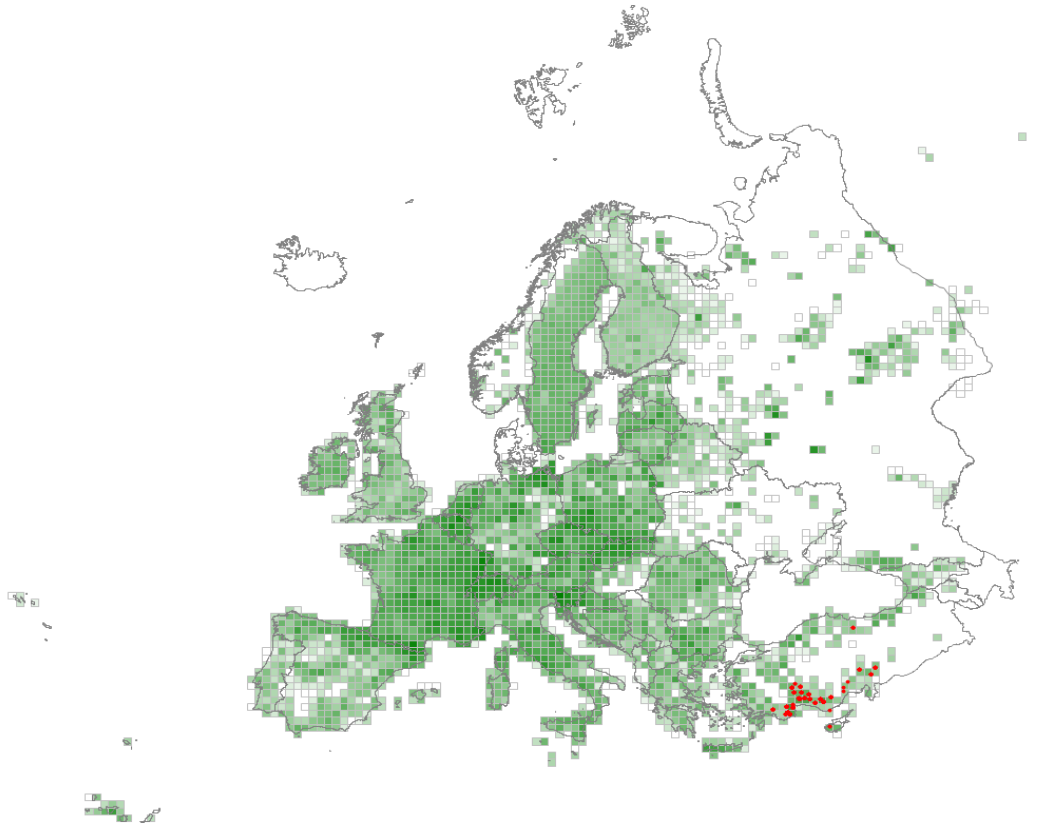
<i>Pinus nigra</i>	71
<i>Pteridium aquilinum</i>	39
<i>Pinus sylvestris</i>	38
<i>Galium rotundifolium</i>	34
<i>Avenella flexuosa</i>	32
<i>Juniperus communis</i> subsp. <i>communis</i>	27
<i>Cruciata glabra</i>	27
<i>Hieracium murorum</i>	26
<i>Luzula forsteri</i>	22
<i>Anthoxanthum odoratum</i> aggr.	22
<i>Veronica officinalis</i>	21
<i>Juniperus communis</i> subsp. <i>nana</i>	21
<i>Fagus sylvatica</i>	20
<i>Festuca heterophylla</i>	19
<i>Arrhenatherum elatius</i>	19
<i>Helleborus lividus</i>	18
<i>Fragaria vesca</i>	18
<i>Amelanchier ovalis</i>	18
<i>Erica arborea</i>	16
<i>Lactuca muralis</i>	15
<i>Ilex aquifolium</i>	15
<i>Digitalis purpurea</i>	15
<i>Brachypodium sylvaticum</i>	15
<i>Hepatica nobilis</i>	14
<i>Helictochloa marginata</i>	14
<i>Crataegus monogyna</i>	14
<i>Calluna vulgaris</i>	14
<i>Helleborus foetidus</i>	13
<i>Viola riviniana</i>	12
<i>Rumex acetosella</i>	12
<i>Pilosella officinarum</i>	12
<i>Buxus sempervirens</i>	12
<i>Brachypodium rupestre</i>	12
<i>Brachypodium pinnatum</i>	12
<i>Sanicula europaea</i>	11
<i>Rubus ulmifolius</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus nigra</i>	67
<i>Pinus sylvestris</i>	32

T38 – Mediterranean montane *Cedrus* forest

Forests dominated by cedars (*Cedrus atlantica* or *Cedrus libani*) found on mountains of North Africa, Lebanon, Syria, Asiatic Turkey and Cyprus.



Corresponding alliances in EuroVegChecklist 2016

- <> PIC-01B Pinion peucis Horvat 1950
- > PUB-02A Querco-Cedrion libani Barbero et al. 1974

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cedrus libani</i>	94
<i>Lonicera nummulariifolia</i>	48
<i>Anthemis rosea</i>	41
<i>Juniperus excelsa</i>	38
<i>Bunium microcarpum</i>	37
<i>Lamium garganicum</i>	37
<i>Silene aegyptiaca</i>	36
<i>Abies cilicica</i>	34
<i>Euphorbia kotschyana</i>	34
<i>Ranunculus argyreus</i>	32

<i>Astragalus macrourus</i>	30
<i>Veronica cuneifolia</i>	30
<i>Doronicum orientale</i>	29
<i>Lactuca variabilis</i>	28
<i>Crepis macropus</i>	28
<i>Berberis crataegina</i>	28
<i>Galium peplidifolium</i>	27
<i>Astragalus pinetorum</i>	27
<i>Hesperis armena</i>	26
<i>Scutellaria brevibracteata</i>	26
<i>Astragalus mesogitanus</i>	26
<i>Pilosella auriculoides</i>	25
<i>Salvia frigida</i>	25
<i>Juniperus foetidissima</i>	25
<i>Viola heldreichiana</i>	25
<i>Salvia tomentosa</i>	25
<i>Milium vernale</i>	24
<i>Astragalus oxytropifolius</i>	24
<i>Cotoneaster nummularius</i>	24
<i>Orchis anatolica</i>	24
<i>Ferula elaeochytris</i>	23
<i>Saponaria orientalis</i>	23
<i>Cynoglossum montanum</i>	23
<i>Silene armena</i>	23
<i>Ononis adenotricha</i>	22
<i>Myosotis lithospermifolia</i>	22
<i>Digitalis cariensis</i>	22
<i>Ferulago aucheri</i>	22
<i>Bromus lanceolatus</i>	22
<i>Anemone blanda</i>	22
<i>Iranecio cariensis</i>	22
<i>Geranium tuberosum</i>	22
<i>Tripleurospermum elongatum</i>	22
<i>Astragalus lycius</i>	22
<i>Amelanchier parviflora</i>	21
<i>Silene conoidea</i>	21
<i>Galium dumosum</i>	21
<i>Eranthis hyemalis</i>	21
<i>Salvia candidissima</i>	21
<i>Veronica macrostachya</i>	21
<i>Sorbus umbellata</i>	21
<i>Lactuca hispida</i>	21
<i>Lolium temulentum</i>	21
<i>Tulipa armena</i>	21
<i>Geum heterocarpum</i>	21
<i>Vicia anatolica</i>	21
<i>Tragopogon pterodes</i>	21
<i>Verbascum glomerulosum</i>	20
<i>Euphorbia eriophora</i>	20
<i>Verbascum nudatum</i>	20
<i>Astragalus microrchis</i>	20
<i>Acer hyrcanum</i>	20
<i>Papaver spicatum</i>	20
<i>Verbascum leptocladum</i>	20
<i>Euphorbia macroclada</i>	20

<i>Silene leptoclada</i>	20
<i>Clinopodium graveolens</i>	20
<i>Veronica pectinata</i>	19
<i>Silene gigantea</i>	19
<i>Scandix iberica</i>	19
<i>Ranunculus reuterianus</i>	19
<i>Leontodon oxylepis</i>	19
<i>Isatis cappadocica</i>	19
<i>Vicia tenuifolia</i>	19
<i>Silene rhynchocarpa</i>	19
<i>Onopordum caricum</i>	19
<i>Onopordum anatolicum</i>	19
<i>Acantholimon puberulum</i>	19
<i>Hesperis pendula</i>	19
<i>Asyneuma michauxioides</i>	19
<i>Anthemis cretica</i>	19
<i>Arabis nova</i>	18
<i>Alyssum strigosum</i>	18
<i>Scorzonera phaeopappa</i>	18
<i>Verbascum pestalozzae</i>	18
<i>Bellevalia tauri</i>	18
<i>Saponaria kotschyi</i>	18
<i>Ranunculus neocuneatus</i>	18
<i>Atraphaxis billardierei</i>	18
<i>Veronica syriaca</i>	18
<i>Potentilla kotschyana</i>	18
<i>Muscari armeniacum</i>	18
<i>Aethionema cordatum</i>	18
<i>Silene behen</i>	17
<i>Euphorbia pestalozzae</i>	17
<i>Alopecurus arundinaceus</i>	17
<i>Lamium macrodon</i>	17
<i>Paeonia kesrouanensis</i>	17
<i>Cerastium fragillimum</i>	17
<i>Bunium ferulaceum</i>	17
<i>Asphodeline taurica</i>	17
<i>Brizochloa humilis</i>	17
<i>Silene cryptoneura</i>	17
<i>Vinca herbacea</i>	16
<i>Cyanus depressus</i>	16
<i>Elytrigia tauri</i>	16
<i>Valeriana dioscoridis</i>	16
<i>Picnomon acarna</i>	16
<i>Campanula involucrata</i>	16
<i>Astragalus sparsipilis</i>	16
<i>Stipa ehrenbergiana</i>	16
<i>Crocus pallasii</i>	16
<i>Scutellaria orientalis</i> aggr.	16
<i>Campanula lyrata</i>	15
<i>Anacamptis palustris</i> aggr.	15
<i>Tordylium lanatum</i>	15
<i>Euphorbia cardiophylla</i>	15

Constant species (percentage frequencies)

<i>Cedrus libani</i>	100
<i>Dactylis glomerata</i>	37
<i>Juniperus excelsa</i>	36
<i>Lamium garganicum</i>	34
<i>Lonicera nummulariifolia</i>	29
<i>Euphorbia kotschyana</i>	29
<i>Juniperus oxycedrus</i> aggr.	26
<i>Bunium microcarpum</i>	26
<i>Abies cilicica</i>	25
<i>Poa bulbosa</i>	23
<i>Doronicum orientale</i>	23
<i>Galium peplidifolium</i>	21
<i>Silene aegyptiaca</i>	20
<i>Anthemis cretica</i>	20
<i>Berberis crataegina</i>	19
<i>Arabis alpina</i>	19
<i>Anthemis rosea</i>	19
<i>Juniperus foetidissima</i>	18
<i>Vicia tenuifolia</i>	17
<i>Silene italica</i> aggr.	16
<i>Milium vernale</i>	16
<i>Veronica cuneifolia</i>	15
<i>Teucrium chamaedrys</i>	15
<i>Salvia tomentosa</i>	15
<i>Noccaea perfoliata</i>	15
<i>Anisantha tectorum</i>	15
<i>Pinus nigra</i>	14
<i>Quercus coccifera</i>	13
<i>Geranium tuberosum</i>	13
<i>Cotoneaster nummularius</i>	13
<i>Clinopodium graveolens</i>	13
<i>Alyssum strigosum</i>	13
<i>Ranunculus argyreus</i>	12
<i>Daphne oleoides</i>	12
<i>Anemone blanda</i>	12
<i>Anacamptis palustris</i> aggr.	12
<i>Cerastium brachypetalum</i>	11
<i>Alliaria petiolata</i>	11

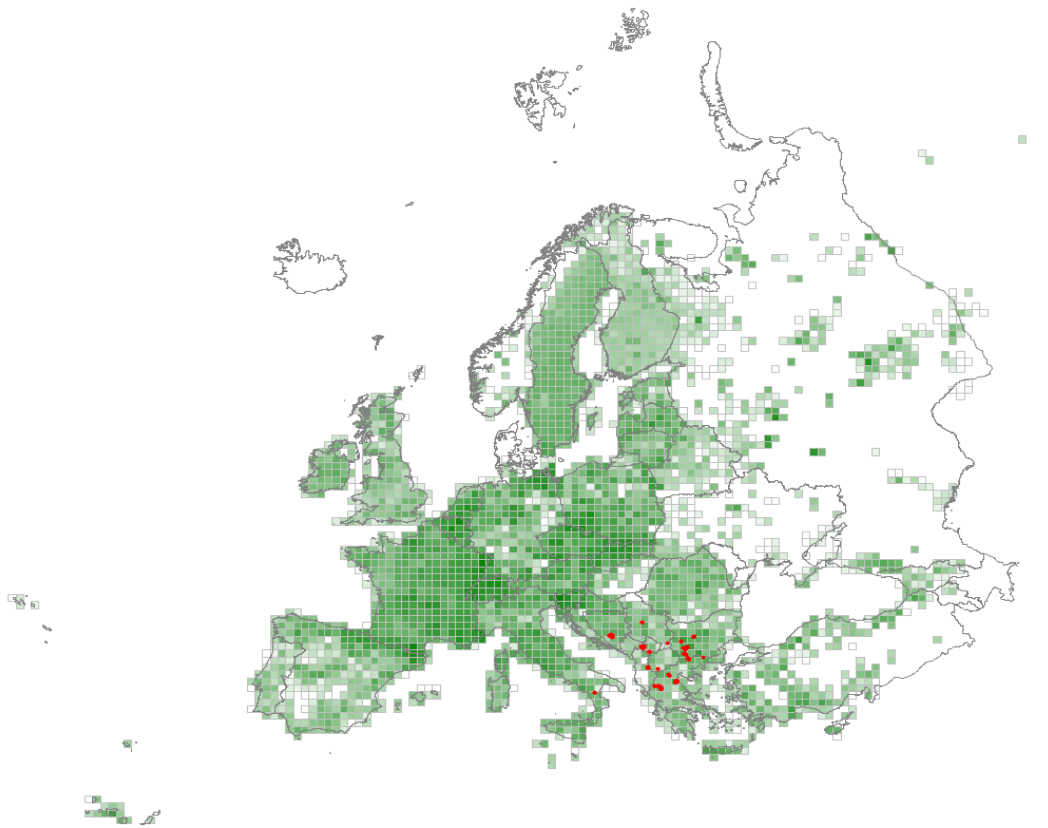
Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Cedrus libani</i>	100
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T39 – Mediterranean and Balkan subalpine *Pinus heldreichii*-*Pinus peuce* forest

Evergreen coniferous forest of timberlines in the mountains of the Balkans and southern Italy, dominated by Bosnian pine (*Pinus heldreichii*) on base-rich soils in more sunny and drought-prone situations or by Macedonian pine (*Pinus peuce*) mostly on siliceous soils.

Remark: This habitat should be divided into two, one dominated by *Pinus heldreichii* and the other by *Pinus peuce*, because the ecology and floristic composition of these two pine forests are very different.



Corresponding alliances in EuroVegChecklist 2016

- > ERI-01H Pinion heldreichii Horvat 1946
- <> PIC-01B Pinion peucis Horvat 1950
- <> QUI-01F Genisto pilosae-Pinion pinastris Biondi et Vagge 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinus heldreichii</i>	74
<i>Pinus peuce</i>	66
<i>Moehringia pendula</i>	53
<i>Hieracium pannosum</i>	34
<i>Campanula sparsa</i>	33

<i>Sesleria robusta</i>	31
<i>Aremonia agrimonoides</i>	30
<i>Cyanus pindicola</i>	30
<i>Cotoneaster nebrodensis</i>	29
<i>Achillea holosericea</i>	28
<i>Viola pseudograeca</i>	27
<i>Cytisus eriocarpus</i>	27
<i>Euphorbia amygdaloides</i>	26
<i>Crocus veluchensis</i>	26
<i>Carum appuanum</i>	25
<i>Festuca penzesii</i>	24
<i>Calamagrostis arundinacea</i>	24
<i>Festuca valida</i>	24
<i>Geranium macrorrhizum</i>	23
<i>Festuca graeca</i>	23
<i>Luzula sylvatica</i>	22
<i>Euphorbia capitulata</i>	22
<i>Minuartia baldaccii</i>	21
<i>Daphne blagayana</i>	21
<i>Daphne oleoides</i>	21
<i>Staehelina uniflosculosa</i>	21
<i>Galium hellenicum</i>	20
<i>Senecio thapsoides</i>	19
<i>Juniperus communis</i> subsp. <i>nana</i>	19
<i>Carum graecum</i>	19
<i>Iberis sempervirens</i>	19
<i>Alyssoides utriculata</i>	18
<i>Hieracium murorum</i>	18
<i>Scabiosa cinerea</i>	17
<i>Fragaria vesca</i>	17
<i>Ferulago sylvatica</i>	16
<i>Campanula trichocalycina</i>	16
<i>Peucedanum austriacum</i>	16
<i>Melampyrum sylvaticum</i>	16
<i>Aurinia corymbosa</i>	16
<i>Sideritis scardica</i>	15
<i>Salvia ringens</i>	15
<i>Knautia midzorensis</i>	15

Constant species (percentage frequencies)

<i>Pinus heldreichii</i>	60
<i>Vaccinium myrtillus</i>	53
<i>Fragaria vesca</i>	51
<i>Euphorbia amygdaloides</i>	49
<i>Pinus peuce</i>	47
<i>Calamagrostis arundinacea</i>	45
<i>Hieracium murorum</i>	44
<i>Juniperus communis</i> subsp. <i>nana</i>	43
<i>Luzula sylvatica</i>	42
<i>Aremonia agrimonoides</i>	38
<i>Picea abies</i>	37
<i>Moehringia pendula</i>	34
<i>Avenella flexuosa</i>	31
<i>Fagus sylvatica</i>	27
<i>Dryopteris filix-mas</i>	27

<i>Daphne oleoides</i>	27
<i>Luzula luzuloides</i>	26
<i>Pinus sylvestris</i>	25
<i>Melampyrum sylvaticum</i>	25
<i>Veronica chamaedrys</i> aggr.	24
<i>Juniperus communis</i> subsp. <i>communis</i>	23
<i>Hieracium pannosum</i>	23
<i>Daphne mezereum</i>	23
<i>Clinopodium alpinum</i>	23
<i>Brachypodium sylvaticum</i>	23
<i>Rubus idaeus</i>	22
<i>Poa nemoralis</i>	22
<i>Lactuca muralis</i>	22
<i>Veronica officinalis</i>	21
<i>Thalictrum minus</i>	20
<i>Senecio nemorensis</i> aggr.	20
<i>Pinus mugo</i> subsp. <i>mugo</i>	19
<i>Cruciata glabra</i>	19
<i>Crocus veluchensis</i>	19
<i>Campanula sparsa</i>	19
<i>Brachypodium pinnatum</i>	19
<i>Teucrium chamaedrys</i>	17
<i>Silene vulgaris</i>	17
<i>Abies alba</i>	17
<i>Sesleria robusta</i>	16
<i>Cytisus eriocarpus</i>	16
<i>Oxalis acetosella</i>	15
<i>Viola reichenbachiana</i>	14
<i>Prenanthes purpurea</i>	14
<i>Helianthemum nummularium</i>	14
<i>Cytisus hirsutus</i>	14
<i>Cotoneaster nebrodensis</i>	14
<i>Rosa pendulina</i>	13
<i>Polygala nicaeensis</i> aggr.	13
<i>Lilium martagon</i>	13
<i>Iberis sempervirens</i>	13
<i>Festuca heterophylla</i>	13
<i>Buxus sempervirens</i>	13
<i>Anemone nemorosa</i>	13
<i>Vaccinium vitis-idaea</i>	12
<i>Sorbus aucuparia</i>	12
<i>Sorbus aria</i> aggr.	12
<i>Primula veris</i>	12
<i>Polystichum lonchitis</i>	12
<i>Pinus nigra</i>	12
<i>Geranium macrorrhizum</i>	12
<i>Festuca valida</i>	12
<i>Dactylis glomerata</i>	12
<i>Clinopodium vulgare</i>	12
<i>Cephalanthera rubra</i>	12
<i>Achillea holosericea</i>	12
<i>Symphytum tuberosum</i> aggr.	11
<i>Galium sylvaticum</i>	11

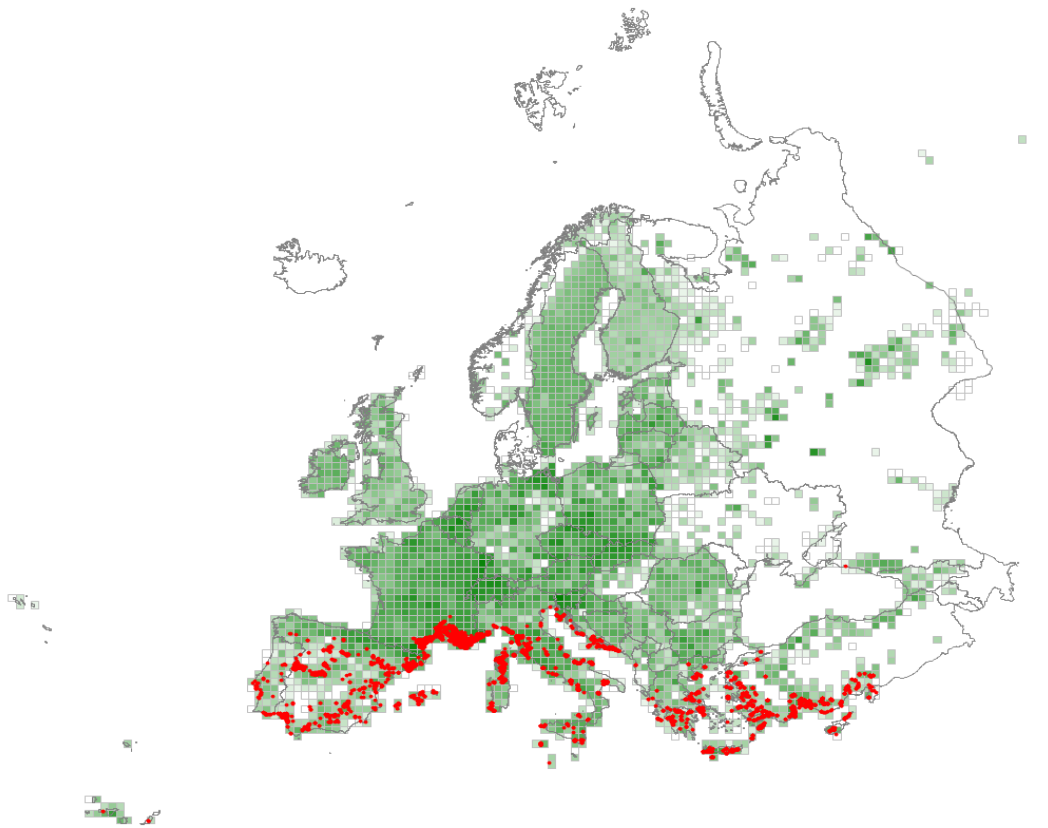
Dominant species (percentage frequencies of occurrences with cover > 25%)

Pinus heldreichii 59

Pinus peuce 41

T3A – Mediterranean lowland to submontane *Pinus* forest

Evergreen coniferous forest dominated by various thermophilous pines: maritime pine (*Pinus pinaster* in the Western Mediterranean and winter-mild Atlantic regions), Aleppo pine (*Pinus halepensis*), stone pine (*Pinus pinea* all around the Southern European coasts, and in some places also inland), and Aegean pine (*Pinus brutia* in Greece, Cyprus and Anatolia), the first three often favouring unstable substrates or pre-climax situations. All of these forests are fire-prone.



Corresponding alliances in EuroVegChecklist 2016

- > PUB-01J Campanulo sibiricae-Pinion brutiae Litvinskaya et Postarnak ex Mucina in Mucina et al. 2016
- <> QUI-01F Genisto pilosae-Pinion pinastri Biondi et Vagge 2015
- <> QUI-03A Pistacio lentisci-Pinion halepensis Biondi, Blasi, Galdenzi, Pesaresi et Vagge in Biondi et al. 2014
- <> QUI-03A Pistacio lentisci-Pinion halepensis Biondi, Blasi, Galdenzi, Pesaresi et Vagge in Biondi et al. 2014
- > QUI-03B Alkanno baeoticae-Pinion halepensis Mucina et Dimopoulos in Mucina et al. 2009
- > QUI-03C Salvia fruticosae-Pinion brutiae Konstantinidis, Mucina et Bergmeier ined.
- <> QUI-03D Pinion pineae Feinbrun 1959

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinus brutia</i>	31
<i>Pinus halepensis</i>	27
<i>Pinus pinaster</i>	21
<i>Quercus coccifera</i>	16

Constant species (percentage frequencies)

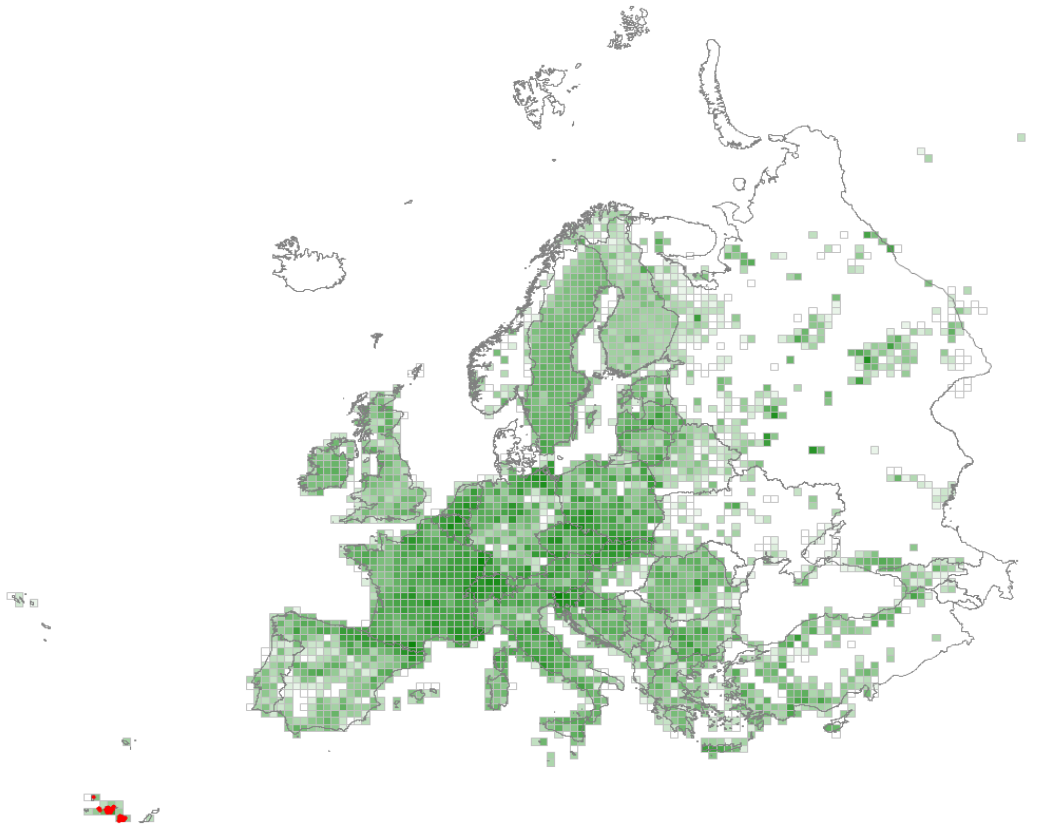
<i>Pinus halepensis</i>	43
<i>Rubia peregrina</i>	41
<i>Pistacia lentiscus</i>	34
<i>Dactylis glomerata</i>	34
<i>Asparagus acutifolius</i>	33
<i>Smilax aspera</i>	31
<i>Pinus pinaster</i>	31
<i>Juniperus oxycedrus</i> aggr.	31
<i>Quercus ilex</i>	30
<i>Quercus coccifera</i>	26
<i>Pinus brutia</i>	25
<i>Brachypodium retusum</i>	25
<i>Phillyrea latifolia</i>	23
<i>Rosmarinus officinalis</i>	22
<i>Cistus salviifolius</i>	22
<i>Cistus creticus</i>	21
<i>Thymus vulgaris</i>	20
<i>Dorycnium pentaphyllum</i>	20
<i>Arbutus unedo</i>	20
<i>Phillyrea angustifolia</i>	19
<i>Lonicera implexa</i>	19
<i>Pistacia terebinthus</i>	18
<i>Myrtus communis</i>	18
<i>Erica arborea</i>	18
<i>Rubus ulmifolius</i>	17
<i>Rhamnus alaternus</i>	16
<i>Quercus pubescens</i>	16
<i>Teucrium chamaedrys</i>	15
<i>Olea europaea</i>	15
<i>Helichrysum stoechas</i>	15
<i>Daphne gnidium</i>	14
<i>Carex flacca</i>	14
<i>Brachypodium phoenicoides</i>	14
<i>Aphyllanthes monspeliensis</i>	14
<i>Helictochloa bromoides</i>	13
<i>Clematis flammula</i>	13
<i>Sanguisorba minor</i> aggr.	12
<i>Carex halleriana</i>	12
<i>Pteridium aquilinum</i>	11
<i>Ononis minutissima</i>	11
<i>Hedera helix</i> aggr.	11
<i>Crataegus monogyna</i>	11
<i>Cistus albidus</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus halepensis</i>	38
<i>Pinus pinaster</i>	26

T3B – *Pinus canariensis* forest

Forest of endemic Canarian pine (*Pinus canariensis*) occurring mostly at high altitudes in dry, sunny situations above the fog belt, locally on foothill rock outcrops and old lava flows, in the western Canary Islands.



Corresponding alliances in EuroVegChecklist 2016

- > CAN-01A *Cisto symphyfolii*-*Pinion canariensis* Rivas Goday et Esteve ex Esteve 1969

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinus canariensis</i>	73
<i>Cytisus proliferus</i>	58
<i>Cistus symphytifolius</i>	51
<i>Bystropogon origanifolius</i>	38
<i>Lotus campylocladus</i>	31
<i>Adenocarpus viscosus</i>	29
<i>Argyranthemum adauctum</i>	27
<i>Micromeria benthamii</i>	27
<i>Asphodelus aestivus</i>	24
<i>Lotus holosericus</i>	17

Echium onosmifolium 16

Constant species (percentage frequencies)

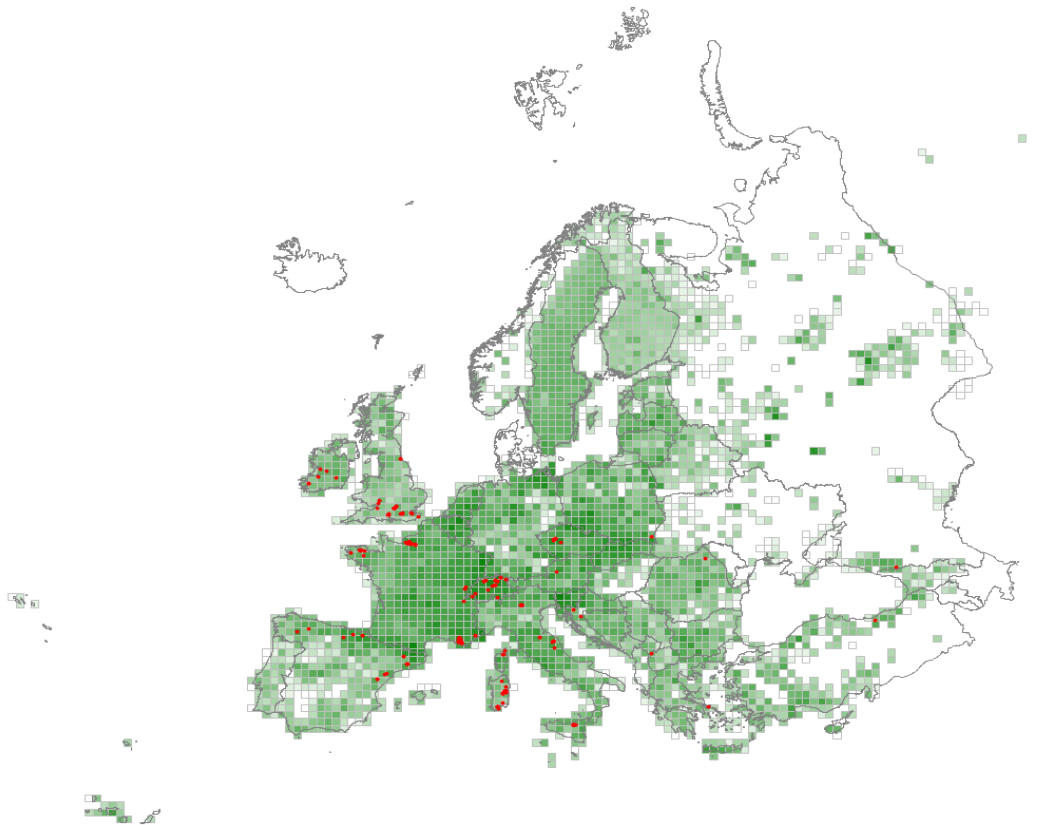
<i>Pinus canariensis</i>	100
<i>Cytisus proliferus</i>	68
<i>Cistus symphytifolius</i>	56
<i>Adenocarpus viscosus</i>	34
<i>Asphodelus aestivus</i>	31
<i>Erica arborea</i>	27
<i>Cistus monspeliensis</i>	24
<i>Bystropogon origanifolius</i>	23
<i>Morella faya</i>	16
<i>Micromeria hyssopifolia</i>	16
<i>Lotus campylocladus</i>	15
<i>Pterocephalus lasiospermus</i>	14
<i>Argyranthemum adauctum</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus canariensis</i>	98
<i>Cytisus proliferus</i>	32

T3C – *Taxus baccata* forest

Evergreen woodlands overwhelmingly dominated by yew (*Taxus baccata*), sometimes with holly (*Ilex aquifolium*), whitebeam (*Sorbus aria*) and box (*Buxus sempervirens*), maybe in halted successions or as senescent survivals, occurring very locally on base-rich soils in the Mediterranean and in the British Isles.



Corresponding alliances in EuroVegChecklist 2016

- <> FAG-02B Fagion sylvaticae Luquet 1926
- <> FAG-03A Carpinion betuli ISSLER 1931
- <> FAG-05A Tilio-Acerion Klika 1955
- <> PUB-01R Lathyro veneti-Taxion baccatae Čarni et Mucina 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Taxus baccata</i>	84
<i>Daphne laureola</i>	24
<i>Euonymus latifolius</i>	23
<i>Glechoma sardoa</i>	23
<i>Mercurialis perennis</i>	23
<i>Ilex aquifolium</i>	22

<i>Hedera helix</i> aggr.	21
<i>Arenaria balearica</i>	19
<i>Ribes multiflorum</i>	19
<i>Acer opalus</i> aggr.	18
<i>Tilia platyphyllos</i>	18
<i>Cymbalaria aequitriloba</i>	18
<i>Cyclamen repandum</i>	17
<i>Viola reichenbachiana</i>	16
<i>Hepatica nobilis</i>	15
<i>Ruscus aculeatus</i>	15

Constant species (percentage frequencies)

<i>Taxus baccata</i>	100
<i>Hedera helix</i> aggr.	74
<i>Ilex aquifolium</i>	45
<i>Fagus sylvatica</i>	45
<i>Mercurialis perennis</i>	44
<i>Viola reichenbachiana</i>	36
<i>Daphne laureola</i>	35
<i>Corylus avellana</i>	34
<i>Ruscus aculeatus</i>	30
<i>Sorbus aria</i> aggr.	29
<i>Rubus fruticosus</i> aggr.	27
<i>Hepatica nobilis</i>	27
<i>Quercus ilex</i>	25
<i>Fraxinus excelsior</i>	24
<i>Euphorbia amygdaloides</i>	24
<i>Brachypodium sylvaticum</i>	24
<i>Acer opalus</i> aggr.	23
<i>Acer campestre</i>	23
<i>Lactuca muralis</i>	22
<i>Crataegus monogyna</i>	22
<i>Acer pseudoplatanus</i>	21
<i>Rubia peregrina</i>	20
<i>Ligustrum vulgare</i>	20
<i>Dioscorea communis</i>	20
<i>Tilia platyphyllos</i>	19
<i>Melica uniflora</i>	19
<i>Lonicera xylosteum</i>	19
<i>Hieracium murorum</i>	19
<i>Viola alba</i>	17
<i>Sanicula europaea</i>	17
<i>Cyclamen repandum</i>	17
<i>Clematis vitalba</i>	17
<i>Sambucus nigra</i>	16
<i>Dryopteris filix-mas</i>	16
<i>Lilium martagon</i>	15
<i>Ulmus glabra</i>	14
<i>Euonymus latifolius</i>	14
<i>Cornus sanguinea</i>	14
<i>Asplenium adiantum-nigrum</i>	14
<i>Primula acaulis</i>	13
<i>Hippocrepis emerus</i>	13
<i>Solidago virgaurea</i>	12
<i>Quercus pubescens</i>	12

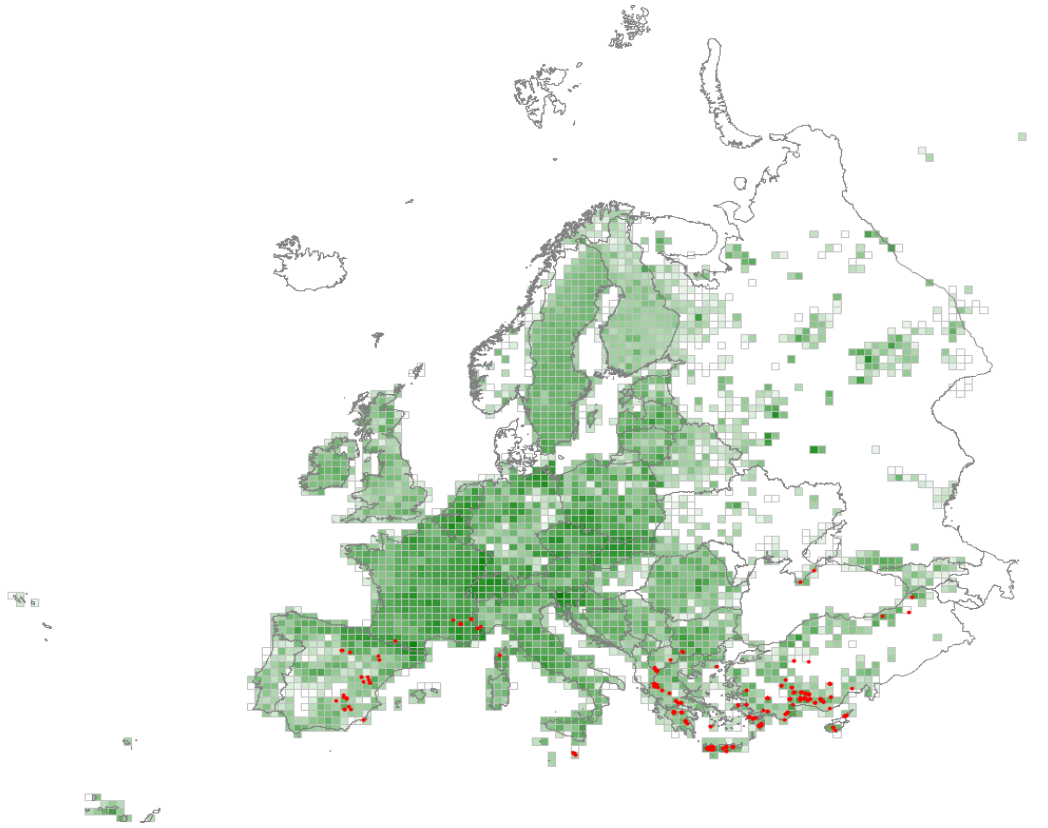
<i>Helleborus foetidus</i>	12
<i>Epipactis helleborine</i>	12
<i>Asplenium scolopendrium</i>	12
<i>Acer monspessulanum</i>	12
<i>Viburnum lantana</i>	11
<i>Oxalis acetosella</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Taxus baccata</i>	100
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T3D – Mediterranean *Cupressaceae* forest

Evergreen forests and tall scrub of cypress (*Cupressus sempervirens*), junipers (*Juniperus drupacea*, *Juniperus excelsa*, *Juniperus foetidissima* and *Juniperus thurifera*) or alerce (*Tetraclinis articulata*) with a usually open canopy with scrubby understorey and herb-rich field layer, on shallow, usually base-rich soils, in dry, rocky situations scattered through the Mediterranean.



Corresponding alliances in EuroVegChecklist 2016

- > QUI-02B *Aceri sempervirentis-Cupression sempervirentis* Barbero et Qu  zel ex Qu  zel et al. 1993
- <> QUI-04F *Pino pinastri-Juniperion phoeniceae* P  rez Latorre et Cabezudo in P  rez Latorre et al. 1998
- > QUI-04G *Juniperion lagunae* Cano et al. 2007
- > QUI-04J *Rhamno graecae-Juniperion lyciae* M. Costa et al. 1984
- > SAB-01B *Juniperion thuriferae* Rivas-Mart. 1969
- > SAB-03B *Juniperion excelso-foetidissimae* Em ex Matevski et al. 2010
- <> SAB-03C *Jasmino-Juniperion excelsae* Didukh, Vakarenko et Shelyag-Sosonko ex Didukh 1996
- > SAB-03D *Berberido creticae-Juniperion foetidissimae* S. Brullo et al. 2001

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cupressus sempervirens</i>	56
<i>Juniperus excelsa</i>	42
<i>Juniperus foetidissima</i>	36
<i>Crepis fraasii</i>	32
<i>Achnatherum bromoides</i> aggr.	26
<i>Galium monachinii</i>	26
<i>Quercus coccifera</i>	25
<i>Acer sempervirens</i>	22
<i>Alyssum strigosum</i>	21
<i>Juniperus thurifera</i>	20
<i>Cerastium scaposum</i>	20
<i>Brizochloa humilis</i>	19
<i>Silene sieberi</i>	19
<i>Minuartia hamata</i>	19
<i>Hypericum empetrifolium</i>	19
<i>Cyclamen creticum</i>	19
<i>Luzula nodulosa</i>	19
<i>Scaligeria napiformis</i>	18
<i>Berberis crataegina</i>	18
<i>Ziziphora tenuior</i>	18
<i>Phlomis grandiflora</i>	17
<i>Lamyropsis cynaroides</i>	17
<i>Phlomis leucophracta</i>	16
<i>Phlomis cretica</i>	16
<i>Sideritis libanotica</i>	16
<i>Pinus brutia</i>	16
<i>Micromeria myrtifolia</i>	16
<i>Bellis longifolia</i>	15
<i>Crucianella imbricata</i>	15
<i>Arabis verna</i>	15

Constant species (percentage frequencies)

<i>Quercus coccifera</i>	40
<i>Juniperus excelsa</i>	39
<i>Dactylis glomerata</i>	39
<i>Cupressus sempervirens</i>	38
<i>Poa bulbosa</i>	33
<i>Juniperus oxycedrus</i> aggr.	30
<i>Achnatherum bromoides</i> aggr.	27
<i>Juniperus foetidissima</i>	26
<i>Teucrium chamaedrys</i>	23
<i>Brachypodium retusum</i>	22
<i>Crepis fraasii</i>	20
<i>Teucrium polium</i> aggr.	17
<i>Alyssum strigosum</i>	15
<i>Scaligeria napiformis</i>	14
<i>Phillyrea latifolia</i>	14
<i>Hypericum empetrifolium</i>	14
<i>Lamyropsis cynaroides</i>	13
<i>Cistus creticus</i>	13
<i>Pinus brutia</i>	12
<i>Geranium purpureum</i>	12
<i>Galium peplidifolium</i>	12

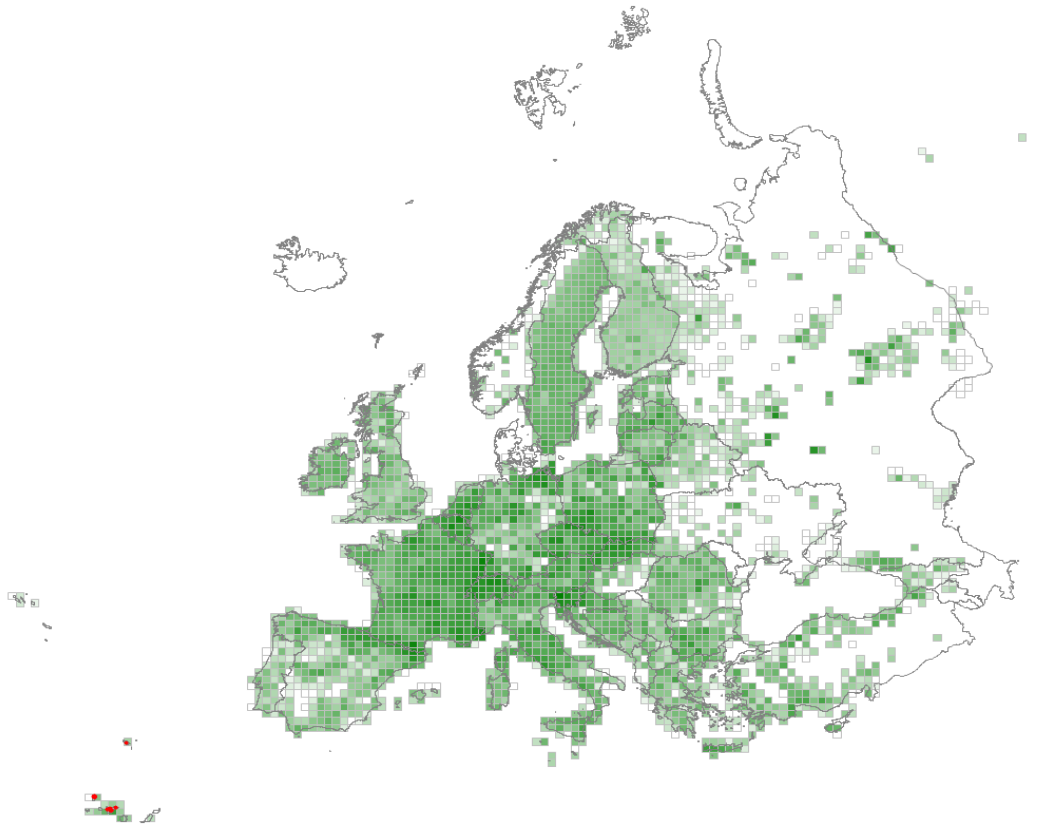
<i>Euphorbia kotschyana</i>	12
<i>Brizochloa humilis</i>	12
<i>Berberis crataegina</i>	12
<i>Asparagus aphyllus</i>	12
<i>Rhamnus lycioides</i>	11
<i>Pistacia terebinthus</i>	11
<i>Olea europaea</i>	11
<i>Minuartia hamata</i>	11
<i>Drimia maritima</i> aggr.	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Cupressus sempervirens</i>	38
<i>Juniperus excelsa</i>	37

T3E – Macaronesian *Juniperus* forest

Evergreen forests of endemic Macaronesian junipers (*Juniperus brevifolia* and *Juniperus cedrus*) in diverse habitats as sometimes very small isolated populations, each with a distinct associated floras.



Corresponding alliances in EuroVegChecklist 2016

- <> AZO-01A *Juniperion brevifoliae* Sjögren 1973
- > CAN-01B *Juniperion cedri* Martín Osorio, Wildpret et Rivas-Mart. in Martín Osorio et al. 2007
- <> OLE-01A *Mayteno canariensis-Juniperion canariensis* Santos et F. Galván ex Santos 1983 corr. Rivas-Mart. et al. 1993

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Juniperus cedrus</i>	91
<i>Adenocarpus viscosus</i>	38
<i>Cheirolophus teydis</i>	29
<i>Pterocephalus porphyranthus</i>	28
<i>Aeonium pseudourbicum</i>	28
<i>Sideritis dendrochahorra</i>	27

<i>Micromeria lachnophylla</i>	26
<i>Cytisus supranubius</i>	24
<i>Pimpinella cumbrae</i>	23
<i>Convolvulus floridus</i>	22
<i>Cistus osbeckiifolius</i>	21
<i>Argyranthemum gracile</i>	21
<i>Allagopappus canariensis</i>	21
<i>Allosorus fragilis</i>	21
<i>Gonospermum revolutum</i>	20
<i>Parietaria mauritanica</i>	20
<i>Asparagus umbellatus</i>	20
<i>Prunus dulcis</i>	19
<i>Cosentinia vellea</i>	19
<i>Aeonium lindleyi</i>	19
<i>Scilla haemorrhoidalis</i>	18
<i>Olea cerasiformis</i>	18
<i>Opuntia ficus-indica</i>	17
<i>Lotus campylocladus</i>	16
<i>Piptatherum coerulescens</i>	16
<i>Euphorbia regis-jubae</i>	16
<i>Echium wildpretii</i>	16
<i>Ferula linkii</i>	16

Constant species (percentage frequencies)

<i>Juniperus cedrus</i>	100
<i>Adenocarpus viscosus</i>	44
<i>Cytisus supranubius</i>	28
<i>Euphorbia regis-jubae</i>	20
<i>Pterocephalus lasiospermus</i>	16
<i>Piptatherum coerulescens</i>	16
<i>Pinus canariensis</i>	16
<i>Periploca angustifolia</i>	16
<i>Micromeria lachnophylla</i>	16
<i>Kleinia neriifolia</i>	16
<i>Cytisus proliferus</i>	16
<i>Cheirolophus teydis</i>	16
<i>Asparagus umbellatus</i>	16
<i>Scilla haemorrhoidalis</i>	12
<i>Rubia fruticosa</i>	12
<i>Pimpinella cumbrae</i>	12
<i>Opuntia ficus-indica</i>	12
<i>Hyparrhenia hirta</i>	12
<i>Carlina salicifolia</i>	12
<i>Asphodelus aestivus</i>	12

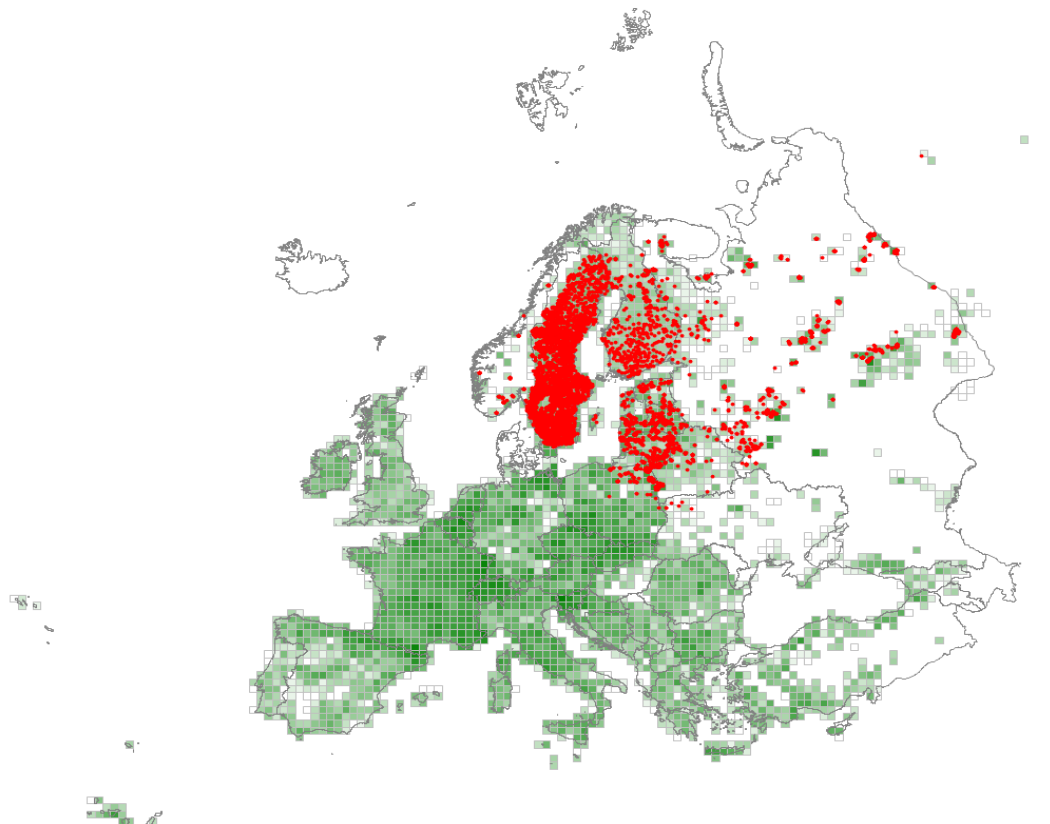
Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Juniperus cedrus</i>	100
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T3F – Dark taiga

Forest naturally dominated by spruce (*Picea abies* and *Picea obovata*), Siberian fir (*Abies sibirica*) or Siberian pine (*Pinus sibirica*) on more mesic, usually podzolic soils through the north-eastern continental and boreal regions, often with a subordinate deciduous broadleaf component (e.g. *Betula pendula* and *Betula pubescens*) and in places even some Scots pine (*Pinus sylvestris*) in the canopy and understorey. The field-layer has a significant participation of dwarf shrubs, bryophytes and lichens. Some forests with *Picea* or *Abies sibirica* can be rich in tall herbs.

Remark: Spruce forests of the hemiboreal and boreal zone on brown soils, with a species-rich herb layer consisting of nutrient-demanding forest herbs (e.g. *Aegopodium podagraria*, *Anemone nemorosa*, *Brachypodium sylvaticum*, *Hepatica nobilis*, *Hieracium lachenalii*, *Hieracium murorum*, *Lamium galeobdolon*, *Melica nutans*, *Mercurialis perennis*, *Mycelis muralis* and *Oxalis acetosella*) is very different from the taiga spruce forest with a predominance of dwarf shrubs and bryophytes in the field layer. These forests need to be considered as potential new habitat.



Corresponding alliances in EuroVegChecklist 2016

- <> PIC-01A Piceion excelsae Pawłowski et al. 1928
- <> PIC-02A Aconito rubicundi-Abietion sibiricae Anenkhonov et Chytrý 1998
- <> PIC-05A Empetro-Piceion obovatae Morozova et al. 2008

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Maianthemum bifolium</i>	29
<i>Picea abies</i>	27
<i>Trientalis europaea</i>	26
<i>Luzula pilosa</i>	26
<i>Hylocomium splendens</i>	26
<i>Ptilium crista-castrensis</i>	25
<i>Sorbus aucuparia</i>	24
<i>Pleurozium schreberi</i>	23
<i>Abies sibirica</i>	21
<i>Gymnocarpium dryopteris</i>	19
<i>Betula pubescens</i>	19
<i>Equisetum sylvaticum</i>	19
<i>Vaccinium myrtillus</i>	19
<i>Linnaea borealis</i>	18
<i>Picea obovata</i>	18
<i>Brachythecium oedipodium</i>	18
<i>Rubus saxatilis</i>	17
<i>Oxalis acetosella</i>	17
<i>Vaccinium vitis-idaea</i>	16
<i>Calamagrostis arundinacea</i>	16

Constant species (percentage frequencies)

<i>Picea abies</i>	90
<i>Sorbus aucuparia</i>	83
<i>Vaccinium myrtillus</i>	82
<i>Pleurozium schreberi</i>	80
<i>Hylocomium splendens</i>	78
<i>Vaccinium vitis-idaea</i>	65
<i>Maianthemum bifolium</i>	61
<i>Trientalis europaea</i>	57
<i>Luzula pilosa</i>	57
<i>Betula pubescens</i>	56
<i>Avenella flexuosa</i>	53
<i>Oxalis acetosella</i>	50
<i>Pinus sylvestris</i>	47
<i>Dryopteris carthusiana</i> aggr.	42
<i>Rubus idaeus</i>	37
<i>Solidago virgaurea</i>	36
<i>Melampyrum pratense</i>	34
<i>Linnaea borealis</i>	33
<i>Rubus saxatilis</i>	31
<i>Gymnocarpium dryopteris</i>	31
<i>Ptilium crista-castrensis</i>	30
<i>Calamagrostis arundinacea</i>	30
<i>Betula pendula</i>	27
<i>Polytrichum commune</i>	25
<i>Equisetum sylvaticum</i>	25
<i>Populus tremula</i>	22
<i>Lycopodium annotinum</i>	21
<i>Frangula alnus</i>	21
<i>Orthilia secunda</i>	20
<i>Dicranum scoparium</i>	20

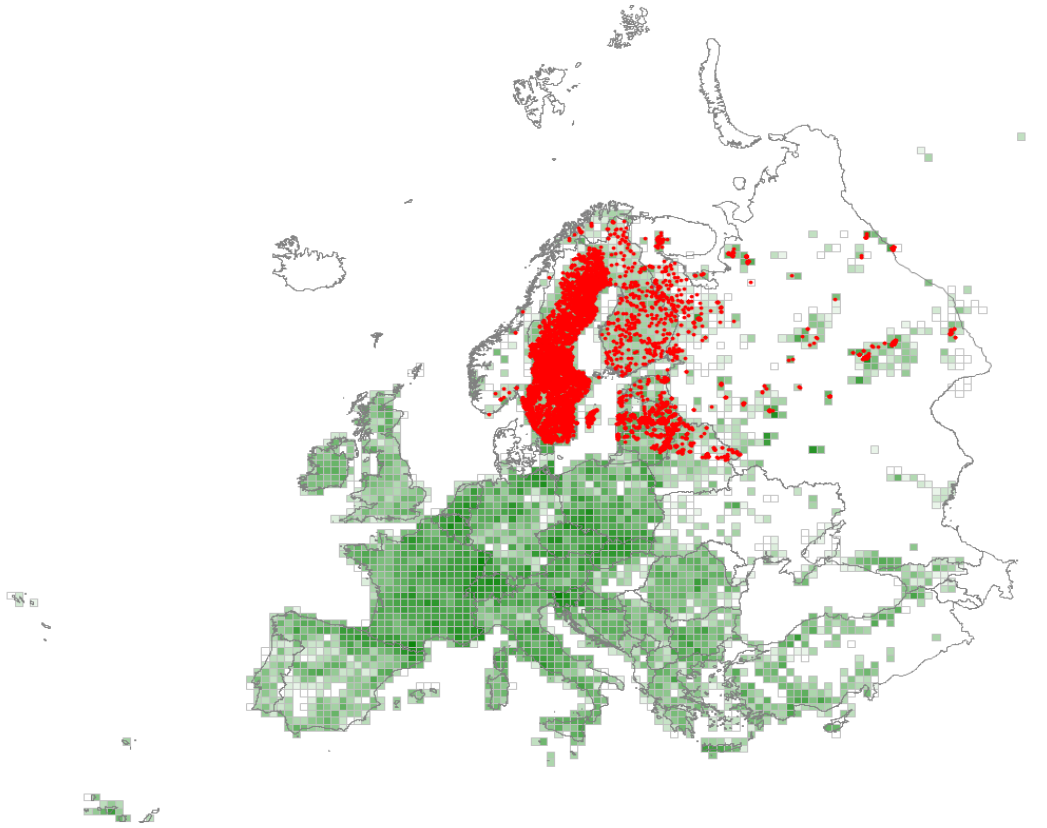
<i>Carex digitata</i>	19
<i>Rhytidiadelphus triquetrus</i>	18
<i>Melica nutans</i>	18
<i>Juniperus communis</i> subsp. <i>communis</i>	18
<i>Epilobium angustifolium</i>	18
<i>Corylus avellana</i>	18
<i>Geranium sylvaticum</i> aggr.	17
<i>Quercus robur</i>	16
<i>Pteridium aquilinum</i>	16
<i>Fragaria vesca</i>	16
<i>Melampyrum sylvaticum</i>	15
<i>Lactuca muralis</i>	15
<i>Deschampsia cespitosa</i> aggr.	15
<i>Anemone nemorosa</i>	15
<i>Plagiomnium affine</i> aggr.	14
<i>Convallaria majalis</i>	14
<i>Dicranum polysetum</i>	13
<i>Paris quadrifolia</i>	12
<i>Lonicera xylosteum</i>	12
<i>Calluna vulgaris</i>	12
<i>Potentilla erecta</i>	11
<i>Phegopteris connectilis</i>	11
<i>Milium effusum</i>	11
<i>Equisetum pratense</i>	11
<i>Empetrum nigrum</i> aggr.	11
<i>Athyrium filix-femina</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Picea abies</i>	87
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T3G – *Pinus sylvestris* light taiga

Forest naturally dominated by Scots pine (*Pinus sylvestris*) but often with some birch (*Betula pendula* and *B. pubescens*). They occur on lithomorphic and podzolised, moderately dry soils throughout the European boreal zone. The field layer is rich in dwarf shrubs, bryophytes and lichens. There can be a specialised herbaceous flora on eskers.



Corresponding alliances in EuroVegChecklist 2016

- <> PIC-03A Dicrano-Pinion sylvestris (Libbert 1933) W. Matuszkiewicz 1962 nom. conserv. propos.
- > PIC-03B Cladonio stellaris-Pinion sylvestris Kielland-Lund ex Ermakov et Morozova 2011

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pinus sylvestris</i>	28
<i>Pleurozium schreberi</i>	26
<i>Hylocomium splendens</i>	24
<i>Vaccinium vitis-idaea</i>	23
<i>Picea abies</i>	22

<i>Ptilium crista-castrensis</i>	22
<i>Melampyrum pratense</i>	22
<i>Vaccinium myrtillus</i>	20
<i>Luzula pilosa</i>	18
<i>Betula pubescens</i>	17
<i>Dicranum polysetum</i>	16
<i>Sorbus aucuparia</i>	16

Constant species (percentage frequencies)

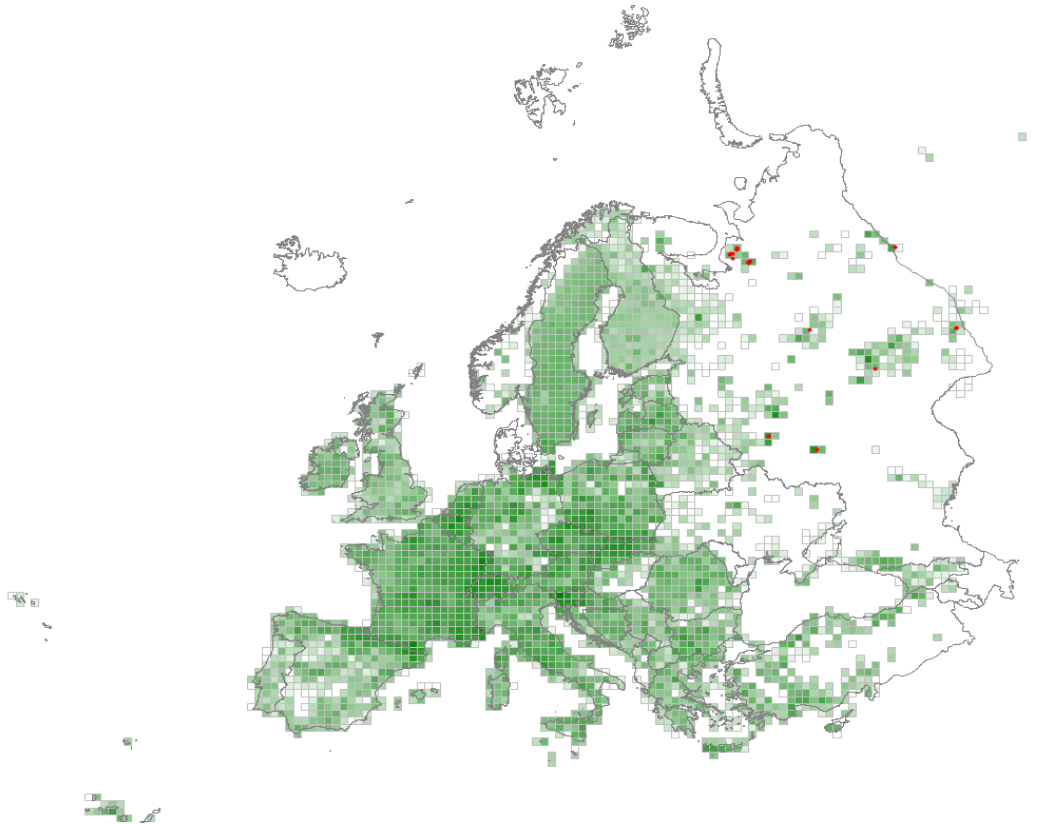
<i>Pinus sylvestris</i>	100
<i>Pleurozium schreberi</i>	90
<i>Vaccinium vitis-idaea</i>	89
<i>Vaccinium myrtillus</i>	88
<i>Picea abies</i>	77
<i>Hylocomium splendens</i>	73
<i>Avenella flexuosa</i>	57
<i>Sorbus aucuparia</i>	56
<i>Calluna vulgaris</i>	53
<i>Melampyrum pratense</i>	49
<i>Betula pubescens</i>	49
<i>Luzula pilosa</i>	41
<i>Juniperus communis</i> subsp. <i>communis</i>	38
<i>Betula pendula</i>	36
<i>Empetrum nigrum</i> aggr.	35
<i>Trientalis europaea</i>	30
<i>Ptilium crista-castrensis</i>	27
<i>Solidago virgaurea</i>	24
<i>Dicranum polysetum</i>	23
<i>Maianthemum bifolium</i>	22
<i>Linnaea borealis</i>	22
<i>Vaccinium uliginosum</i>	21
<i>Calamagrostis arundinacea</i>	20
<i>Populus tremula</i>	19
<i>Polytrichum commune</i>	19
<i>Epilobium angustifolium</i>	19
<i>Frangula alnus</i>	18
<i>Rubus idaeus</i>	16
<i>Quercus robur</i>	14
<i>Pteridium aquilinum</i>	14
<i>Rubus saxatilis</i>	13
<i>Dryopteris carthusiana</i> aggr.	13
<i>Convallaria majalis</i>	13
<i>Cladonia stellaris</i>	13
<i>Festuca ovina</i>	12
<i>Cladonia rangiferina</i>	12
<i>Rhododendron tomentosum</i>	11
<i>Dicranum scoparium</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus sylvestris</i>	95
<i>Pleurozium schreberi</i>	34

T3H – *Larix* light taiga

Deciduous coniferous woodland of Siberian larch (*Larix sibirica*) in the boreal zone of North-Eastern Europe and western Siberia.



Corresponding alliances in EuroVegChecklist 2016

<> PIC-05A Empetro-Piceion obovatae Morozova et al. 2008

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Larix sibirica</i>	99
<i>Rosa acicularis</i>	83
<i>Clematis alpina</i>	71
<i>Lathyrus vernus</i>	47
<i>Crepis sibirica</i>	47
<i>Lonicera caerulea</i>	46
<i>Rubus saxatilis</i>	45
<i>Salix recurvigemmata</i>	45
<i>Rubus arcticus</i>	43
<i>Salix arbuscula</i>	42
<i>Galium boreale</i>	42

<i>Epilobium angustifolium</i>	40
<i>Salix starkeana</i>	38
<i>Linnaea borealis</i>	36
<i>Melica nutans</i>	34
<i>Peltigera aphthosa</i>	33
<i>Maianthemum bifolium</i>	33
<i>Aconitum lycoctonum</i>	30
<i>Hylocomium splendens</i>	29
<i>Betula pubescens</i>	29
<i>Saussurea alpina</i> aggr.	28
<i>Cirsium heterophyllum</i> aggr.	28
<i>Vicia sylvatica</i>	26
<i>Trientalis europaea</i>	26
<i>Delphinium elatum</i>	26
<i>Dicranum polysetum</i>	25
<i>Geranium sylvaticum</i> aggr.	25
<i>Hieracium diaphanoides</i>	25
<i>Pyrola rotundifolia</i>	25
<i>Pleurozium schreberi</i>	24
<i>Orthilia secunda</i>	24
<i>Tephroses integrifolia</i>	23
<i>Viola mauritii</i>	23
<i>Moehringia lateriflora</i>	23
<i>Vaccinium vitis-idaea</i>	23
<i>Peltigera leucophlebia</i>	22
<i>Ptilium crista-castrensis</i>	22
<i>Actaea erythrocarpa</i>	21
<i>Hieracium pseudirectum</i>	21
<i>Carex digitata</i>	21
<i>Viola mirabilis</i>	21
<i>Juniperus communis</i> subsp. <i>communis</i>	21
<i>Valeriana wolgensis</i>	21
<i>Calypso bulbosa</i>	20
<i>Picea abies</i>	20
<i>Calamagrostis obtusata</i>	19
<i>Pohlia lescuriana</i>	19
<i>Parasenecio hastatus</i>	19
<i>Paeonia anomala</i>	19
<i>Rhytidiadelphus triquetrus</i>	19
<i>Lathyrus gmelinii</i>	19
<i>Thalictrum minus</i>	19
<i>Solidago virgaurea</i>	18
<i>Lycopodium annotinum</i>	18
<i>Dicranum majus</i>	18
<i>Lactuca macrophylla</i>	18
<i>Hieracium caesium</i>	17
<i>Stellaria bungeana</i>	17
<i>Mnium laevinerve</i>	16
<i>Parmeliopsis hyperopta</i>	16
<i>Conioselinum tataricum</i>	16
<i>Gymnocarpium dryopteris</i>	16
<i>Dicranum fragilifolium</i>	16
<i>Astragalus frigidus</i>	16
<i>Ranunculus propinquus</i>	16
<i>Eurhynchiastrum pulchellum</i>	15

<i>Daphne mezereum</i>	15
<i>Scorzonera glabra</i>	15

Constant species (percentage frequencies)

<i>Larix sibirica</i>	100
<i>Vaccinium vitis-idaea</i>	88
<i>Hylocomium splendens</i>	87
<i>Clematis alpina</i>	85
<i>Pleurozium schreberi</i>	83
<i>Betula pubescens</i>	83
<i>Rubus saxatilis</i>	80
<i>Rosa acicularis</i>	80
<i>Epilobium angustifolium</i>	80
<i>Picea abies</i>	68
<i>Maianthemum bifolium</i>	68
<i>Lathyrus vernus</i>	65
<i>Juniperus communis</i> subsp. <i>communis</i>	64
<i>Linnaea borealis</i>	63
<i>Solidago virgaurea</i>	60
<i>Geranium sylvaticum</i> aggr.	57
<i>Trientalis europaea</i>	56
<i>Melica nutans</i>	55
<i>Vaccinium myrtillus</i>	53
<i>Galium boreale</i>	53
<i>Sorbus aucuparia</i>	51
<i>Pinus sylvestris</i>	51
<i>Saussurea alpina</i> aggr.	45
<i>Oxalis acetosella</i>	43
<i>Lonicera caerulea</i>	43
<i>Dicranum scoparium</i>	40
<i>Rhynchospora triquetra</i>	37
<i>Orthilia secunda</i>	36
<i>Dicranum polysetum</i>	36
<i>Aconitum lycoctonum</i>	36
<i>Luzula pilosa</i>	33
<i>Rubus arcticus</i>	32
<i>Peltigera aphthosa</i>	32
<i>Carex digitata</i>	32
<i>Salix arbuscula</i>	31
<i>Avenella flexuosa</i>	31
<i>Thalictrum minus</i>	29
<i>Pyrola rotundifolia</i>	28
<i>Lycopodium annotinum</i>	28
<i>Angelica sylvestris</i>	28
<i>Ptilium crista-castrensis</i>	27
<i>Cirsium heterophyllum</i> aggr.	27
<i>Gymnocarpium dryopteris</i>	25
<i>Crepis sibirica</i>	25
<i>Cladonia arbuscula</i> aggr.	25
<i>Poa nemoralis</i>	24
<i>Daphne mezereum</i>	24
<i>Festuca ovina</i>	23
<i>Vicia sepium</i>	21
<i>Vicia cracca</i>	21
<i>Populus tremula</i>	21

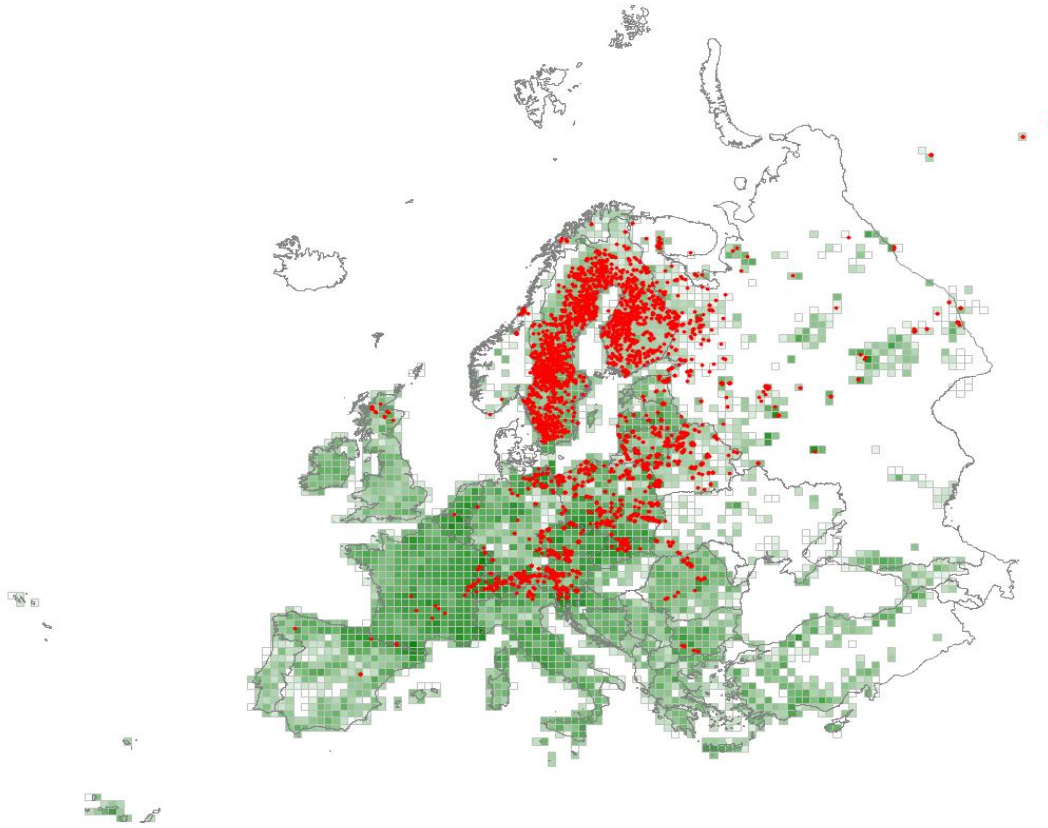
<i>Salix recurvigemmata</i>	20
<i>Salix caprea</i>	20
<i>Milium effusum</i>	20
<i>Melampyrum pratense</i>	20
<i>Lathyrus pratensis</i>	20
<i>Campanula rotundifolia</i>	20
<i>Vicia sylvatica</i>	19
<i>Betula pendula</i>	19
<i>Salix starkeana</i>	17
<i>Dicranum majus</i>	17
<i>Vaccinium uliginosum</i>	16
<i>Trollius europaeus</i>	16
<i>Fragaria vesca</i>	16
<i>Viola mirabilis</i>	15
<i>Rhododendron tomentosum</i>	15
<i>Paris quadrifolia</i>	15
<i>Melampyrum sylvaticum</i>	15
<i>Tephrosieris integrifolia</i>	13
<i>Sanionia uncinata</i>	13
<i>Equisetum pratense</i>	13
<i>Hieracium umbellatum</i>	12
<i>Hieracium lachenalii</i>	12
<i>Equisetum sylvaticum</i>	12
<i>Epipactis atrorubens</i>	12
<i>Elymus caninus</i>	12
<i>Calamagrostis arundinacea</i>	12
<i>Polytrichum commune</i>	11
<i>Plagiothecium laetum</i>	11
<i>Goodyera repens</i>	11
<i>Equisetum scirpoides</i>	11
<i>Dicranum fuscescens</i>	11
<i>Delphinium elatum</i>	11
<i>Carex vaginata</i>	11
<i>Calamagrostis epigejos</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Larix sibirica</i>	91
<i>Hylocomium splendens</i>	67
<i>Vaccinium vitis-idaea</i>	45
<i>Pleurozium schreberi</i>	36
<i>Picea abies</i>	29

T3J – *Pinus* and *Larix* mire forest

Open woodland dominated by pine (*Pinus mugo* subsp. *rotundata*, *Pinus sylvestris*) or larch (*Larix decidua*, *L. sibirica*) on acid peat or around active bogs and poor fens with nutrient-poor ground waters occurring through the boreal zone and locally, where ground conditions permit, in the continental zone.



Corresponding alliances in EuroVegChecklist 2016

- <> OXY-02B Sphagnion medii Kästner et Flössner 1933
- > PIC-07A Vaccinio uliginosi-Pinion sylvestris Passarge 1968

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Vaccinium oxycoccos</i>	37
<i>Eriophorum vaginatum</i>	35
<i>Sphagnum magellanicum</i> aggr.	30
<i>Rhododendron tomentosum</i>	29
<i>Andromeda polifolia</i>	28
<i>Sphagnum recurvum</i> aggr.	26
<i>Polytrichum strictum</i>	23

<i>Pinus sylvestris</i>	23
<i>Vaccinium uliginosum</i>	23
<i>Rubus chamaemorus</i>	20
<i>Sphagnum fuscum</i>	19
<i>Chamaedaphne calyculata</i>	19
<i>Aulacomnium palustre</i>	18
<i>Pleurozium schreberi</i>	17
<i>Carex globularis</i>	17
<i>Carex pauciflora</i>	16
<i>Betula pubescens</i>	16

Constant species (percentage frequencies)

<i>Pinus sylvestris</i>	83
<i>Eriophorum vaginatum</i>	78
<i>Vaccinium oxycoccos</i>	70
<i>Pleurozium schreberi</i>	62
<i>Vaccinium uliginosum</i>	61
<i>Vaccinium myrtillus</i>	61
<i>Vaccinium vitis-idaea</i>	56
<i>Andromeda polifolia</i>	56
<i>Sphagnum recurvum</i> aggr.	52
<i>Calluna vulgaris</i>	52
<i>Sphagnum magellanicum</i> aggr.	46
<i>Betula pubescens</i>	46
<i>Rhododendron tomentosum</i>	45
<i>Picea abies</i>	44
<i>Empetrum nigrum</i> aggr.	43
<i>Polytrichum strictum</i>	39
<i>Aulacomnium palustre</i>	35
<i>Rubus chamaemorus</i>	34
<i>Hylocomium splendens</i>	25
<i>Betula nana</i>	24
<i>Polytrichum commune</i>	23
<i>Sphagnum capillifolium</i> aggr.	22
<i>Drosera rotundifolia</i>	22
<i>Sphagnum fuscum</i>	21
<i>Molinia caerulea</i> aggr.	19
<i>Melampyrum pratense</i>	18
<i>Cladonia rangiferina</i>	15
<i>Carex globularis</i>	15
<i>Pinus mugo</i> subsp. <i>mugo</i>	14
<i>Carex pauciflora</i>	14
<i>Vaccinium microcarpum</i>	13
<i>Chamaedaphne calyculata</i>	13
<i>Betula pendula</i>	13
<i>Dicranum scoparium</i>	12
<i>Dicranum polysetum</i>	12
<i>Sphagnum russowii</i>	11
<i>Frangula alnus</i>	11
<i>Dicranum undulatum</i>	11
<i>Cladonia arbuscula</i> aggr.	11
<i>Avenella flexuosa</i>	11

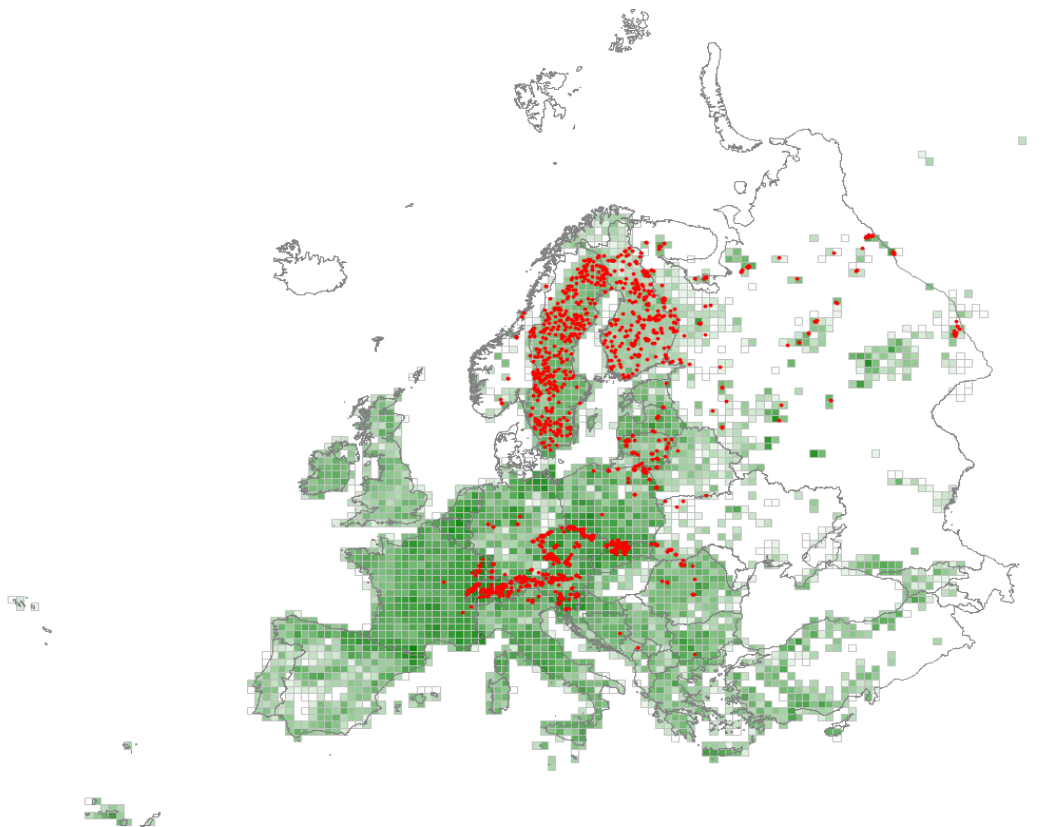
Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus sylvestris</i>	62
<i>Sphagnum recurvum</i> aggr.	26

T3K – *Picea* mire forest

Open woodland dominated by spruce (*Picea abies* or *P. obovata*) on acid peat or around active bogs and poor fens with nutrient-poor ground waters occurring through the boreal zone and locally, where ground conditions permit, in the continental zone.

Remark: Mire forests occurring in ombrotrophic conditions and those occurring in minerotrophic conditions (in fens or at sites influenced by spring water) can be considered as two different habitats characterised by a different floristic composition of the herb layer. This distinction can be seen not only within spruce forests but also within pine forests and larch forests.



Corresponding alliances in EuroVegChecklist 2016

- > PIC-07B Eriophoro-Piceion abietis Passarge 1968
- > PIC-08A Calamagrostio canescentis-Piceion abietis Solomeshch in Willner et al. 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sphagnum girgensohnii</i>	45
<i>Polytrichum commune</i>	30
<i>Picea abies</i>	28
<i>Bazzania trilobata</i>	25

<i>Carex globularis</i>	25
<i>Equisetum sylvaticum</i>	23
<i>Vaccinium myrtillus</i>	21
<i>Sphagnum russowii</i>	21
<i>Vaccinium vitis-idaea</i>	18
<i>Sphagnum recurvum</i> aggr.	18
<i>Pleurozium schreberi</i>	17
<i>Calamagrostis villosa</i>	17
<i>Lycopodium annotinum</i>	17
<i>Hylocomium splendens</i>	16
<i>Betula pubescens</i>	16
<i>Sphagnum magellanicum</i> aggr.	15

Constant species (percentage frequencies)

<i>Picea abies</i>	96
<i>Vaccinium myrtillus</i>	92
<i>Vaccinium vitis-idaea</i>	72
<i>Polytrichum commune</i>	63
<i>Pleurozium schreberi</i>	62
<i>Hylocomium splendens</i>	50
<i>Betula pubescens</i>	46
<i>Sphagnum girgensohnii</i>	43
<i>Sorbus aucuparia</i>	42
<i>Avenella flexuosa</i>	41
<i>Sphagnum recurvum</i> aggr.	37
<i>Dryopteris carthusiana</i> aggr.	36
<i>Eriophorum vaginatum</i>	34
<i>Trientalis europaea</i>	33
<i>Dicranum scoparium</i>	33
<i>Equisetum sylvaticum</i>	32
<i>Pinus sylvestris</i>	29
<i>Vaccinium uliginosum</i>	26
<i>Lycopodium annotinum</i>	26
<i>Maianthemum bifolium</i>	25
<i>Sphagnum magellanicum</i> aggr.	24
<i>Calamagrostis villosa</i>	24
<i>Rubus chamaemorus</i>	23
<i>Oxalis acetosella</i>	22
<i>Carex globularis</i>	22
<i>Aulacomnium palustre</i>	22
<i>Vaccinium oxycoccos</i>	21
<i>Melampyrum pratense</i>	21
<i>Sphagnum russowii</i>	20
<i>Polytrichastrum formosum</i>	20
<i>Luzula pilosa</i>	20
<i>Molinia caerulea</i> aggr.	19
<i>Empetrum nigrum</i> aggr.	19
<i>Sphagnum capillifolium</i> aggr.	18
<i>Linnaea borealis</i>	17
<i>Carex nigra</i>	16
<i>Carex echinata</i>	16
<i>Homogyne alpina</i>	15
<i>Calluna vulgaris</i>	15
<i>Bazzania trilobata</i>	15
<i>Sphagnum palustre</i> aggr.	14

<i>Solidago virgaurea</i>	14
<i>Potentilla erecta</i>	14
<i>Orthilia secunda</i>	14
<i>Deschampsia cespitosa</i> aggr.	14
<i>Neottia cordata</i>	13
<i>Juniperus communis</i> subsp. <i>communis</i>	13
<i>Gymnocarpium dryopteris</i>	13
<i>Dicranum polysetum</i>	13
<i>Polytrichum strictum</i>	12
<i>Melampyrum sylvaticum</i>	11
<i>Carex canescens</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Picea abies</i>	81
<i>Vaccinium myrtillus</i>	29
<i>Sphagnum girgensohnii</i>	25

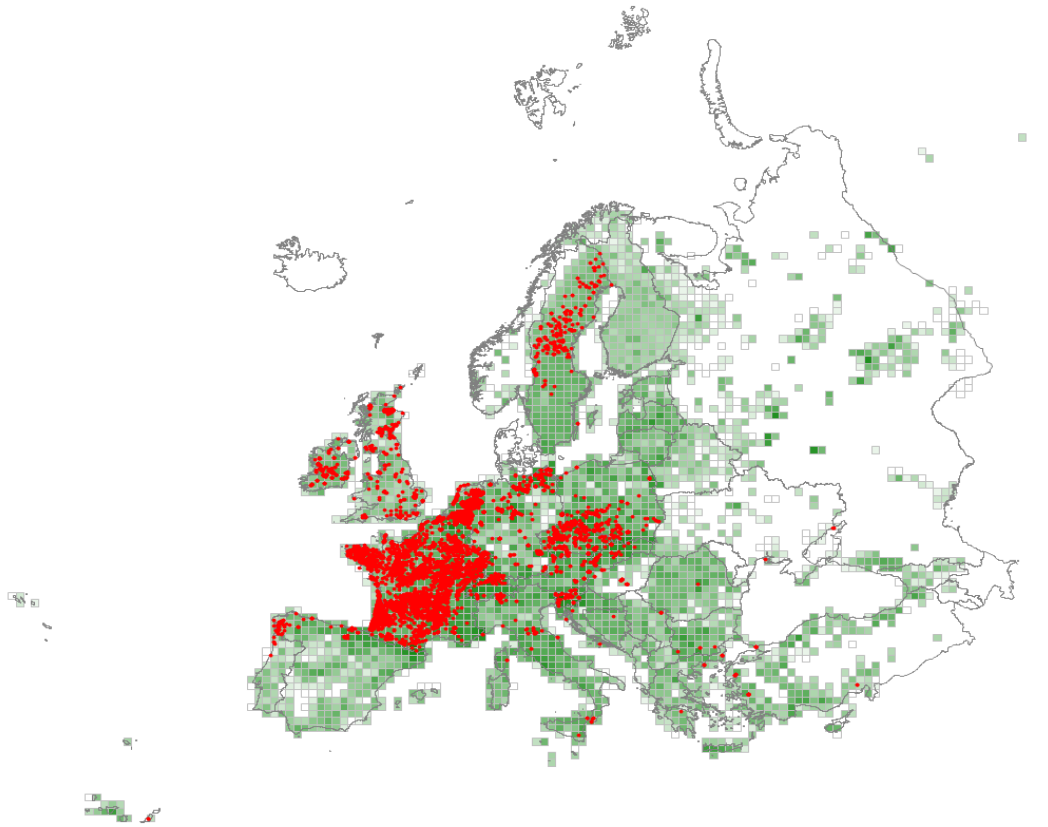
T3L – Coniferous self-sown forest of non site-native trees

[This habitat could not be formally defined in the expert system, because self-sown forests cannot be distinguished from plantations based on the vegetation-plot data.]

Spontaneously established forests composed of exotic conifer species or of European conifers out of their natural range.

T3M – Coniferous plantation of non site-native trees

Cultivated stands of coniferous trees planted for the production of wood, composed of exotic conifer species or of European conifers out of their natural range.



Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Pseudotsuga menziesii</i>	29
<i>Prunus serotina</i>	18
<i>Larix kaempferi</i>	16
<i>Rubus fruticosus</i> aggr.	15

Constant species (percentage frequencies)

<i>Rubus fruticosus</i> aggr.	52
<i>Quercus robur</i>	45
<i>Pinus sylvestris</i>	43
<i>Avenella flexuosa</i>	42
<i>Dryopteris carthusiana</i> aggr.	38
<i>Sorbus aucuparia</i>	34
<i>Betula pendula</i>	33
<i>Molinia caerulea</i> aggr.	31
<i>Frangula alnus</i>	30

<i>Pseudoscleropodium purum</i>	29
<i>Pteridium aquilinum</i>	28
<i>Picea abies</i>	26
<i>Calluna vulgaris</i>	26
<i>Polytrichastrum formosum</i>	25
<i>Hypnum cupressiforme</i> aggr.	25
<i>Vaccinium myrtillus</i>	24
<i>Dicranum scoparium</i>	23
<i>Lonicera periclymenum</i>	21
<i>Fagus sylvatica</i>	21
<i>Pleurozium schreberi</i>	20
<i>Hedera helix</i> aggr.	19
<i>Prunus serotina</i>	18
<i>Pinus pinaster</i>	17
<i>Pseudotsuga menziesii</i>	16
<i>Pinus nigra</i>	15
<i>Ilex aquifolium</i>	15
<i>Teucrium scorodonia</i>	14
<i>Corylus avellana</i>	14
<i>Castanea sativa</i>	14
<i>Quercus rubra</i>	13
<i>Carex pilulifera</i>	13
<i>Ulex europaeus</i>	12
<i>Thuidium tamariscinum</i>	12
<i>Rubus idaeus</i>	12
<i>Quercus petraea</i>	12
<i>Oxalis acetosella</i>	12
<i>Kindbergia praelonga</i>	12
<i>Erica cinerea</i>	12
<i>Cytisus scoparius</i>	12
<i>Crataegus monogyna</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Pinus sylvestris</i>	27
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T3N – Coniferous plantation of site-native trees

[This habitat could not be formally defined in the expert system, because plantations of site-native trees cannot be distinguished from natural forests based on the vegetation-plot data.]

Cultivated stands of coniferous trees planted for the production of wood, composed of site-native conifer species.

T41 – Early-stage natural and semi-natural forest and regrowth

[This habitat could not be formally defined in the expert system, because successional stage is in most cases impossible to identify from the vegetation-plot data.]

Early stages of forest regrowth or newly-colonising forest composed predominantly of young individuals of high-forest species that are still less than 5 m in height. Includes young native forest replanted with indigenous trees and naturally-colonising stands of non-native trees.

T42 – Coppice and early-stage plantation

[This habitat could not be formally defined in the expert system, because coppice management or early-stage plantation is impossible to identify from the vegetation-plot data.]

Forest treated as coppice without standards. Plantations with a dominant canopy of young trees that are still less than 5 m in height. Plantations of dwarf trees or shrubs cultivated for wood or small-tree production, with a regular whole-plant harvesting regime, including short-rotation *Salix* beds for biomass production, Christmas tree crops and tree nurseries.

T43 – Recently felled areas

[This habitat could not be formally defined in the expert system because it cannot be distinguished from various shrubland habitats based on the vegetation-plot data.]

Clear-felled or burnt land that has previously supported a deciduous or coniferous forest. Includes forest with successional vegetation dominated by shrubs provided that these will soon be overtopped by a tree canopy. Clearings with herbaceous vegetation are considered part of R57 Herbaceous forest clearing vegetation although that may be a temporary stage before tree cover returns. Non-coastal habitats on substrates with no or little development of soil, mostly with less than 30% vegetation cover which are dry or only seasonally wet (with the water table at or above ground level for less than half of the year). Habitats which may have a high vegetation cover include crevices of rocks, screes or cliffs and habitats formed by carpets of moss. Includes subterranean non-marine caves and passages including underground waters and disused underground mines and habitats characterised by the presence of permanent snow and surface ice other than marine ice bodies. Natural caves, cave systems, underground waters and subterranean interstitial spaces. Caves and their associated waters harbour varied, but paucispecific, communities of animals, fungi and algae that are restricted to them (troglobiont organisms), or are physiologically and ecologically capable of conducting their entire life cycle within them (troglophile organisms), or are dependent on them for part of the life cycle (subtroglophile organisms). Underground waters not associated with caves (stygon) and interstitial spaces harbour distinctive faunas.

U11 – Cave

[This habitat could not be formally defined in the expert system because it is not based on vegetation.]

Caves originate over very long time periods and are very diverse in extent, configuration and character, some dry, others permanently or seasonally wet, others warm, deoxygenated and variously lit at cave entrances. They occur throughout Europe but are most extensive in karstic areas. The flora and fauna are specialised, adapted to often extreme environmental conditions and include some remarkable troglaphiles or distinctive roosting or seasonally dormant creatures.

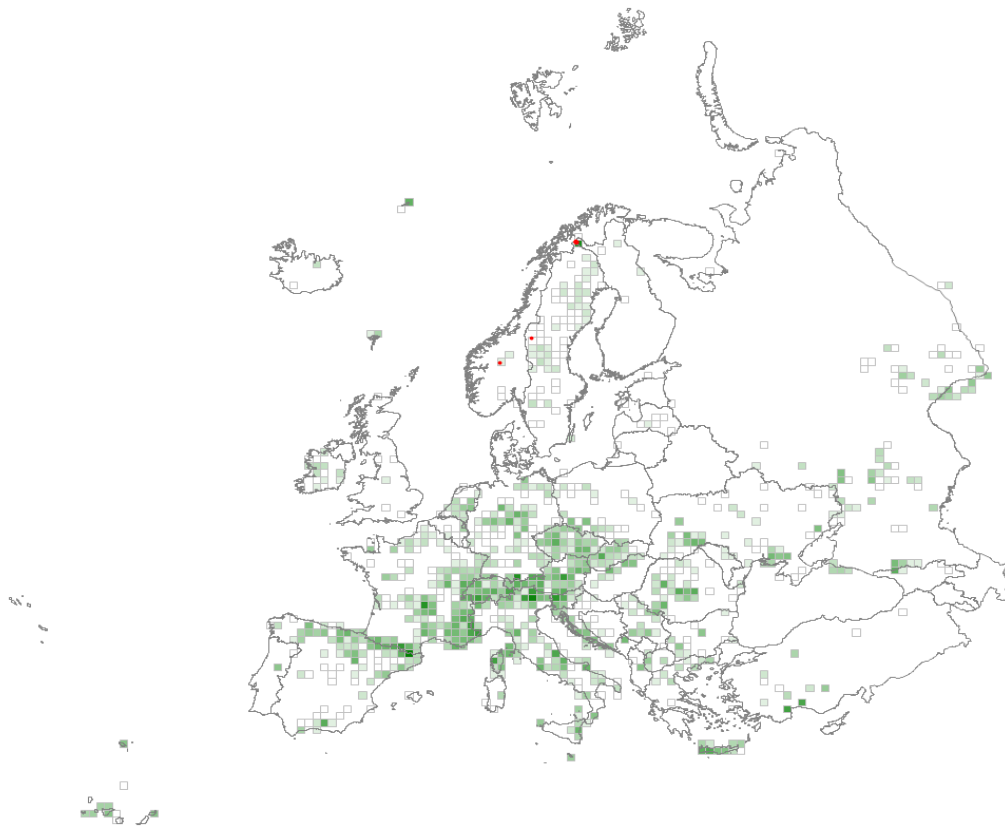
U12 – Disused underground mine and tunnel

[This habitat could not be formally defined in the expert system because it is not based on vegetation.]

Artificial underground spaces. They may constitute important substitution habitats for cave-dwelling bats and for significant subterranean invertebrates such as crustaceans and planarians. Accumulations of boulders, stones, rock fragments, pebbles, gravels or finer material, of non-aeolian and non-fluvial depositional origin, unvegetated, occupied by lichens or mosses, or colonized by sparse herbs or shrubs. Included are screes and scree slopes produced by slope processes, moraines and drumlins originating from glacial deposition, sandar, eskers and kames resulting from fluvio-glacial deposition, block slopes, block streams and block fields constructed by periglacial depositional processes of downslope mass movement, ancient beach deposits constituted by former coastal constructional processes. Deposits originating from aeolian depositional processes (dunes) or from eruptive volcanic activity are not included; they are included in U5 and U6 respectively. High mountain, boreal and mediterranean unstable screes are colonized by highly specialised plant communities. They or their constituting species may also inhabit moraines and other depositional debris accumulations in the same areas. A very few communities form in lowland areas elsewhere.

U21 – Boreal and arctic siliceous scree and block field

Boreal and Arctic sparsely vegetated siliceous boulders, stones or gravel screes occurring over base-poor substrates that harbour acidophilous plant communities. They are of diverse origin, uneven distribution through the region and often subject to continuing natural disturbance through rock falls, freeze-thaw or coastal erosion and deposition. The vegetation typically consists of lichens and bryophytes with different growth forms dominating different microhabitats, eg crustose and foliose lichens and small-cushion forming bryophytes on the sides of boulders, and fruticose lichens and mat forming bryophytes in the hollows between blocks. Where vascular plants find enough soil between blocks, they contribute a sparse cover.



Corresponding alliances in EuroVegChecklist 2016

- > THL-06A Antitrichio-Rhodiolion roseae Hadač 1971

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Trisetum spicatum</i>	41
<i>Minuartia biflora</i>	38
<i>Antennaria alpina</i>	37
<i>Agrostis mertensii</i>	35

<i>Gnaphalium supinum</i>	34
<i>Cassiope hypnoides</i>	33
<i>Viola biflora</i>	33
<i>Sibbaldia procumbens</i>	31
<i>Calamagrostis lapponica</i>	31
<i>Carex bigelowii</i>	29
<i>Hieracium lachenalii</i>	28
<i>Carex lachenalii</i>	28
<i>Astragalus alpinus</i>	25
<i>Veronica alpina</i>	25
<i>Oxyria digyna</i>	24
<i>Salix polaris</i>	23
<i>Rhodiola rosea</i>	23
<i>Bistorta vivipara</i>	23
<i>Festuca ovina</i>	22
<i>Salix herbacea</i>	21
<i>Phyllodoce caerulea</i>	21
<i>Solidago virgaurea</i>	20
<i>Juncus trifidus</i>	18
<i>Botrychium boreale</i>	18
<i>Luzula spicata</i>	16

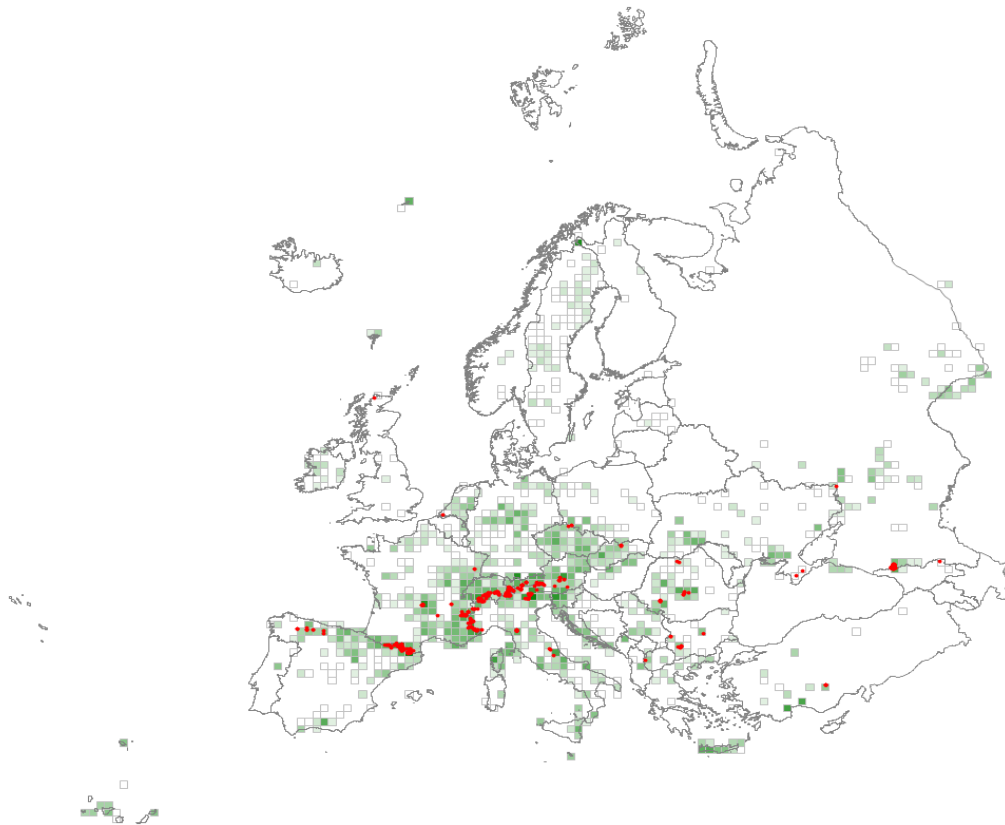
Constant species (percentage frequencies)

<i>Festuca ovina</i>	78
<i>Viola biflora</i>	70
<i>Solidago virgaurea</i>	67
<i>Bistorta vivipara</i>	59
<i>Vaccinium vitis-idaea</i>	56
<i>Carex bigelowii</i>	56
<i>Gnaphalium supinum</i>	52
<i>Anthoxanthum odoratum</i> aggr.	52
<i>Avenella flexuosa</i>	48
<i>Hieracium lachenalii</i>	44
<i>Sibbaldia procumbens</i>	41
<i>Salix herbacea</i>	41
<i>Antennaria alpina</i>	41
<i>Calamagrostis lapponica</i>	37
<i>Veronica alpina</i>	33
<i>Trisetum spicatum</i>	33
<i>Juncus trifidus</i>	33
<i>Cassiope hypnoides</i>	33
<i>Campanula rotundifolia</i>	33
<i>Agrostis mertensii</i>	33
<i>Ranunculus acris</i> aggr.	30
<i>Trientalis europaea</i>	26
<i>Phyllodoce caerulea</i>	26
<i>Oxyria digyna</i>	26
<i>Luzula spicata</i>	26
<i>Linnaea borealis</i>	26
<i>Selaginella selaginoides</i>	22
<i>Saussurea alpina</i> aggr.	22
<i>Rhodiola rosea</i>	22
<i>Vaccinium myrtillus</i>	19
<i>Thalictrum alpinum</i>	19
<i>Salix polaris</i>	19

<i>Minuartia biflora</i>	19
<i>Luzula campestris</i> aggr.	19
<i>Carex lachenalii</i>	19
<i>Astragalus alpinus</i>	19
<i>Salix glauca</i>	15
<i>Pyrola minor</i>	15
<i>Potentilla crantzii</i>	15
<i>Poa alpina</i>	15
<i>Luzula pilosa</i>	15
<i>Juniperus communis</i> subsp. <i>nana</i>	15
<i>Geranium sylvaticum</i> aggr.	15
<i>Huperzia selago</i>	11
<i>Deschampsia cespitosa</i> aggr.	11
<i>Carex vaginata</i>	11

U22 – Temperate high-mountain siliceous scree

Siliceous, mostly acidic screes, moraines or stone rivers found at high altitudes and cool sites in mountain ranges through the nemoral zone of Europe. The screes are colonised by a range of mostly perennial, mostly acidophilous plants, the composition strongly influenced by altitude and regional climate and often including many relic and local endemic species, though less than on calcareous screes. Often the vegetation cover is sparse but these screes can be more humid because of the impervious and water-retentive character of the substrates and long snow-lie also encourages luxuriant growth and accumulation of humus.



Corresponding alliances in EuroVegChecklist 2016

- > LAM-01A *Chaerophyllion humilis* Onipchenko 2002
- > LAM-01B *Scrophulario minimae-Symphylomion graveolentis* Belonovskaya et al. 2014
- > THL-03B *Androsacion ciliatae* Rivas-Mart. 1988
- > THL-06B *Androsacion alpinae* Br.-Bl. in Br.-Bl. et Jenny 1926
- > THL-06C *Veronicion baumgartenii* Coldea 1991
- > THL-06D *Polygono alpini-Poion laxae* D. Lakušić et Mucina ined.
- > THL-06E *Dryopteridion oreadis* Rivas-Mart. 1977 corr. Rivas-Mart. et al. 1984
- > THL-06F *Senecionion leucophylli* Br.-Bl. 1948
- <> THL-06G *Linario saxatilis-Senecionion carpetani* Rivas-Mart. 1964

Characteristic species combination

Diagnostic species (phi coefficient * 100)

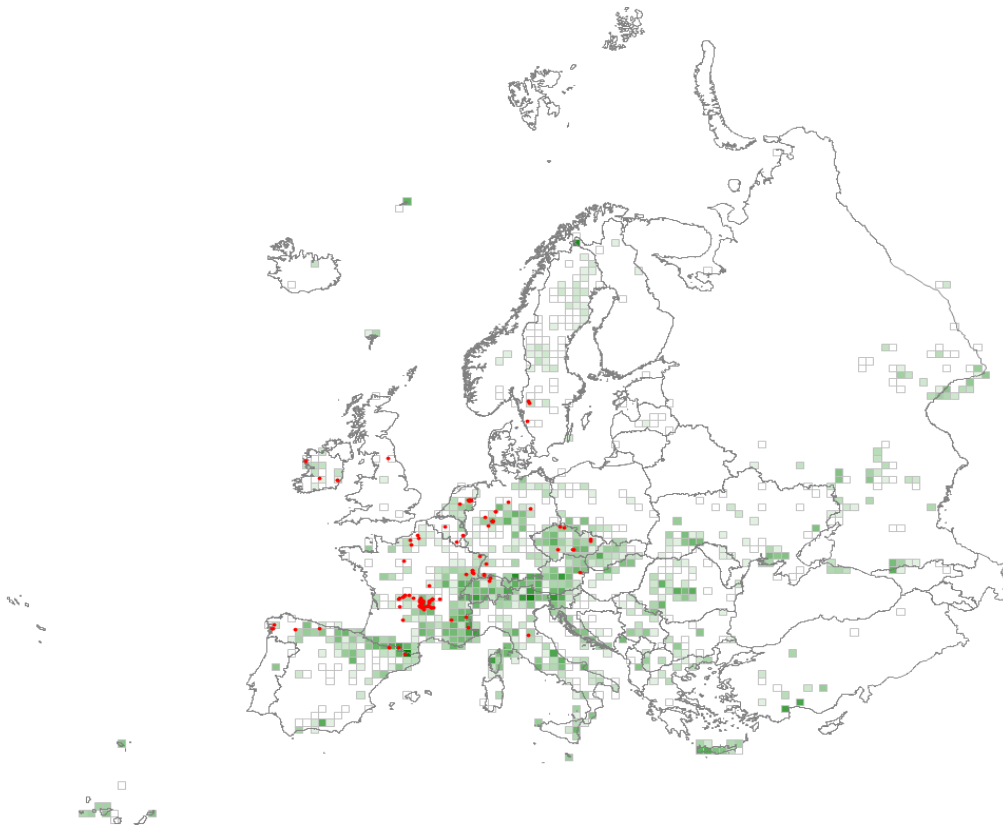
<i>Ranunculus parnassifolius</i>	44
<i>Galeopsis pyrenaica</i>	37
<i>Viola diversifolia</i>	32
<i>Poa laxa</i>	28
<i>Saxifraga bryoides</i>	26
<i>Galium cometerhizon</i>	24
<i>Jacobaea leucophylla</i>	23
<i>Ranunculus glacialis</i>	23
<i>Veronica telephiifolia</i>	22
<i>Xatartia scabra</i>	21
<i>Cerastium pyrenaicum</i>	18
<i>Iberis spathulata</i>	16
<i>Saxifraga moschata</i>	15
<i>Oxyria digyna</i>	15
<i>Minuartia recurva</i>	15
<i>Leucanthemopsis alpina</i>	15

Constant species (percentage frequencies)

<i>Ranunculus parnassifolius</i>	28
<i>Saxifraga bryoides</i>	19
<i>Poa laxa</i>	18
<i>Poa alpina</i>	18
<i>Oxyria digyna</i>	17
<i>Galeopsis pyrenaica</i>	17
<i>Leucanthemopsis alpina</i>	16
<i>Ranunculus glacialis</i>	15
<i>Minuartia recurva</i>	14
<i>Saxifraga moschata</i>	13
<i>Cardamine resedifolia</i>	13
<i>Viola diversifolia</i>	12
<i>Sedum alpestre</i>	11
<i>Galium cometerhizon</i>	11
<i>Festuca airoides</i>	11

U23 – Temperate, lowland to montane siliceous scree

Siliceous screes and moraines of warm exposures, derived from a diversity of sedimentary, igneous and metamorphic rocks on the lower slopes of mountain ranges of the nemoral zone. Often the screes are mixed with fine soil. Vegetation can be completely lacking, but moss or lichen-dominated, species-poor communities can occur on rock surfaces and fine soil accumulated in crevices can support a variety of forb or fern-dominated vegetation. Siliceous screes in general have a lower species richness than calcareous screes but ferns can be diverse and luxuriant. Natural succession on more stable screes results in the development of scrub and woodland, not included here.



Corresponding alliances in EuroVegChecklist 2016

- > PHA-01C Sesamoidion suffruticosae Ortiz et Pulgar 2000
- > THL-07A Galeopsis Oberd. 1957
- > THL-07B Galeopsis pyrenaicae Rivas-Mart. 1977

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Galeopsis segetum</i>	43
<i>Digitalis purpurea</i>	33
<i>Senecio viscosus</i>	25

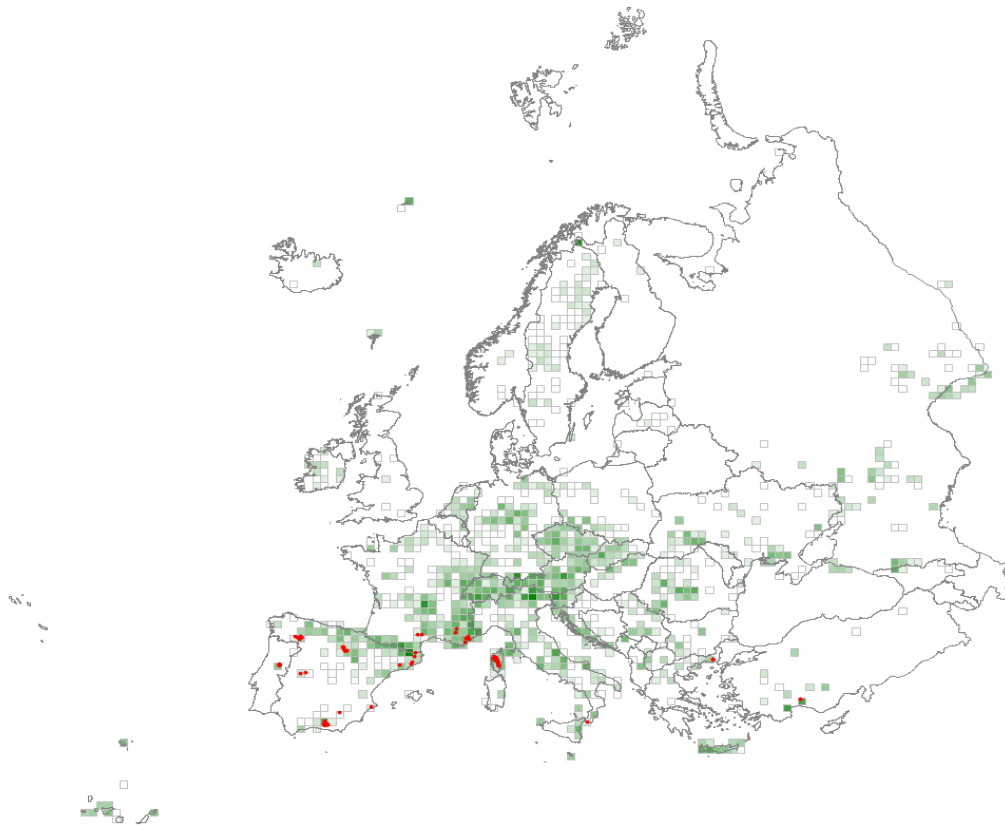
<i>Linaria repens</i>	24
<i>Epilobium collinum</i>	22

Constant species (percentage frequencies)

<i>Digitalis purpurea</i>	46
<i>Avenella flexuosa</i>	29
<i>Galeopsis segetum</i>	22
<i>Campanula rotundifolia</i>	22
<i>Rumex acetosella</i>	21
<i>Linaria repens</i>	21
<i>Agrostis capillaris</i>	21
<i>Dryopteris carthusiana</i> aggr.	18
<i>Senecio viscosus</i>	17
<i>Pilosella officinarum</i>	17
<i>Teucrium scorodonia</i>	16
<i>Cerastium arvense</i>	16
<i>Rubus idaeus</i>	15
<i>Cytisus scoparius</i>	15
<i>Fagus sylvatica</i>	14
<i>Achillea millefolium</i> aggr.	14
<i>Thymus pulegioides</i>	13
<i>Sedum rupestre</i>	12
<i>Oxalis acetosella</i>	12
<i>Galeopsis tetrahit</i> aggr.	12
<i>Epilobium collinum</i>	12
<i>Poa nemoralis</i>	11
<i>Anthoxanthum odoratum</i> aggr.	11

U24 – Mediterranean siliceous scree

Siliceous screes derived from various sedimentary, igneous and metamorphic rocks occurring on lower slopes in the Mediterranean. Rock debris is often mixed with fine soil. Vegetation cover can be completely lacking or consisting only of bryophyte and lichen communities. In most cases, however, these screes support open vegetation of vascular plants, which tends to be poorer in species than Mediterranean calcareous screes. Natural succession is slower than in temperate screes. Screes overgrown with shrublands or forest do not belong to this habitat.



Corresponding alliances in EuroVegChecklist 2016

- > PHA-01A Gymnogrammo-Scrophularion Rivas Goday 1964
- > PHA-01B Saxifragion continentalis Rivas-Mart. in Rivas-Mart. et al. 1986
- > THL-06G Linario saxatilis-Senecionion carpetani Rivas-Mart. 1964
- > THL-06H Holcicion caespitosi Quézel 1953

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cryptogramma crista</i>	27
<i>Epilobium anagallidifolium</i>	27
<i>Viola crassiuscula</i>	25

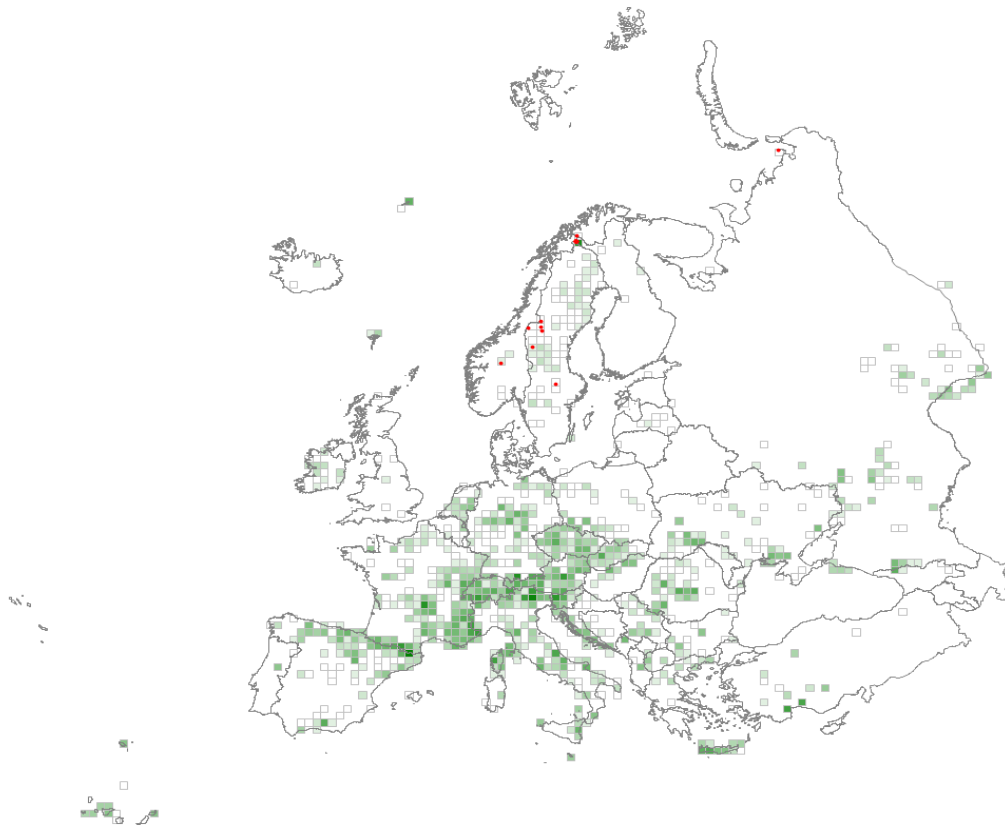
<i>Viola argenteria</i>	25
<i>Reseda complicata</i>	24
<i>Festuca clementei</i>	24
<i>Cardamine resedifolia</i>	22
<i>Chaenorhinum glareosum</i>	21
<i>Poa cenisia</i>	21
<i>Minuartia bulgarica</i>	19
<i>Sedum alpestre</i>	18
<i>Silene foetida</i>	18
<i>Stachys corsica</i>	18
<i>Ranunculus marschlinii</i>	18
<i>Leucanthemopsis pectinata</i>	17
<i>Hormathophylla purpurea</i>	17
<i>Biscutella glacialis</i>	16
<i>Linaria glacialis</i>	16
<i>Saxifraga pedemontana</i>	16
<i>Carduus carlinoides</i>	16
<i>Arenaria tetraquetra</i>	16
<i>Sempervivum minutum</i>	15
<i>Paronychia polygonifolia</i>	15

Constant species (percentage frequencies)

<i>Cryptogramma crista</i>	21
<i>Hypochaeris robertia</i>	19
<i>Cardamine resedifolia</i>	19
<i>Epilobium anagallidifolium</i>	18
<i>Digitalis purpurea</i>	18
<i>Sedum alpestre</i>	17
<i>Avenella flexuosa</i>	15
<i>Poa cenisia</i>	14
<i>Paronychia polygonifolia</i>	13
<i>Cerastium soleirolii</i>	13
<i>Stachys corsica</i>	12
<i>Festuca clementei</i>	12
<i>Saxifraga pedemontana</i>	11
<i>Sagina pilifera</i>	11
<i>Oxyria digyna</i>	11
<i>Jasione crispa</i> aggr.	11

U25 – Boreal and arctic base-rich scree and block field

Boreal and arctic base-rich scree and block fields comprise talus or freeze-thaw block fields of calcareous rocks in the southern boreal to arctic regions, mainly in the Scandinavian Mountain range, Iceland and Svalbard. Because of the large variation in climate, the habitat harbours a large diversity of species and plant communities, but this habitat includes only the sparse assemblages of vascular plants growing in sparse patches. These are dependent on the natural or seminatural disturbance regime, periodic rockfall and continuing instability of the substrate in the case of scree, and in some regions also a long tradition of grazing.



Corresponding alliances in EuroVegChecklist 2016

- > THL-01M Arenarion norvegicae Nordhagen 1935

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Saussurea alpina</i> aggr.	55
<i>Thalictrum alpinum</i>	37
<i>Rhinanthus groenlandicus</i>	32
<i>Tofieldia pusilla</i>	29
<i>Bistorta vivipara</i>	28

<i>Viola biflora</i>	27
<i>Selaginella selaginoides</i>	26
<i>Carex vaginata</i>	24
<i>Carex bigelowii</i>	21
<i>Cirsium heterophyllum</i> aggr.	19
<i>Trisetum spicatum</i>	19
<i>Equisetum pratense</i>	19
<i>Antennaria canescens</i>	19
<i>Juncus biglumis</i>	18
<i>Antennaria dioica</i>	18
<i>Salix myrsinifolia</i>	18
<i>Epilobium hornemannii</i>	18
<i>Stellaria crassifolia</i>	17
<i>Ranunculus acris</i> aggr.	17
<i>Carex stenolepis</i>	17
<i>Bartsia alpina</i>	17
<i>Antennaria alpina</i>	17
<i>Festuca ovina</i>	17
<i>Potentilla nivea</i>	16
<i>Geranium sylvaticum</i> aggr.	16
<i>Agrostis mertensii</i>	16
<i>Salix reticulata</i>	16
<i>Arenaria pseudofrigida</i>	16
<i>Salix polaris</i>	15
<i>Trollius europaeus</i>	15

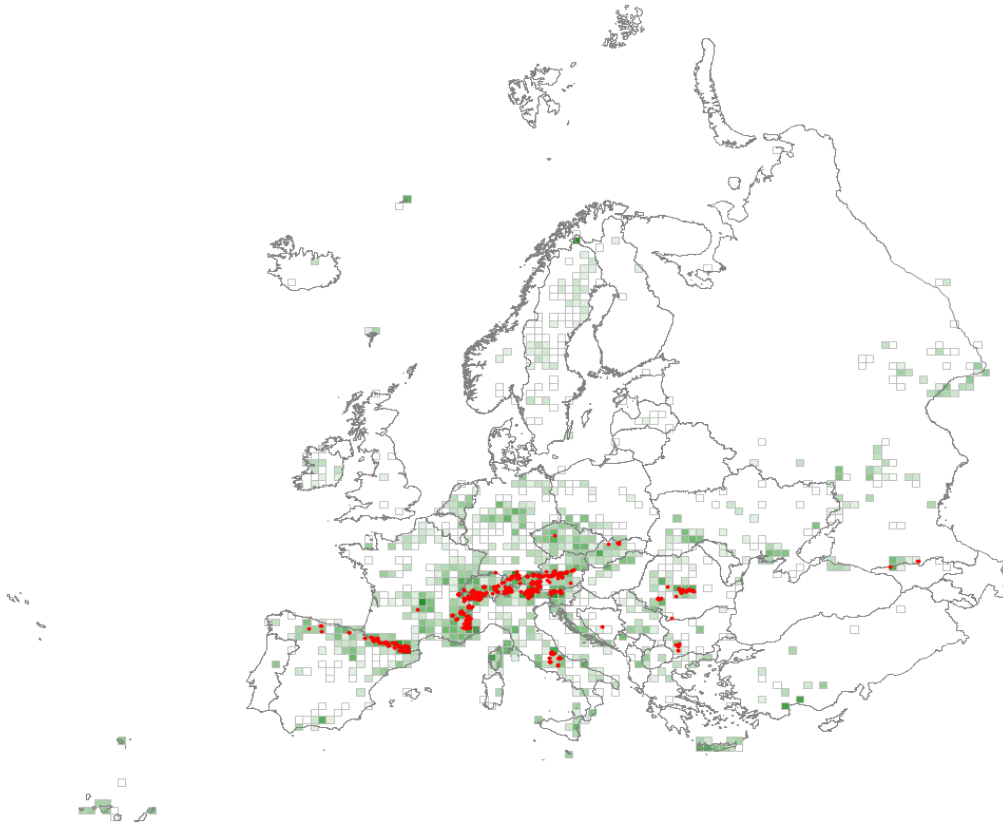
Constant species (percentage frequencies)

<i>Saussurea alpina</i> aggr.	88
<i>Bistorta vivipara</i>	72
<i>Viola biflora</i>	59
<i>Festuca ovina</i>	59
<i>Vaccinium vitis-idaea</i>	56
<i>Thalictrum alpinum</i>	50
<i>Ranunculus acris</i> aggr.	47
<i>Solidago virgaurea</i>	44
<i>Selaginella selaginoides</i>	44
<i>Carex bigelowii</i>	41
<i>Geranium sylvaticum</i> aggr.	38
<i>Empetrum nigrum</i> aggr.	34
<i>Vaccinium uliginosum</i>	31
<i>Campanula rotundifolia</i>	31
<i>Anthoxanthum odoratum</i> aggr.	31
<i>Vaccinium myrtillus</i>	28
<i>Equisetum arvense</i>	28
<i>Carex vaginata</i>	28
<i>Betula nana</i>	28
<i>Tofieldia pusilla</i>	25
<i>Parnassia palustris</i>	25
<i>Deschampsia cespitosa</i> aggr.	25
<i>Bartsia alpina</i>	25
<i>Avenella flexuosa</i>	25
<i>Antennaria dioica</i>	25
<i>Andromeda polifolia</i>	25
<i>Melampyrum pratense</i>	22
<i>Hieracium lachenalii</i>	22

<i>Equisetum pratense</i>	22
<i>Equisetum palustre</i>	22
<i>Trollius europaeus</i>	19
<i>Salix herbacea</i>	19
<i>Poa alpina</i>	19
<i>Cirsium heterophyllum</i> aggr.	19
<i>Antennaria alpina</i>	19
<i>Veronica alpina</i>	16
<i>Trisetum spicatum</i>	16
<i>Salix reticulata</i>	16
<i>Potentilla erecta</i>	16
<i>Potentilla crantzii</i>	16
<i>Pinguicula vulgaris</i>	16
<i>Phyllodoce caerulea</i>	16
<i>Melampyrum sylvaticum</i>	16
<i>Luzula campestris</i> aggr.	16
<i>Linnaea borealis</i>	16
<i>Huperzia selago</i>	16
<i>Gnaphalium supinum</i>	16
<i>Calamagrostis lapponica</i>	16
<i>Agrostis mertensii</i>	16
<i>Trientalis europaea</i>	12
<i>Trichophorum cespitosum</i>	12
<i>Sibbaldia procumbens</i>	12
<i>Salix polaris</i>	12
<i>Salix myrsinifolia</i>	12
<i>Salix glauca</i>	12
<i>Rumex acetosa</i>	12
<i>Rhinanthus groenlandicus</i>	12
<i>Pyrola rotundifolia</i>	12
<i>Pedicularis palustris</i>	12
<i>Nardus stricta</i>	12
<i>Molinia caerulea</i> aggr.	12
<i>Luzula pilosa</i>	12
<i>Gymnadenia conopsea</i>	12
<i>Cerastium alpinum</i>	12
<i>Cassiope tetragona</i>	12
<i>Carex capillaris</i>	12
<i>Aulacomnium palustre</i>	12

U26 – Temperate high-mountain base-rich scree and moraine

Calcareous and calcschist screes occurring at high altitudes and cool sites in high mountain ranges through the nemoral zone of Europe. The screes are colonised by mostly perennial basiphilous species, comprising often rich assemblages with many local and endemic species.



Corresponding alliances in EuroVegChecklist 2016

- > THL-01A *Thlaspion rotundifolii* Jenny-Lips 1930
- > THL-01B *Papaverion tatrici* Pawłowski et al. 1928 corr. Valachovič 1995
- > THL-01C *Papavero-Thymion pulcherrimi* Pop 1968
- > THL-01D *Iberidion spathulatae* Br.-Bl. 1948
- > THL-01E *Linarion filicaulis* Rivas-Mart. ex Fernández Prieto 1983
- > THL-01F *Saxifragion praetermissae* Rivas-Mart. 1977
- > THL-01J *Saxifragion prenjae* Lakušić 1968
- > THL-01K *Bunion alpini* Lakušić 1968
- > THL-01L *Veronico-Papaverion degenii* Mucina et al. 1990
- > THL-03A *Drabion hoppeanae* Zollitsch in Merxmüller et Zollitsch 1967
- > THL-04A *Petasition paradoxo* Zollitsch ex Lippert 1966
- > THL-04B *Arabidion alpinae* Béguin in Richard 1971
- > THL-04C *Petasition doerfleri* Lakušić 1968

Characteristic species combination

Diagnostic species (phi coefficient * 100)

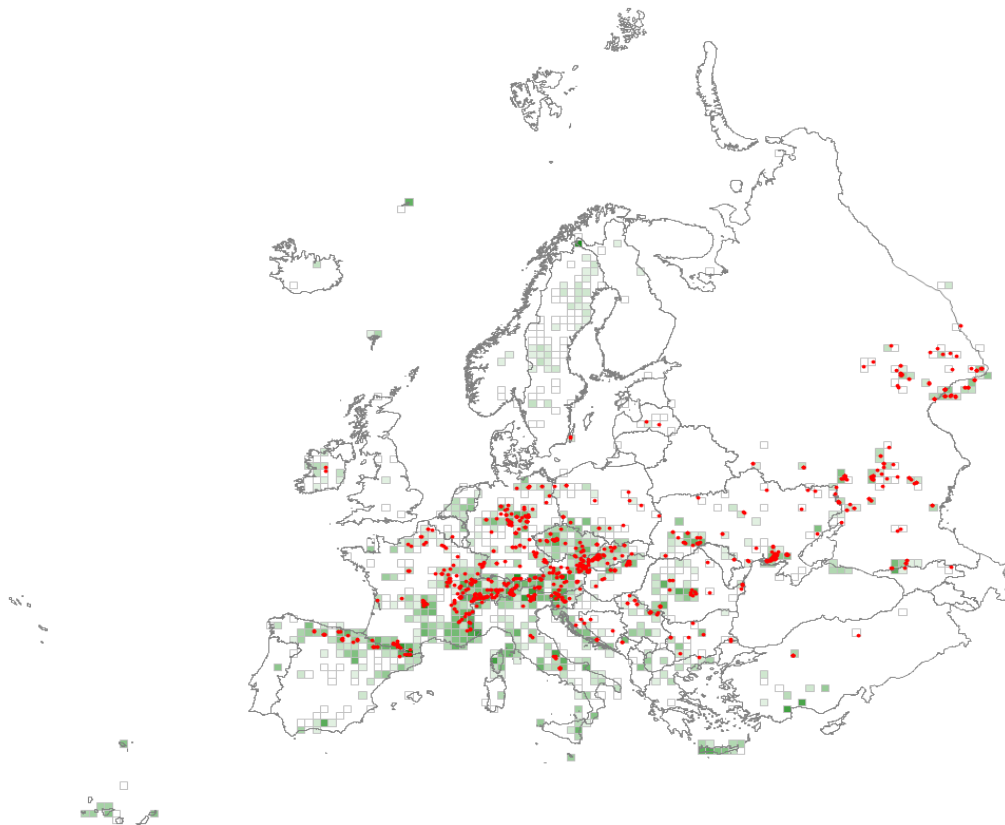
<i>Linaria alpina</i>	37
<i>Noccaea rotundifolia</i>	35
<i>Hornungia alpina</i>	34
<i>Moehringia ciliata</i>	32
<i>Poa minor</i>	31
<i>Galium megalospermum</i>	31
<i>Trisetum distichophyllum</i>	28
<i>Scorzoneroides montana</i>	26
<i>Cerastium latifolium</i>	22
<i>Ranunculus seguieri</i>	21
<i>Papaver rhaeticum</i>	20
<i>Crepis pygmaea</i>	19
<i>Saxifraga oppositifolia</i>	18
<i>Achillea atrata</i>	17
<i>Campanula cochleariifolia</i>	17
<i>Saxifraga sedoides</i>	17
<i>Cerastium carinthiacum</i>	16
<i>Arabis alpina</i>	16
<i>Rumex scutatus</i>	15

Constant species (percentage frequencies)

<i>Hornungia alpina</i>	32
<i>Linaria alpina</i>	30
<i>Saxifraga oppositifolia</i>	24
<i>Poa alpina</i>	24
<i>Arabis alpina</i>	22
<i>Noccaea rotundifolia</i>	21
<i>Moehringia ciliata</i>	19
<i>Campanula cochleariifolia</i>	19
<i>Poa minor</i>	17
<i>Silene vulgaris</i>	16
<i>Trisetum distichophyllum</i>	14
<i>Rumex scutatus</i>	14
<i>Scorzoneroides montana</i>	13
<i>Galium megalospermum</i>	12
<i>Festuca quadriflora</i>	12
<i>Viola biflora</i>	11
<i>Silene acaulis</i>	11
<i>Saxifraga aizoides</i>	11
<i>Myosotis alpestris</i>	11

U27 – Temperate, lowland to montane base-rich scree

Screes of mostly coarse, unstabilized material derived from calcareous and dolomitic bedrocks in the lowlands, foothills and sub-montane zone of temperate Europe. Vegetation can be completely lacking, but rock surfaces can have bryophyte and lichen communities and, where crevices accumulate soil, the vascular contingent can be diverse and lush. Natural succession following stabilization of screes allows encroachment of shrubs and trees, vegetation not included here.



Corresponding alliances in EuroVegChecklist 2016

- > DRY-01A *Peltarion alliaceae* Horvatić in Domac 1957
- > THL-05B *Leontodontion hyoseroidis* Duvigneaud et al. 1970
- > THL-05C *Stipion calamagrostis* Jenny-Lips ex Br.-Bl. 1950

Characteristic species combination

Diagnostic species (phi coefficient * 100)

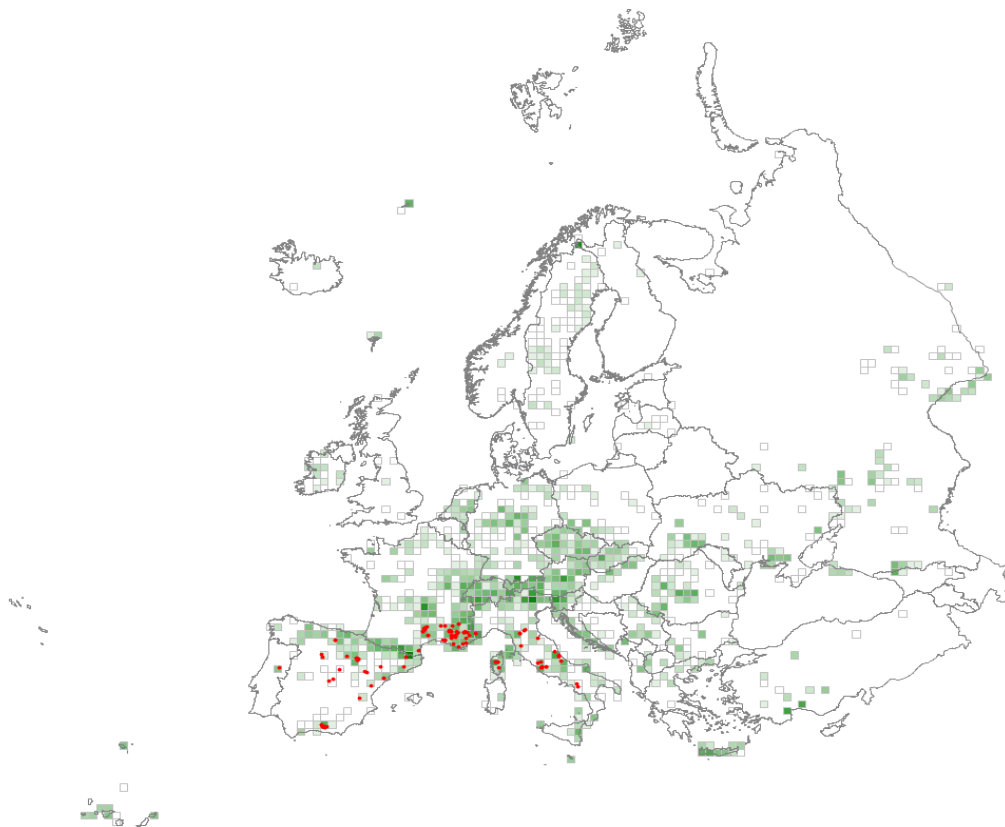
<i>Galeopsis angustifolia</i>	21
<i>Microrrhinum minus</i>	20

Constant species (percentage frequencies)

<i>Euphorbia seguieriana</i>	28
<i>Microrrhinum minus</i>	15
<i>Vincetoxicum hirundinaria</i>	14
<i>Galeopsis angustifolia</i>	14
<i>Artemisia campestris</i>	12

U28 – Western Mediterranean base-rich scree

Calcareous and ultrabasic scree, with boulders, rock debris and riverine gravel derived from sedimentary and metamorphic rocks, ultramafics and basic volcanics occurring through the western Mediterranean, from lowlands to the high mountains. Epilithic lichens and bryophytes may be very diverse, particularly in the mountains, where they are mostly found in crevices and other shady and humid microsites of immobile boulders. The vascular plant vegetation comprises hemicryptophytes and chamaephytes adapted to the mechanical disturbance caused by mobile screes, shortages in water supply and lack of fine-grained soil. The habitat becomes scarcer and more scattered to the foothills and lowlands and more prone to be affected by human disturbances, such as quarrying and infrastructure development but high mountain screes are usually well preserved and therefore in a very natural state.



Corresponding alliances in EuroVegChecklist 2016

- > DRY-03A *Linarion purpureae* S. Brullo 1984
- > DRY-03B *Arrhenatherion sardoi* Gamisans 1989
- > DRY-03C *Ptilostemone casabonae*-*Euphorbion cupanii* Angiolini et al. 2005
- <> PHA-01D *Melico minutae*-*Phagnalium intermedii* Rivas Goday et Esteve 1972
- <> PHA-01E *Calendulo lusitanicae*-*Antirrhinion linkiani* Ladero et al. 1991
- > PHA-01F *Andryalium ragusinae* Rivas Goday et Esteve 1972
- > THL-01G *Platycapno saxicolae*-*Iberidion granatensis* Rivas Goday et Rivas-Mart. 1963
- > THL-01H *Festucion dimorphae* Bonin 1978
- > THL-01I *Thlaspion stylosi* Feoli-Chiapella et Feoli 1977

- > THL-05A Pimpinello tragiium-Gouffeion arenarioidis Br.-Bl. in Br.-Bl. et al. 1952
- > THL-09B Scrophularion sciophilae O. de Bolòs 1957

Characteristic species combination

Diagnostic species (phi coefficient * 100)

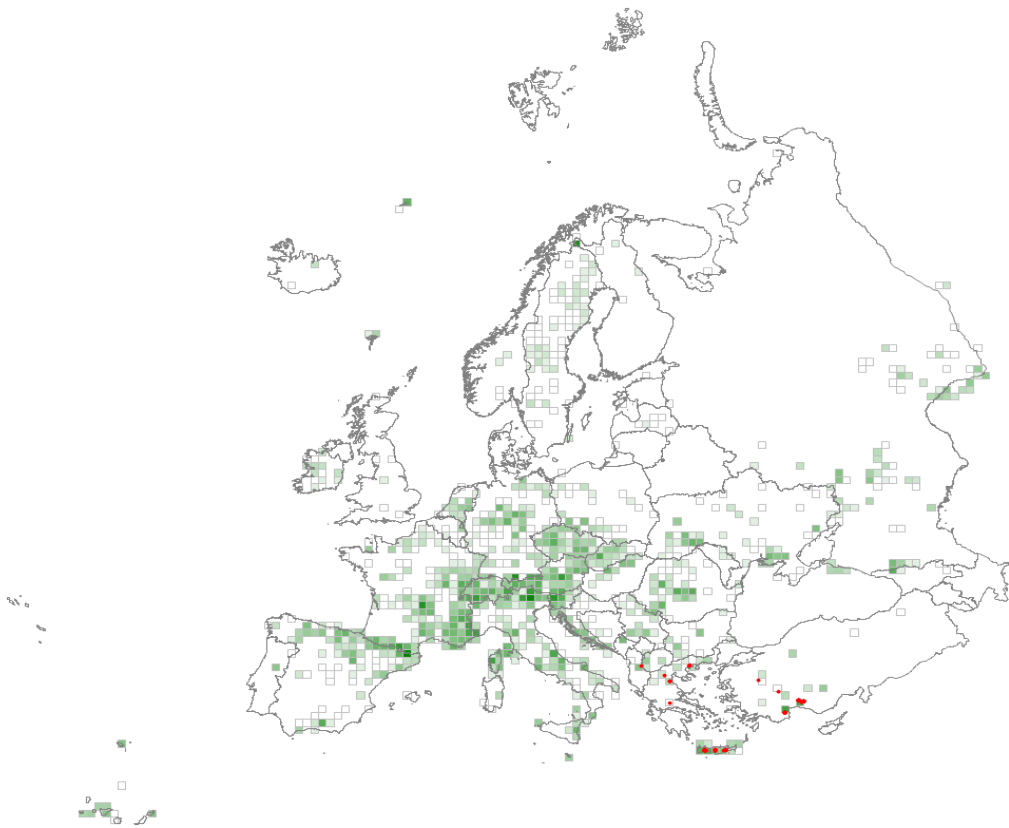
<i>Erodium daucoides</i>	23
<i>Rumex scutatus</i>	22
<i>Saxifraga erioblasta</i>	22
<i>Galeopsis angustifolia</i>	20
<i>Draba hispanica</i>	20
<i>Ptychotis saxifraga</i>	19
<i>Hormathophylla longicaulis</i>	17

Constant species (percentage frequencies)

<i>Rumex scutatus</i>	21
<i>Picris hieracioides</i>	15
<i>Galeopsis angustifolia</i>	13
<i>Vincetoxicum hirundinaria</i>	12
<i>Hieracium murorum</i>	12
<i>Achnatherum calamagrostis</i>	12

U29 – Eastern Mediterranean base-rich scree

Calcareous and ultrabasic screes, with talus, boulder fields, glacier forefields, rock debris and riverine gravel banks, from the lowlands upwards to subnival levels in the eastern Mediterranean. Apart from epilithic bryophytes and lichens on rock outcrops and stable boulders, the vegetation consists mainly of specialist vascular plants adapted to the mobility of scree materials, the scarcity of fine-grained soil, mechanical disturbance, shortage of water and other physiological stresses. Towards the foothills and lowlands the habitat is rarer and more scattered but more prone to be affected by human disturbances, especially in terms of species composition. However, high mountain screes are usually well preserved, most within protected areas, and therefore in a very natural state.



Corresponding alliances in EuroVegChecklist 2016

- > DRY-01B *Silenion marginatae* Lakušić 1968
- > DRY-01D *Silenion caesia* Quézel 1964
- > DRY-01E *Campanulion hawkinsianae* Quézel 1967
- > DRY-01F *Alyso sphaciotici-Valantion apricae* Bergmeier 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

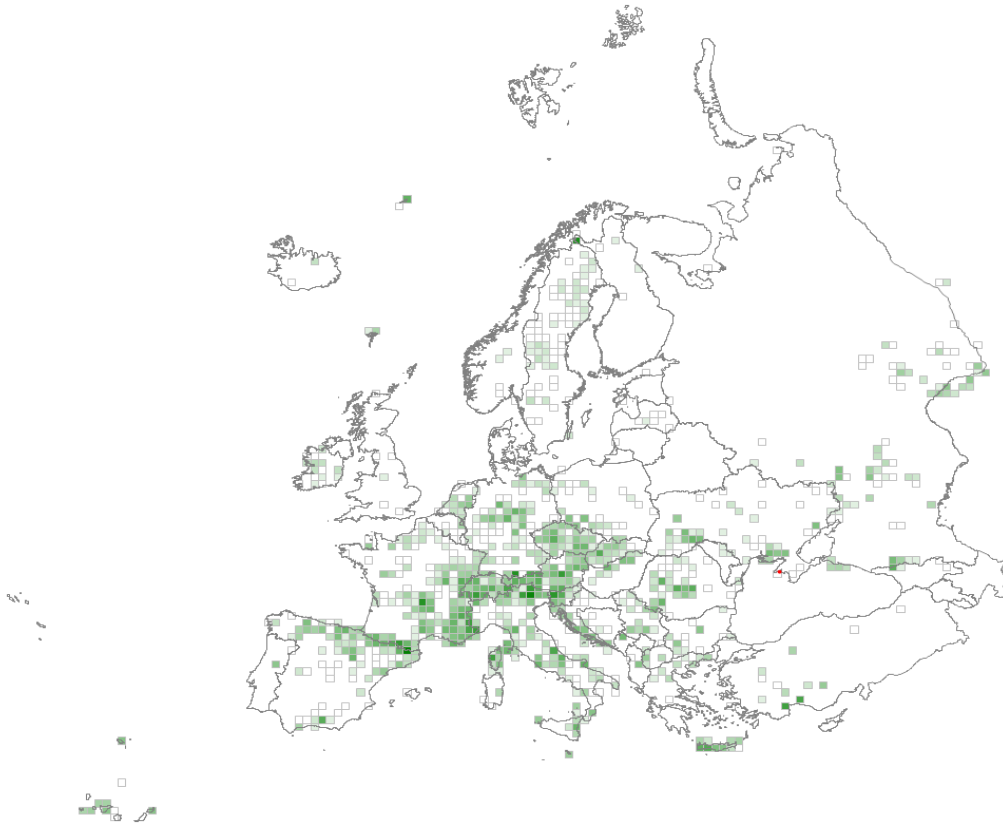
<i>Cicer incisum</i>	48
<i>Peucedanum alpinum</i>	46
<i>Euphorbia herniariifolia</i>	41
<i>Silene variegata</i>	39
<i>Elytrigia lazica</i>	37
<i>Ranunculus brevifolius</i>	36
<i>Scrophularia depauperata</i>	34
<i>Silene odontopetala</i>	33
<i>Nepeta sphaciotica</i>	31
<i>Valantia aprica</i>	31
<i>Lamium eriocephalum</i>	29
<i>Asyneuma linifolium</i>	29
<i>Satureja cuneifolia</i>	29
<i>Heldreichia bupleurifolia</i>	29
<i>Vavilovia formosa</i>	28
<i>Scutellaria hirta</i>	27
<i>Fritillaria crassifolia</i>	27
<i>Odontarrhena fragillima</i>	26
<i>Viola fragrans</i>	26
<i>Alyssum sphacioticum</i>	25
<i>Sobolewskia clavata</i>	24
<i>Scrophularia myriophylla</i>	24
<i>Satureja spinosa</i>	23
<i>Sedum magellense</i>	22
<i>Viola crassifolia</i>	22
<i>Heldreichia bourgaei</i>	22
<i>Senecio fruticulosus</i>	22
<i>Lomelosia sphaciotica</i>	22
<i>Galium incanum</i>	20
<i>Ferulago trachycarpa</i>	20
<i>Scrophularia candelabrum</i>	20
<i>Dianthus sphacioticus</i>	20
<i>Cynoglossum sphacioticum</i>	20
<i>Arenaria eliasiana</i>	20
<i>Cyanus bourgaei</i>	19
<i>Alyssum idaeum</i>	19
<i>Mattiastrum lithospermifolium</i>	19
<i>Ricotia varians</i>	19
<i>Rosularia sempervivum</i>	18
<i>Ranunculus cadmicus</i>	18
<i>Campanula isaurica</i>	17
<i>Acantholimon ulicinum</i>	17
<i>Campanula cymbalaria</i>	17
<i>Silene oreades</i>	16
<i>Geranium lasiopus</i>	16
<i>Prunus prostrata</i>	16
<i>Campanula davisii</i>	16
<i>Asperula idaea</i>	16
<i>Veronica thymifolia</i>	16
<i>Cyclamen trochopteranum</i>	16
<i>Draba cretica</i>	15
<i>Lamium garganicum</i>	15

Constant species (percentage frequencies)

<i>Euphorbia herniariifolia</i>	28
<i>Cicer incisum</i>	25
<i>Peucedanum alpinum</i>	22
<i>Arabis alpina</i>	19
<i>Ranunculus brevifolius</i>	18
<i>Silene variegata</i>	16
<i>Elytrigia lazica</i>	15
<i>Prunus prostrata</i>	14
<i>Lamium garganicum</i>	14
<i>Scutellaria hirta</i>	13
<i>Satureja cuneifolia</i>	13
<i>Acantholimon ulicinum</i>	13
<i>Valantia aprica</i>	12
<i>Silene odontopetala</i>	12
<i>Scrophularia depauperata</i>	11
<i>Satureja spinosa</i>	11
<i>Asyneuma linifolium</i>	11

U2A – Crimean base-rich scree

Base rich screes formed from a variety of rock types including limestone, flysch and schists of the Crimean Peninsula. Unvegetated, sparsely vegetated, and bryophyte or lichen vegetated cliffs, rock faces and rock pavements, not presently adjacent to the sea, and not resulting from recent volcanic activity. Parts of seacliffs free from the influence of wave or wind transported marine salt are included. Rock accumulations resulting from depositional processes are excluded and listed under U2 or U5.



Corresponding alliances in EuroVegChecklist 2016

- > DRY-01C Rumici scutati-Heracleion stevenii Ryff 2007
- > DRY-02C Austrodauco-Salvion verticillati Korzhenevskii et Kliukin 1990

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Elytrigia bessarabica</i>	97
<i>Silene subconica</i>	92
<i>Sideritis montana</i>	85
<i>Odontarrhena tortuosa</i>	76
<i>Artemisia arenaria</i>	75
<i>Crambe maritima</i>	75

<i>Linaria genistifolia</i>	64
<i>Pimpinella tragium</i>	63
<i>Euphorbia seguieriana</i>	49
<i>Teucrium polium</i> aggr.	42
<i>Poa bulbosa</i>	30

Constant species (percentage frequencies)

<i>Teucrium polium</i> aggr.	100
<i>Silene subconica</i>	100
<i>Sideritis montana</i>	100
<i>Poa bulbosa</i>	100
<i>Pimpinella tragium</i>	100
<i>Odontarrhena tortuosa</i>	100
<i>Linaria genistifolia</i>	100
<i>Euphorbia seguieriana</i>	100
<i>Elytrigia repens</i> aggr.	100
<i>Elytrigia bessarabica</i>	100
<i>Crambe maritima</i>	100
<i>Artemisia arenaria</i>	100

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Elytrigia bessarabica</i>	100
<i>Artemisia arenaria</i>	100

U31 – Boreal and arctic siliceous inland cliff

[Data on this habitat are missing in the European Vegetation Archive.]

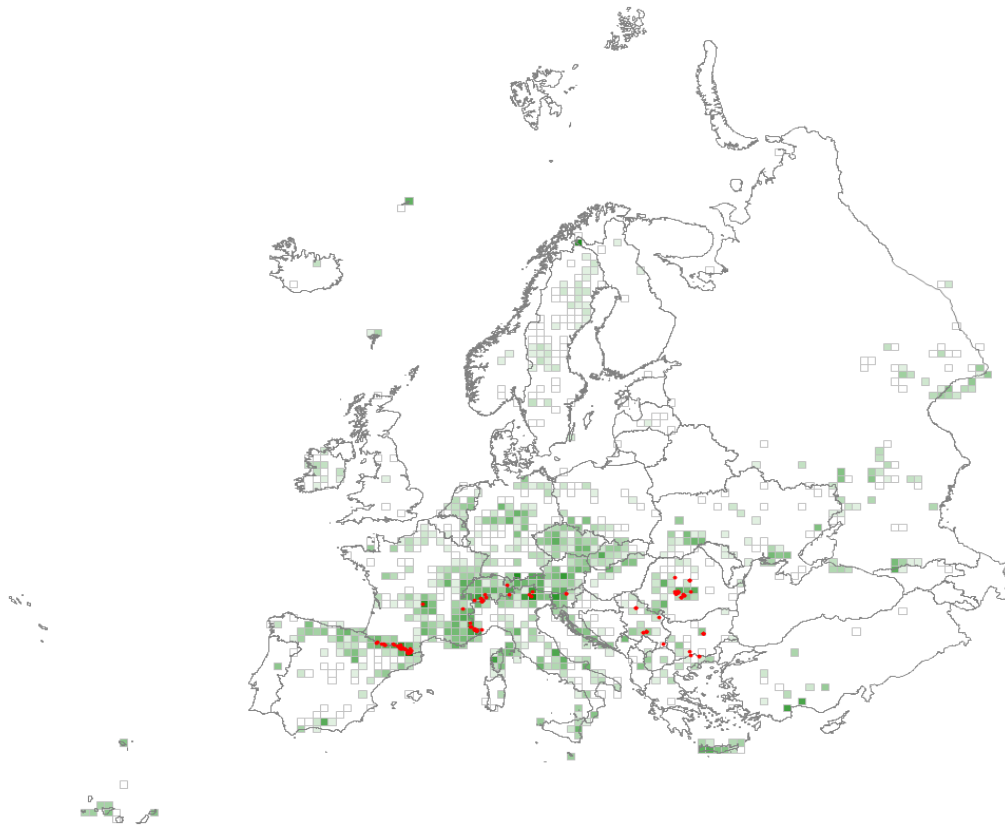
Siliceous rock faces and cliffs, mostly of hard crystalline rocks, soft mica schist and some volcanics, in the boreal and arctic biogeographical regions, though not including sea cliffs with salt spray influence or very wet, dripping vertical rock faces. The vegetation consists of a limited vascular flora growing in crevices and on ledges, with epilithic bryophytes, lichens as well as micro-algae on rock faces, overhangs and in all kinds of sheltered microsites. Although the rock types are all base-poor, they show marked variation in their chemical composition and stratigraphy and can harbor a great diversity of vascular plants and cryptogams in many different assemblages, disposed in many microhabitats.

Corresponding alliances in EuroVegChecklist 2016

- > ASP-11A *Saxifragion cotyledonis* Nordhagen ex Mucina et Chytrý in Mucina et al. 2016
- > ASP-11B *Allosuro-Athyrium alpestris* Nordhagen 1943

U32 – Temperate high-mountain siliceous inland cliff

Siliceous cliffs and rock faces of acidic, mostly Palaeozoic, rocks in the high mountains of the nemoral zone. Slow weathering of these resistant rocks creates few niches for colonisation and the vascular flora of the crevices and on ledges is rather species-poor but rich in epilithic lichens.



Corresponding alliances in EuroVegChecklist 2016

- > ASP-11C Androsacion vandellii Br.-Bl. in Br.-Bl. et Jenny 1926 nom. corr.
- > ASP-11D Saxifragion pedemontanae Barbero et Bono 1967
- > ASP-11E Saxifragion cymosae Lakušić 1970
- > ASP-11F Silenion lerchenfeldiana Simon 1958
- > ASP-11G Gypsophilion tenuifoliae Onipchenko 2002

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Androsace vandellii</i>	54
<i>Jovibarba heuffelii</i>	39
<i>Veronica bachofenii</i>	37
<i>Asplenium septentrionale</i>	36
<i>Primula latifolia</i>	33

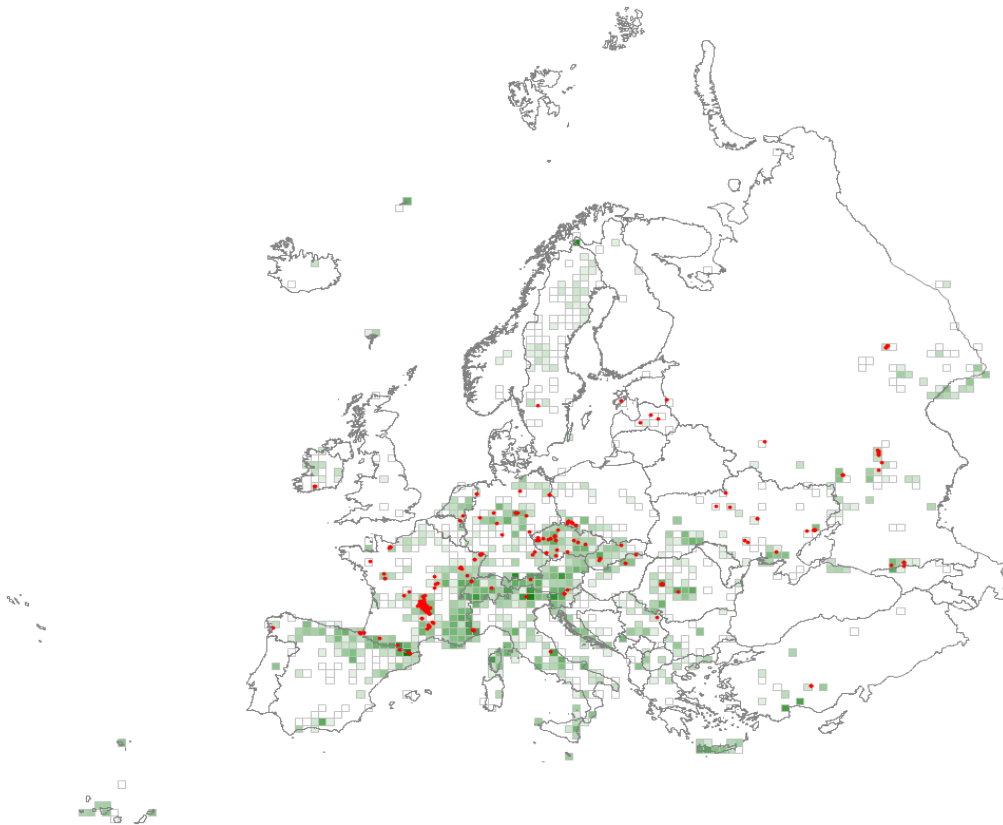
<i>Dianthus henteri</i>	32
<i>Silene larchenfeldiana</i>	28
<i>Woodsia ilvensis</i>	28
<i>Galium tendae</i>	27
<i>Draba dubia</i>	26
<i>Saxifraga pentadactylis</i>	26
<i>Thymus comosus</i>	26
<i>Saxifraga pubescens</i>	25
<i>Primula hirsuta</i>	25
<i>Saxifraga retusa</i>	22
<i>Phyteuma hemisphaericum</i>	21
<i>Saxifraga florulenta</i>	21
<i>Cardamine resedifolia</i>	21
<i>Phyteuma humile</i>	19
<i>Eritrichium nanum</i>	19
<i>Dicranella rufescens</i>	19
<i>Phyteuma globulariifolium</i>	17
<i>Sempervivum arachnoideum</i>	17
<i>Sedum annuum</i>	17
<i>Festuca halleri</i>	16

Constant species (percentage frequencies)

<i>Asplenium septentrionale</i>	39
<i>Androsace vandellii</i>	31
<i>Jovibarba heuffelii</i>	23
<i>Phyteuma hemisphaericum</i>	21
<i>Asplenium trichomanes</i>	21
<i>Poa nemoralis</i>	20
<i>Cardamine resedifolia</i>	18
<i>Draba dubia</i>	16
<i>Primula latifolia</i>	15
<i>Veronica bachofenii</i>	14
<i>Sempervivum arachnoideum</i>	14
<i>Juncus trifidus</i>	14
<i>Thymus comosus</i>	13
<i>Saxifraga pentadactylis</i>	13
<i>Polypodium vulgare</i>	13
<i>Silene nutans</i>	11
<i>Sedum brevifolium</i>	11
<i>Saxifraga bryoides</i>	11
<i>Dianthus henteri</i>	11

U33 – Temperate, lowland to montane siliceous inland cliff

Siliceous rock walls and cliffs in the nemoral region except those in the high mountains and coastal cliffs subject to sea spray. They comprise diverse metamorphic, sedimentary and igneous rocks but also some non-calcareous but more or less base-rich igneous volcanics. The vegetation in the rock fissures and crevices consists of vascular plants such as small ferns, succulents and rosulate herbs, on the rock surface also mosses and hepatics, crustose and foliose lichens, micro-algae and other micro-organisms. Natural succession can lead to scrub and woodland development.



Corresponding alliances in EuroVegChecklist 2016

- <> ASP-01A *Asplenio scolopendrii-Geranion robertiani* Ferrez 2010
- > ASP-10B *Asplenion septentrionalis* Gams in Oberd. 1938
- > ASP-10E *Thalictro foetidi-Asplenion* Onipchenko et Gorbachevskaya in Onipchenko 2002 (Biul. Mosk. Obshch. Ispyt. Prir., Otd. Biol.)
- > ASP-12A *Antirrhinion asarinae* (Br.-Bl. in Meier et Br.-Bl. 1934) Br.-Bl. in Br.-Bl. et al. 1952
- > POD-01A *Hypno-Polypodium vulgaris* Mucina 1993
- <> POD-02C *Hymenophyllion tunbrigensis* Tx. in Tx. et Oberd. 1958
- <> POD-05A *Valeriano longifoliae-Petrocoptidion* Fernández Casas 1972
- <> POD-05B *Rupicampanulion* Rothmaler 1954

Characteristic species combination

Diagnostic species (phi coefficient * 100)

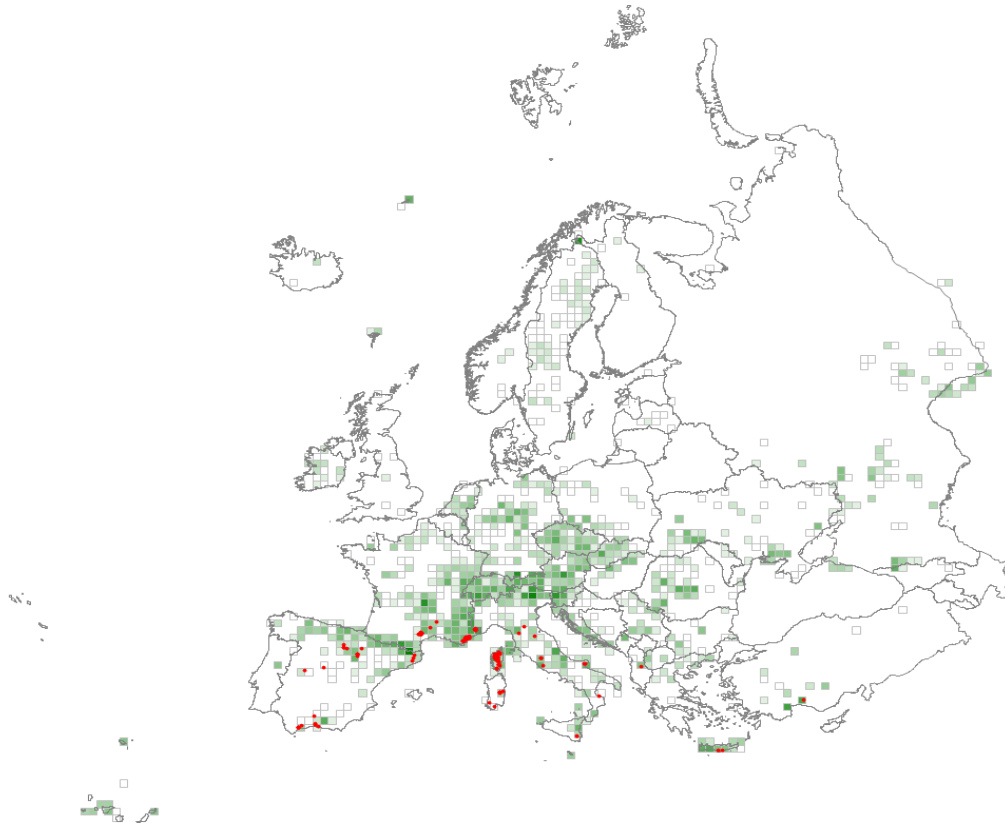
<i>Asplenium septentrionale</i>	30
<i>Hieracium umbellatum</i>	22
<i>Achillea glaberrima</i>	20
<i>Centaurea pseudoleucolepis</i>	20
<i>Saxifraga fragosoi</i>	15

Constant species (percentage frequencies)

<i>Hieracium umbellatum</i>	38
<i>Asplenium septentrionale</i>	33
<i>Campanula rotundifolia</i>	30
<i>Asplenium trichomanes</i>	25
<i>Polypodium vulgare</i>	23
<i>Rumex acetosella</i>	16
<i>Avenella flexuosa</i>	16
<i>Asplenium adiantum-nigrum</i>	15
<i>Hylotelephium maximum</i>	13
<i>Calluna vulgaris</i>	13
<i>Festuca ovina</i>	12
<i>Poa nemoralis</i>	11
<i>Cystopteris fragilis</i>	11

U34 – Mediterranean siliceous inland cliff

Siliceous rock walls and cliffs from the lowlands to high mountains in the Mediterranean, formed chiefly of igneous or metamorphic origin which offer a diversity of niches for colonisation depending on the rock texture, schistosity, moisture content and chemistry. Typically they have cushion or rosulate vascular plants, some of them succulent, ferns and dwarf shrubs, with bryophytes, lichens, epi and endolithic micro-organisms.



Corresponding alliances in EuroVegChecklist 2016

- > ASP-10D *Pohlio crudae-Asplenion septentrionalis* S. Brullo et Siracusa in S. Brullo et al. 2001
- > ASP-11H *Hieracion carpetani* González-Albo 1941
- > ASP-11I *Saxifragion nevadensis* Rivas Goday et Rivas-Mart. 1971
- > ASP-11J *Potentillion crassinerviae* Gamisans 1975
- > ASP-12B *Cheilanthion hispanicae* Rivas Goday et al. 1956
- > ASP-12C *Asplenio billotii-Dianthion godroniani* Rameau 1996 nom. inval.
- > ASP-12D *Linarion caprariae* Foggi et al. 2006
- > ASP-12E *Dianthion rupicolae* S. Brullo et Marcenò 1979
- > ASP-13C *Polygonion icarici* Horvat in Horvat, Glavač et Ellenberg ex Bergmeier et al. 2011
- <> POD-02A *Polypodion serrati* Br.-Bl. in Br.-Bl. et al. 1952

Characteristic species combination

Diagnostic species (phi coefficient * 100)

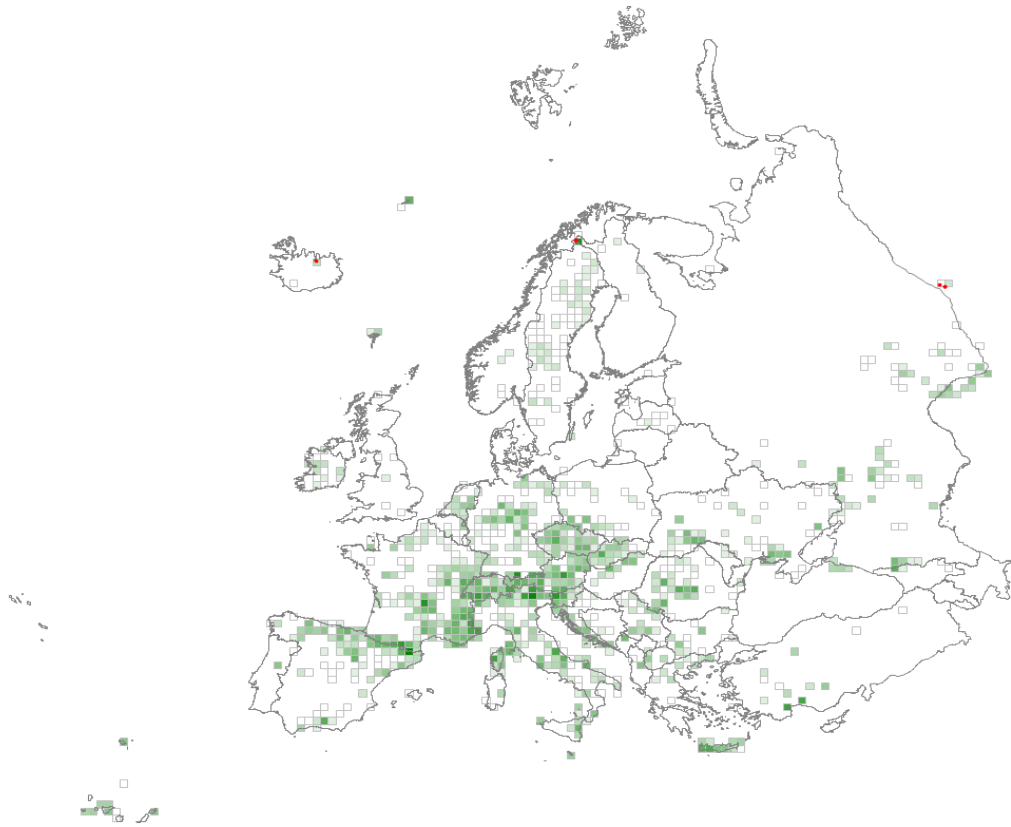
<i>Potentilla crassinervia</i>	36
<i>Armeria leucocephala</i>	36
<i>Castroviejoa frigida</i>	35
<i>Phyteuma serratum</i>	32
<i>Festuca sardoa</i>	32
<i>Asarina procumbens</i>	31
<i>Hieracium amplexicaule</i>	26
<i>Bupleurum stellatum</i>	26
<i>Leucanthemum monspeliense</i>	25
<i>Silene requienii</i>	25
<i>Asplenium foreziense</i>	23
<i>Saxifraga pedemontana</i>	22
<i>Asplenium septentrionale</i>	20
<i>Biscutella coronopifolia</i>	19
<i>Arenaria capillipes</i>	17
<i>Iberis fontqueri</i>	17
<i>Umbilicus rupestris</i>	17
<i>Omphalodes commutata</i>	16
<i>Arenaria retusa</i>	16
<i>Aquilegia bernardii</i>	15
<i>Sedum dasyphyllum</i>	15
<i>Cerastium gibraltarium</i>	15

Constant species (percentage frequencies)

<i>Asplenium trichomanes</i>	23
<i>Asplenium septentrionale</i>	22
<i>Umbilicus rupestris</i>	18
<i>Hieracium amplexicaule</i>	17
<i>Sedum dasyphyllum</i>	16
<i>Saxifraga pedemontana</i>	15
<i>Potentilla crassinervia</i>	15
<i>Helichrysum italicum</i>	15
<i>Dianthus sylvestris</i>	15
<i>Asarina procumbens</i>	14
<i>Armeria leucocephala</i>	14
<i>Sedum brevifolium</i>	13
<i>Polypodium vulgare</i>	13
<i>Phyteuma serratum</i>	13
<i>Castroviejoa frigida</i>	13
<i>Festuca sardoa</i>	12
<i>Festuca rubra</i> aggr.	12
<i>Campanula rotundifolia</i>	12
<i>Avenella flexuosa</i>	12
<i>Asplenium adiantum-nigrum</i>	12
<i>Cerastium gibraltarium</i>	11

U35 – Boreal and arctic base-rich inland cliff

Vegetated cliffs on base-rich (not ultramafic or salt-sprayed) bedrocks across the boreal region, including Scotland, and maybe Iceland. They are often rich in ferns, crustose lichens and, in sunless, damp situations, particularly in more oceanic areas, bryophytes.



Corresponding alliances in EuroVegChecklist 2016

= POD-04B Cochlearion alpinae Br.-Bl. in Br.-Bl. 1952

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Poa alpigena</i>	43
<i>Salix hastata</i>	43
<i>Cerastium fontanum</i> subsp. <i>fontanum</i>	37
<i>Dianthus versicolor</i>	36
<i>Phyllodoce caerulea</i>	33
<i>Viola biflora</i>	31
<i>Neottianthe cucullata</i>	29
<i>Draba podolica</i>	27
<i>Thymus bashkiriensis</i>	26
<i>Trifolium lupinaster</i>	26

<i>Geranium sylvaticum</i> aggr.	26
<i>Pedicularis lapponica</i>	25
<i>Thalictrum alpinum</i>	24
<i>Campanula rotundifolia</i>	24
<i>Salix glauca</i>	24
<i>Psephellus sibiricus</i>	24
<i>Linnaea borealis</i>	24
<i>Equisetum scirpoides</i>	23
<i>Androsace septentrionalis</i>	23
<i>Equisetum pratense</i>	21
<i>Artemisia sericea</i>	21
<i>Melampyrum sylvaticum</i>	21
<i>Diapensia lapponica</i>	21
<i>Salix phylicifolia</i>	20
<i>Parietaria lusitanica</i>	19
<i>Arabidopsis petraea</i>	19
<i>Neottia cordata</i>	19
<i>Salix myrtilloides</i>	18
<i>Antennaria canescens</i>	17
<i>Pyrola minor</i>	16
<i>Carex capillaris</i>	16
<i>Hieracium lachenalii</i>	16
<i>Bistorta vivipara</i>	16
<i>Trientalis europaea</i>	15

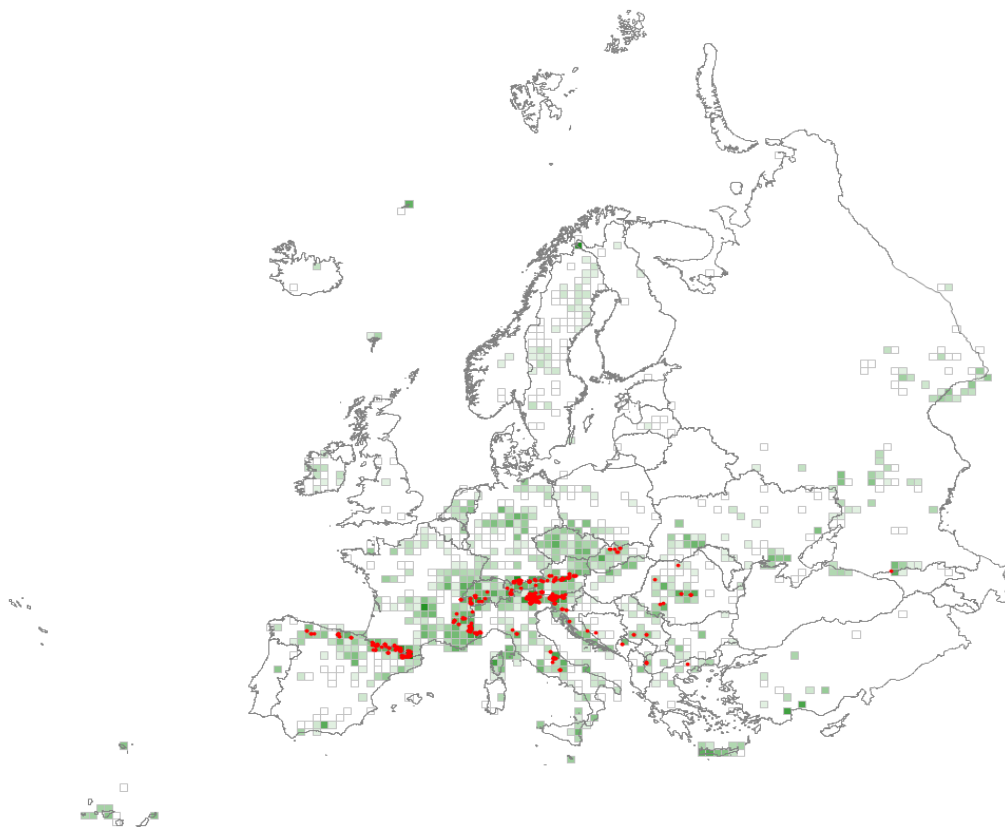
Constant species (percentage frequencies)

<i>Viola biflora</i>	67
<i>Campanula rotundifolia</i>	67
<i>Geranium sylvaticum</i> aggr.	58
<i>Festuca ovina</i>	50
<i>Vaccinium vitis-idaea</i>	42
<i>Phyllodoce caerulea</i>	42
<i>Linnaea borealis</i>	42
<i>Bistorta vivipara</i>	42
<i>Vaccinium myrtillus</i>	33
<i>Trientalis europaea</i>	33
<i>Thalictrum alpinum</i>	33
<i>Solidago virgaurea</i>	33
<i>Salix hastata</i>	33
<i>Poa alpigena</i>	33
<i>Melampyrum sylvaticum</i>	33
<i>Luzula pilosa</i>	33
<i>Avenella flexuosa</i>	33
<i>Salix glauca</i>	25
<i>Pedicularis lapponica</i>	25
<i>Hieracium lachenalii</i>	25
<i>Equisetum pratense</i>	25
<i>Empetrum nigrum</i> aggr.	25
<i>Anthoxanthum odoratum</i> aggr.	25
<i>Veronica alpina</i>	17
<i>Vaccinium uliginosum</i>	17
<i>Silene nutans</i>	17
<i>Selaginella selaginoides</i>	17
<i>Saussurea alpina</i> aggr.	17
<i>Salix phylicifolia</i>	17

<i>Rumex acetosa</i>	17
<i>Rubus chamaemorus</i>	17
<i>Ranunculus acris</i> aggr.	17
<i>Pyrola rotundifolia</i>	17
<i>Pyrola minor</i>	17
<i>Orthilia secunda</i>	17
<i>Neottia cordata</i>	17
<i>Gymnocarpium dryopteris</i>	17
<i>Festuca valesiaca</i> aggr.	17
<i>Eriophorum angustifolium</i>	17
<i>Equisetum variegatum</i>	17
<i>Equisetum scirpoides</i>	17
<i>Dianthus versicolor</i>	17
<i>Deschampsia cespitosa</i> aggr.	17
<i>Cerastium fontanum</i> subsp. <i>fontanum</i>	17
<i>Carex vaginata</i>	17
<i>Carex capillaris</i>	17
<i>Calamagrostis lapponica</i>	17
<i>Bartsia alpina</i>	17
<i>Antennaria alpina</i>	17

U36 – Temperate high-mountain base-rich inland cliff

Calcareous or base-rich rock faces and crevices at high altitudes of European mountain ranges in the temperate region. The chasmophytes, dwarf and cushion formed chamaephytes and hemicryptophytes, and numerous fern species and mosses, are very well adapted to the extreme habitat conditions, like strong solar radiation, a low water content, high day/night and seasonal temperature fluctuations, strong winds, and the absence of snow cover protection. The soil is in general very poorly developed, but can accumulate in crevices. Variation in the vascular flora is high across the continent and due to geographical isolation and variety in site conditions numerous relict, endemic, rare and protected species can be found on these cliffs.



Corresponding alliances in EuroVegChecklist 2016

- > ASP-02A *Potentillion caulescentis* Br.-Bl. in Br.-Bl. et Jenny 1926
- > ASP-02B *Physoplexido comosae-Saxifragion petraeae* Mucina et Theurillat 2015
- > ASP-02C *Saxifragion lingulatae* (Rioux et Quézel 1949) Quézel 1950
- > ASP-02D *Micromerion pulegii* Boşcaiu (1971) 1979
- > ASP-02E *Gypsophilion petraeae* Borhidi et Pócs in Borhidi 1958
- > ASP-02F *Saxifragion mediae* Br.-Bl. in Meier et Br.-Bl. 1934
- > ASP-02G *Sedo albi-Seslerion hispanicae* Br.-Bl. 1966
- > ASP-02H *Asplenio celtiberici-Saxifragion cuneatae* Rivas-Mart. in Loidi et Fernández Prieto 1986
- > ASP-02I *Drabion hispanicae* Font Quer 1935

- > ASP-02K *Saxifragion australis* Biondi et Ballelli ex S. Brullo 1984
- > ASP-02L *Micromerion croaticae* Horvat in Blečić 1959
- > ASP-03 *Moltkeetalia petraeae* Lakušić 1968
- > ASP-03B *Amphoricarpion neumayeri* Lakušić 1968
- > ASP-03C *Edraiantho graminifolii-Erysimion comati* Mucina et al. 1990
- > POD-04A *Violo biflorae-Cystopteridion alpinae* Fernández Casas 1970

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Saxifraga squarrosa</i>	44
<i>Sesleria sphaerocephala</i>	38
<i>Potentilla nitida</i>	35
<i>Paederota bonarota</i>	33
<i>Minuartia cherlerioides</i>	33
<i>Androsace helvetica</i>	31
<i>Draba tomentosa</i>	31
<i>Festuca alpina</i>	29
<i>Potentilla clusiana</i>	24
<i>Carex firma</i>	23
<i>Valeriana elongata</i>	23
<i>Campanula morettiana</i>	23
<i>Carex mucronata</i>	22
<i>Campanula zoysii</i>	21
<i>Saxifraga media</i>	21
<i>Campanula cochleariifolia</i>	21
<i>Draba dubia</i>	20
<i>Primula tyrolensis</i>	20
<i>Primula auricula</i>	19
<i>Androsace hausmannii</i>	18
<i>Artemisia umbelliformis</i>	17
<i>Potentilla nivalis</i>	17
<i>Valeriana apula</i>	17
<i>Saxifraga burseriana</i>	17
<i>Phyteuma sieberi</i>	17
<i>Rhamnus pumila</i>	16
<i>Valeriana saxatilis</i>	16
<i>Draba stellata</i>	15
<i>Saxifraga paniculata</i>	15

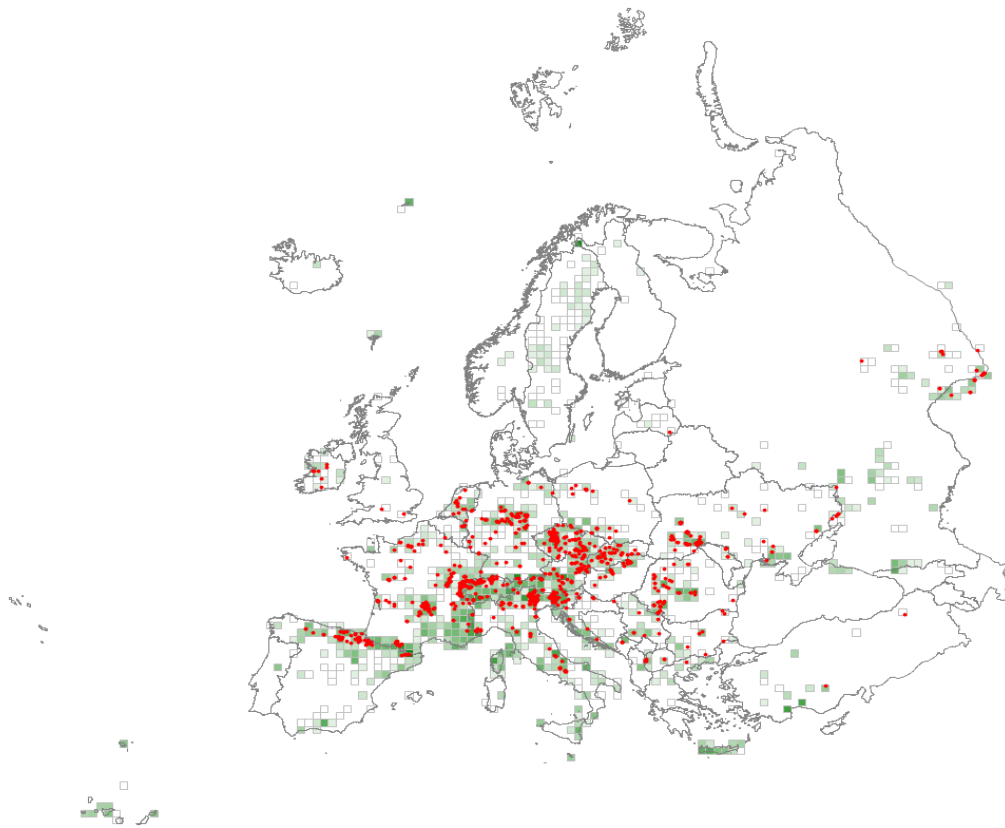
Constant species (percentage frequencies)

<i>Carex firma</i>	24
<i>Saxifraga squarrosa</i>	23
<i>Campanula cochleariifolia</i>	23
<i>Sesleria sphaerocephala</i>	21
<i>Saxifraga paniculata</i>	19
<i>Cystopteris fragilis</i>	19
<i>Potentilla nitida</i>	16
<i>Carex mucronata</i>	16
<i>Primula auricula</i>	15
<i>Paederota bonarota</i>	15
<i>Silene acaulis</i>	14
<i>Festuca alpina</i>	14
<i>Asplenium ruta-muraria</i>	13

<i>Sesleria caerulea</i>	12
<i>Saxifraga oppositifolia</i>	12
<i>Minuartia cherlerioides</i>	12
<i>Draba dubia</i>	12
<i>Asplenium viride</i>	12
<i>Valeriana saxatilis</i>	11
<i>Potentilla clusiana</i>	11
<i>Globularia repens</i>	11
<i>Draba tomentosa</i>	11
<i>Androsace helvetica</i>	11

U37 – Temperate, lowland to montane base-rich inland cliff

Calcareous or base-rich rock faces and crevices of the lowland to montane belts of European mountains in the temperate region. Though conditions are not so severe as at higher altitudes, plant species growing on these rocks are adapted to extreme habitat conditions, such as strong solar radiation, a low water content, strong fluctuations in day/night and seasonal temperature, strong winds, absence of snow cover, and poorly developed soil. Many endemic and rare species occur here.



Corresponding alliances in EuroVegChecklist 2016

- <> ASP-01A *Asplenio scolopendrii-Geranion robertiani* Ferrez 2010
- > ASP-01B *Drabo cuspidatae-Campanulion tauricae* Ryff 2000
- > ASP-03A *Edraianthion* Lakušić 1968
- <> POD-02C *Hymenophyllion tunbrigensis* Tx. in Tx. et Oberd. 1958
- > POD-03A *Ctenidio-Polypodium vulgaris* S. Brullo et al. 2001
- > POD-03B *Moehringion muscosae* Horvat et Horvatić ex Boşcaiu, Gergely et Codoreanu in Raţiu et al. 1966
- > POD-03C *Polysticho setiferi-Phyllitidion scolopendrii* Ubaldi ex Ubaldi et Biondi in Biondi et al. 2014
- <> POD-05A *Valeriano longifoliae-Petrocoptidion* Fernández Casas 1972
- <> POD-05B *Rupicampanulion* Rothmaler 1954

Characteristic species combination

Diagnostic species (phi coefficient * 100)

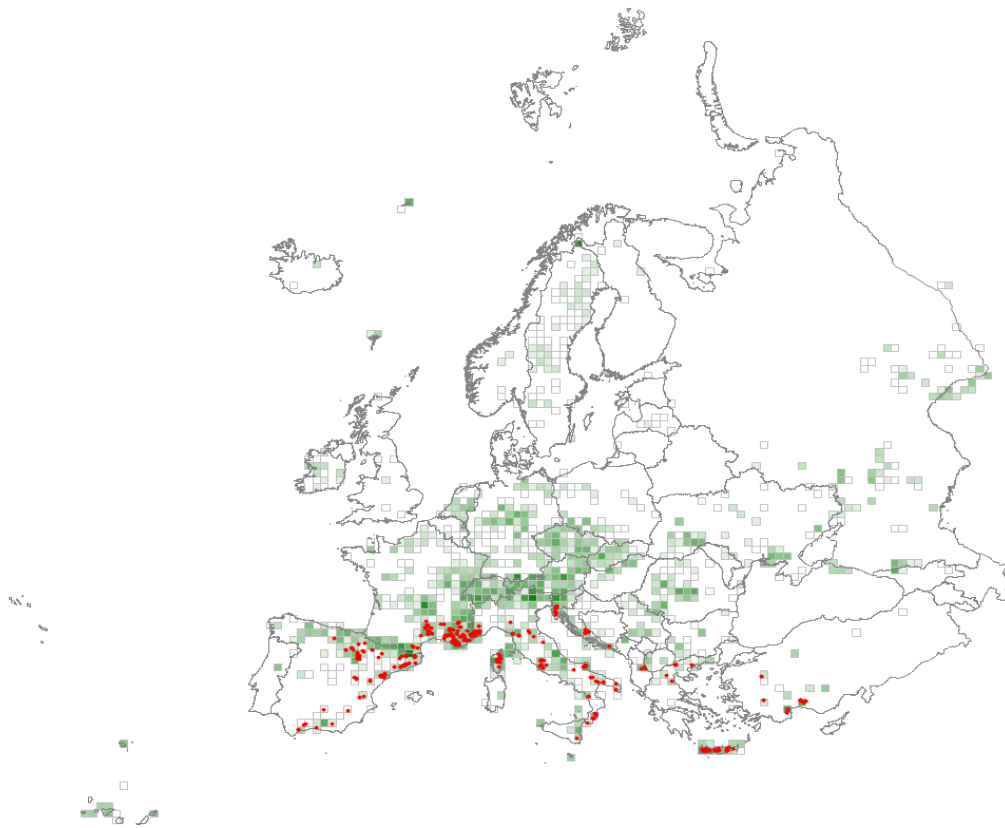
<i>Asplenium ruta-muraria</i>	20
<i>Potentilla caulescens</i>	18
<i>Spiraea decumbens</i>	18
<i>Campanula carnica</i>	16
<i>Physoplexis comosa</i>	15

Constant species (percentage frequencies)

<i>Asplenium ruta-muraria</i>	29
<i>Sesleria caerulea</i>	22
<i>Sanguisorba minor</i> aggr.	19
<i>Asplenium trichomanes</i>	18
<i>Euphorbia cyparissias</i>	16
<i>Campanula rotundifolia</i>	15
<i>Asperula cynanchica</i>	15
<i>Potentilla caulescens</i>	12

U38 – Mediterranean base-rich inland cliff

Cliffs of limestone, calcareous conglomerates and other base-rich rocks in the lowlands to high mountains throughout the Mediterranean basin (excluding salt-sprayed coastal situations). They are characterised by a diverse flora of calcicole vascular perennial plants, often of rosulate, prostrate, succulent and cushion form, tussock grasses, small ferns, dwarf shrubs, shrubs and sometimes woody climbers and small trees, rooted in fissures and crevices. There are also bryophytes, lichens and epi- and endolithic micro-organisms. Towards the foothills and lowlands, the habitat is more prone to be affected by human disturbances, especially its species composition. High mountain cliffs are usually well preserved, with a high degree of naturalness.



Corresponding alliances in EuroVegChecklist 2016

- > ASP-02J *Saxifragion camposii* Cuatrecasas ex Quézel 1953
- > ASP-04A *Asplenion glandulosi* Br.-Bl. in Meier et Br.-Bl. 1934
- > ASP-04B *Brassicion insularis* Gamisans 1991
- > ASP-04C *Centaureo filiformis-Micromerion cordatae* Arrigoni et Di Tommaso 1991
- > ASP-04D *Arenarion bertolonii* Gamisans ex Theurillat in Mucina et al. 2015
- > ASP-04E *Brassicico balearicae-Helichryson rupestris* O. de Bolòs et Molinier 1958
- > ASP-04F *Teucrium buxifolii* Rivas Goday 1956
- > ASP-04G *Campanulion velutinae* Martínez-Parras et Peinado Lorca 1990
- > ASP-04H *Cosentinio bivalentis-Lafuenteion rotundifoliae* Asensi et al. 1990
- > ASP-05A *Centaureo dalmaticae-Campanulion* Horvatić 1934

- > ASP-05B Centaureo cuspidatae-Portenschlagiellion ramosissimae Trinajstić ex Terzi et Di Pietro 2016
- > ASP-05C Asperulion garganicae Bianco et al. 1989
- > ASP-06A Campanulion versicoloris Quézel 1964
- > ASP-06B Caro multiflori-Aurinion megalocarpae Terzi et D'Amico 2008
- > ASP-07A Petromarulo-Centaurion argenteae Horvat in Horvat, Glavač et Ellenberg ex Bergmeier et al. 2011
- > ASP-07B Asterion cretici Zaffran ex Bergmeier et al. 2011
- > ASP-07C Capparo-Amaracion tournefortii Horvat in Horvat, Glavač et Ellenberg ex Bergmeier et al. 2011
- > ASP-07D Inulion heterolepidis Horvat ex Bergmeier et al. 2011
- > ASP-08A Sarcocapnion enneaphyllae Fernández Casas 1972
- > ASP-08B Sarcocapnion pulcherrimae Fernández Casas 1972 corr. Rivas-Mart. et al.
- > ASP-09A Galion degenii Quézel 1967
- > ASP-09B Ramondion nathaliae Horvat ex Simon 1958
- > ASP-09C Saxifragion scardicae Dimopoulos et al. 1997
- > ASP-09D Silenion auriculatae Quézel 1964
- > ASP-09E Arenarion creticae Dimopoulos et al. ex Bergmeier 2002
- <> CYM-01B Galio valantiae-Parietarion judaicae Rivas-Mart. ex O. de Bolòs 1967
- <> CYM-01C Artemisio arborescentis-Capparidion spinosae Biondi, Blasi et Galdenzi in Biondi et al. 2014
- <> CYM-01D Parietario judaicae-Hyoscyamion aurei S. Brullo et Guarino 1999
- <> PHA-01D Melico minutae-Phagnalion intermedii Rivas Goday et Esteve 1972
- <> PHA-01E Calendulo lusitanicae-Antirrhinion linkiani Ladero et al. 1991
- <> POD-02A Polypodium serrati Br.-Bl. in Br.-Bl. et al. 1952
- > POD-02B Arenarion balearicae O. de Bolòs et Molinier 1969
- > POD-02B Arenarion balearicae O. de Bolòs et Molinier 1969

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Asplenium ceterach</i>	22
<i>Sedum dasyphyllum</i>	17
<i>Asplenium petrarchae</i>	16
<i>Potentilla saxifraga</i>	16
<i>Sarcocapnos enneaphylla</i>	16
<i>Moehringia sedoides</i>	16
<i>Asplenium trichomanes</i>	15

Constant species (percentage frequencies)

<i>Asplenium trichomanes</i>	29
<i>Asplenium ceterach</i>	26
<i>Asplenium ruta-muraria</i>	21
<i>Sedum dasyphyllum</i>	18
<i>Parietaria judaica</i>	15
<i>Campanula rotundifolia</i>	13
<i>Thymus vulgaris</i>	11

U39 – Boreal ultramafic inland cliff

[Data on this habitat are missing in the European Vegetation Archive.]

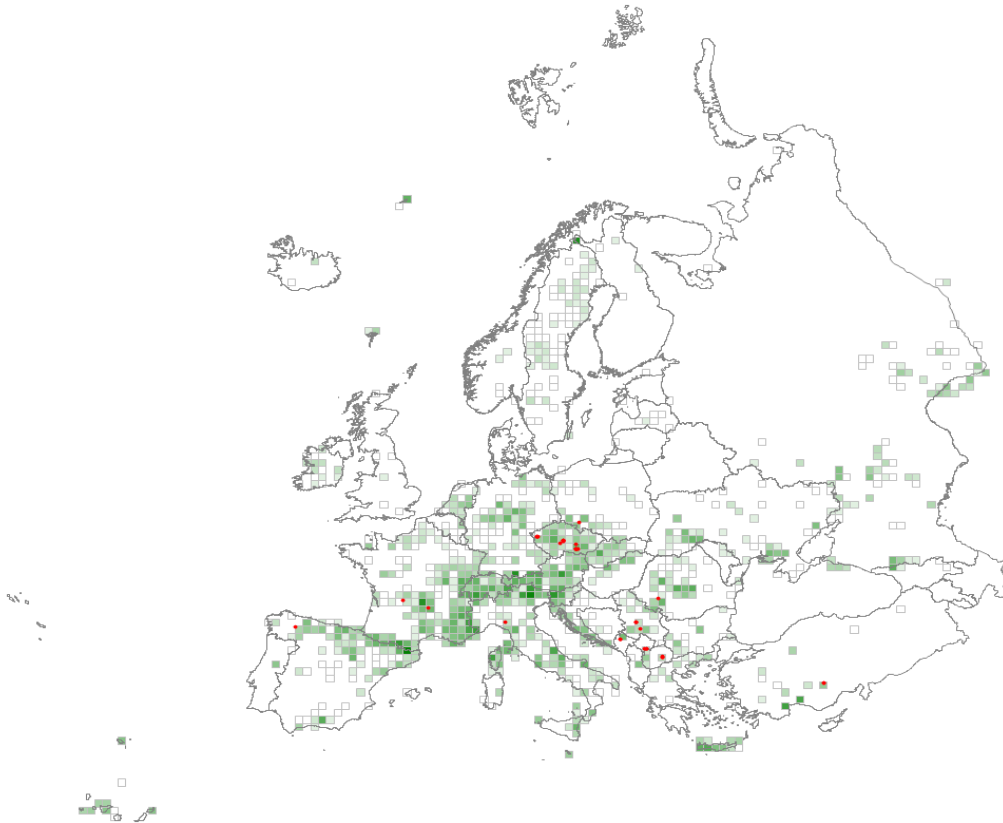
Ultramafic inland cliffs of the boreal zone. They are characterised by a boreal flora of vascular plants and ferns adapted to the serpentine substrate with its distinctive mineral content and by bryophyte and lichen assemblages that are partly typical of calcareous habitats, though not here forming any luxuriant cover.

Corresponding alliances in EuroVegChecklist 2016

< ASP-10C *Asplenion serpentini* Br.-Bl. et Tx. ex Egger 1955

U3A – Temperate ultramafic inland cliff

Warmer south-facing cliffs of ultramafic rocks from the lowlands to the alpine belt of the temperate zone. They have an open cover of a distinctive crevice-rooting flora, mostly annuals, grasses and certain ferns, specialised for the mineral content of the shallow soils, and supports some endemics.



Corresponding alliances in EuroVegChecklist 2016

< ASP-10C Asplenion serpentini Br.-Bl. et Tx. ex Egger 1955

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Asplenium adiantum-nigrum</i> subsp. <i>serpentini</i>	55
<i>Asplenium adulterinum</i>	40
<i>Paragymnopteris marantae</i>	32
<i>Stipa novakii</i>	28
<i>Hedysarum macedonicum</i>	25
<i>Ranunculus isthmicus</i>	24
<i>Festuca pallens</i>	24
<i>Erysimum linariifolium</i>	23
<i>Cerastium alsinifolium</i>	22

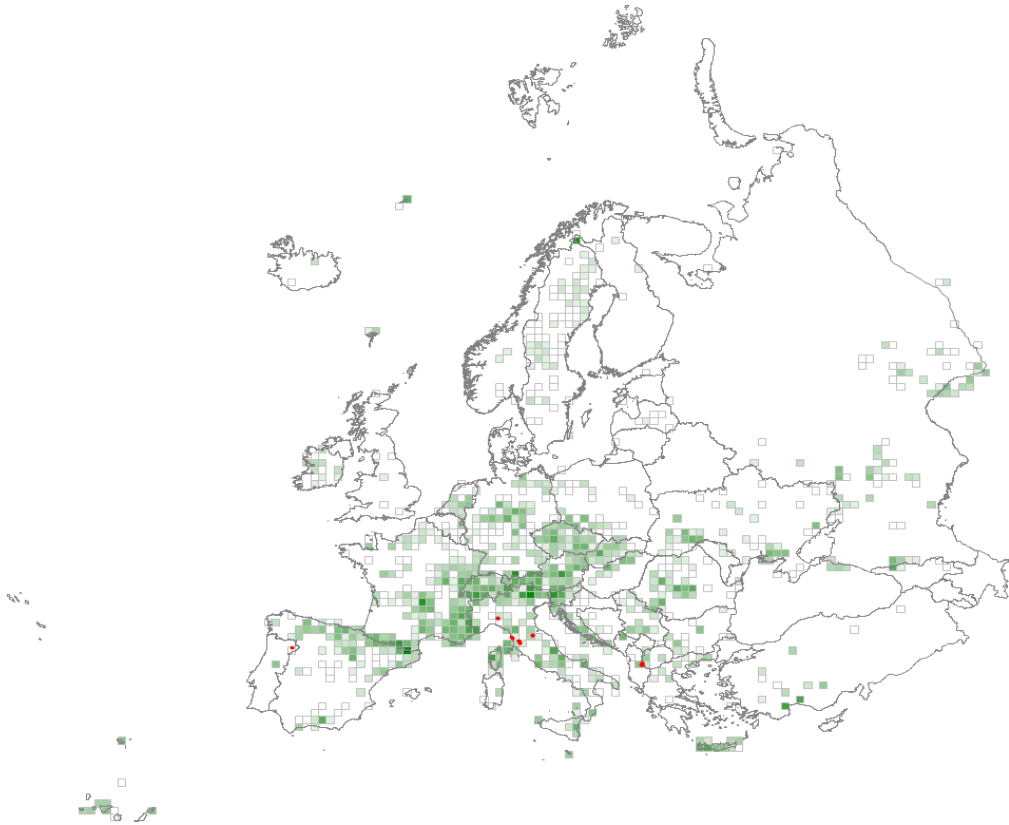
<i>Polygonum setosum</i>	21
<i>Daphne malyana</i>	21
<i>Ranunculus buhsei</i>	21
<i>Festuca callieri</i>	20
<i>Bromopsis pannonica</i>	18
<i>Brassica elongata</i>	17
<i>Alyssum trichostachyum</i>	17
<i>Hieracium waldsteinii</i>	17
<i>Silene bupleuroides</i>	17
<i>Ionopsidium abulense</i>	16
<i>Asplenium ruta-muraria</i>	16
<i>Convolvulus holosericeus</i>	16
<i>Moltkia petraea</i>	16
<i>Aethionema heterocarpum</i>	15

Constant species (percentage frequencies)

<i>Asplenium adiantum-nigrum</i> subsp. <i>serpentini</i>	56
<i>Paragymnopteris marantae</i>	30
<i>Festuca pallens</i>	26
<i>Festuca ovina</i>	26
<i>Thymus praecox</i>	23
<i>Asplenium ruta-muraria</i>	23
<i>Campanula rotundifolia</i>	21
<i>Silene vulgaris</i>	16
<i>Asplenium adulterinum</i>	16
<i>Potentilla crantzii</i>	14
<i>Minuartia verna</i> aggr.	14
<i>Asplenium trichomanes</i>	14
<i>Silene bupleuroides</i>	12
<i>Hypnum cupressiforme</i> aggr.	12
<i>Euphorbia glabriflora</i>	12
<i>Allium flavum</i>	12

U3B – Mediterranean ultramafic inland cliff

Ultramafic rocks and cliffs away from the coast in the Mediterranean have a very scattered distribution and sustain a sparse but highly distinctive flora of a few ferns, vascular plants and cryptogams especially adapted for growing in the fissures and crevices of this specialised substrate.



Corresponding alliances in EuroVegChecklist 2016

= ASP-13B Phagnalo saxatilis-Cheilanthon maderensis Loisel 1970 corr. Pérez-Carro et al. 1989

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Odontarrhena bertolonii</i>	63
<i>Festucopsis serpentini</i>	48
<i>Festuca inops</i>	35
<i>Viola magellensis</i>	32
<i>Asplenium adiantum-nigrum</i> subsp. <i>serpentini</i>	28
<i>Festuca robustifolia</i>	28
<i>Centaurea paniculata</i> aggr.	27
<i>Dianthus sylvestris</i>	26

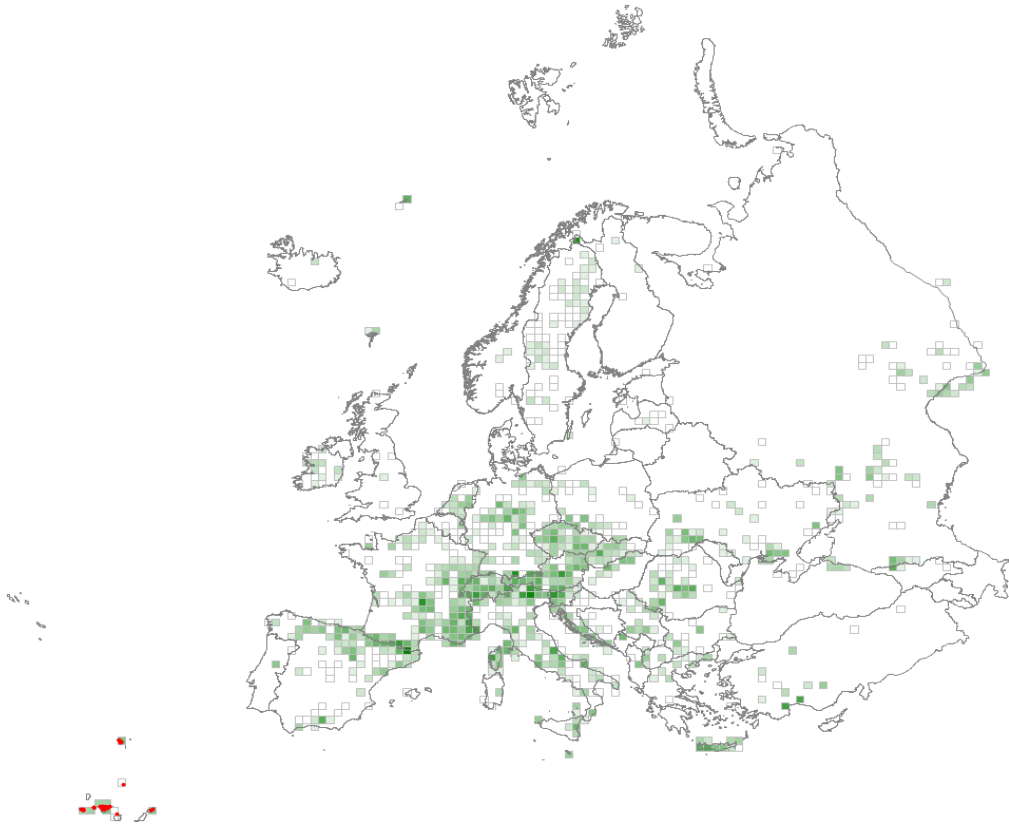
<i>Sesleria coerulans</i>	24
<i>Stipa etrusca</i>	22
<i>Cardamine pancicii</i>	22
<i>Silene schwarzenbergeri</i>	22
<i>Sedum rupestre</i>	22
<i>Euphorbia spinosa</i>	22
<i>Erysimum kuemmerlei</i>	21
<i>Silene paradoxa</i>	21
<i>Sedum album</i>	20
<i>Hypericum spruneri</i>	20
<i>Festuca stricta</i> subsp. <i>trachyphylla</i>	19
<i>Reseda virgata</i>	18
<i>Centaurea micrantha</i>	18
<i>Trigonella balansae</i>	17
<i>Biscutella pichiana</i>	17
<i>Armeria langei</i>	16
<i>Plantago holosteum</i>	16
<i>Thymus striatus</i>	15

Constant species (percentage frequencies)

<i>Odontarrhena bertolonii</i>	52
<i>Sedum album</i>	43
<i>Dianthus sylvestris</i>	43
<i>Sedum rupestre</i>	33
<i>Helichrysum italicum</i>	29
<i>Festuca inops</i>	29
<i>Asplenium adiantum-nigrum</i> subsp. <i>serpentini</i>	29
<i>Plantago holosteum</i>	24
<i>Festucopsis serpentini</i>	24
<i>Euphorbia spinosa</i>	24
<i>Centaurea paniculata</i> aggr.	24
<i>Festuca robustifolia</i>	19
<i>Viola magellensis</i>	14
<i>Thymus striatus</i>	14
<i>Silene paradoxa</i>	14
<i>Sesleria coerulans</i>	14
<i>Sedum dasyphyllum</i>	14
<i>Sanguisorba minor</i> aggr.	14
<i>Galium corrudifolium</i>	14
<i>Festuca stricta</i> subsp. <i>trachyphylla</i>	14
<i>Cerastium arvense</i>	14
<i>Asplenium trichomanes</i>	14

U3C – Macaronesian inland cliff

Cliffs in Macaronesia away from coastal salt-spray with perennial vegetation of crevices and ledges is of very diverse character, some, for example, dominated by succulents, others rich in ferns and bryophytes characteristic of shaded situations and hosting several hundreds of taxa endemic to the archipelagoes.



Corresponding alliances in EuroVegChecklist 2016

- > ASP-13A *Cheilanthion pulchellae* Sáenz de Rivas et Rivas-Mart. 1979
- > POD-02D *Thelipterido pozoi*-*Woodwardion radicantis* Fernández Prieto et Aguiar in Fernández Prieto et al. 2012

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Sonchus ustulatus</i>	35
<i>Aeonium palmense</i>	28
<i>Aeonium diplocyclum</i>	25
<i>Davallia canariensis</i>	24
<i>Pleioimeris canariensis</i>	24
<i>Sonchus hierrensis</i>	23
<i>Ceropegia dichotoma</i>	23

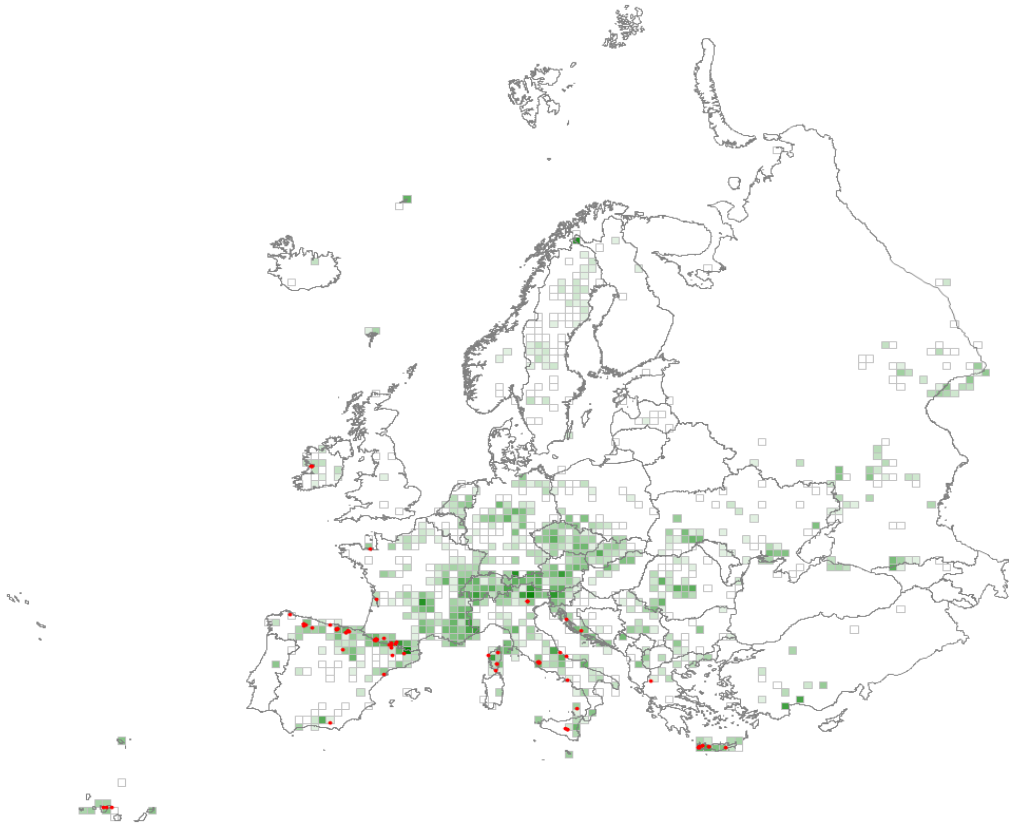
<i>Sonchus congestus</i>	23
<i>Helichrysum devium</i>	22
<i>Rhamnus integrifolia</i>	21
<i>Genista canariensis</i>	21
<i>Bethencourtia palmensis</i>	21
<i>Asplenium marinum</i>	21
<i>Sideritis kuegleriana</i>	20
<i>Sedum brissemoretii</i>	20
<i>Asplenium monanthes</i>	20
<i>Aeonium urbicum</i>	20
<i>Matthiola maderensis</i>	19
<i>Phyllis viscosa</i>	19
<i>Bencomia caudata</i>	18
<i>Tolpis proustii</i>	16
<i>Kleinia neriifolia</i>	16
<i>Monanthes laxiflora</i>	16
<i>Monanthes brachycaulos</i>	15
<i>Brachypodium arbuscula</i>	15

Constant species (percentage frequencies)

<i>Davallia canariensis</i>	31
<i>Sonchus ustulatus</i>	18
<i>Kleinia neriifolia</i>	18
<i>Aeonium glandulosum</i>	18
<i>Erica arborea</i>	14
<i>Sonchus congestus</i>	12
<i>Rubus ulmifolius</i>	12
<i>Crithmum maritimum</i>	12
<i>Asplenium marinum</i>	12

U3D – Wet inland cliff

Permanently wet cliffs in temperate and mediterranean regions, in often highly localised situations, where rock and earth surfaces are kept wet by water trickles, spray splashing and a sunless orientation. The characteristic flora is dominated by shade and moisture-tolerant vascular plants, luxuriant ferns and bryophytes, and green and blue-green algae.



Corresponding alliances in EuroVegChecklist 2016

- > ADI-01A Adiantion Br.-Bl. ex Horvatić 1934
- > ADI-01B Pinguiculion longifoliae Fernández Casas 1970

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Adiantum capillus-veneris</i>	57
<i>Pinguicula grandiflora</i>	55
<i>Cymbalaria muralis</i>	27
<i>Trachelium caeruleum</i>	22
<i>Eucladium verticillatum</i>	21
<i>Hymenostylium recurvirostrum</i>	21
<i>Pinguicula poldinii</i>	20
<i>Veronica ponae</i>	18

<i>Samolus valerandi</i>	18
<i>Parietaria judaica</i>	18
<i>Hypericum nummularium</i>	17

Constant species (percentage frequencies)

<i>Adiantum capillus-veneris</i>	49
<i>Pinguicula grandiflora</i>	42
<i>Parietaria judaica</i>	22
<i>Samolus valerandi</i>	18
<i>Palustriella commutata</i> aggr.	15
<i>Molinia caerulea</i> aggr.	15
<i>Cymbalaria muralis</i>	15
<i>Caltha palustris</i>	12
<i>Tofieldia calyculata</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Adiantum capillus-veneris</i>	29
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U3E – Limestone pavement

[This habitat could not be formally defined in the expert system because it is a fine-scale mosaic of different habitats.]

Limestone pavements are geomorphological landscapes resulting from dissolution processes exerted on hard limestone tables probably formed by ancient glacial erosion and subsequent weathering. They occur in or around the Alps and the Apennines and in northern Atlantic and Baltic regions and comprise flat or sloping surfaces of limestone separated by a network of vertical fissures. The size, shape and regularity of the blocks vary according to the local character of the bedrock and the climate and much of the surface is bare but slowly accumulating soil and the shelter of crevices provides a variety of situations for colonisation. Drought-resistant communities of cushions of lichens and bryophytes and fragments of dry tufted grasslands can occur in exposed situations with more luxuriant vegetation of ferns, herbs, shrubs and trees where sheltered. Wind and herbivores often curtail any surface spread. The composition of the flora contrasts markedly between the major areas of occurrence. High mountain zones and high latitude land masses occupied by glaciers or by perennial snow. They may be inhabited by algae and invertebrates.

U41 – Snow pack

[This habitat could not be formally defined in the expert system because it is not based on vegetation.]

Accumulations of snow which do not flow, found mainly at high latitudes or altitudes, often in sunless situations like shady gorges or avalanche corridors, persistent within the limits of permanent snow but elsewhere susceptible to melting in hot summers, especially if the preceding snowfalls have been light. Some bryophytes can survive in such a habitat, an abundance of unicellular algae can colour the snow and certain insects feed on material released by melting.

U42 – Ice cap and glacier

[This habitat could not be formally defined in the expert system because it is not based on vegetation.]

Glaciers are permanent or near-permanent ice masses, created by the compaction of the snow accumulated in cold climates. These deposits, when they are under pressure, behave like a viscous liquid. So, a glacier is a mobile element, because of its ability to slowly flow along a slope under the effect of gravity. Different types of glacier exist. Characteristic for the arctic regions, ice sheets and ice caps are dome-like ice masses unconstrained by topography. More characteristic of the large mountain ranges, but also present in the arctic regions, most glaciers are constrained by topography including cirque glaciers, valley glaciers, mountain glaciers and piedmont glaciers. The smallest form of glacier is derived from snow-drifting, avalanches, or ice deposition in cold-bottom karst dolines, called glacierets, these small ice masses may have an existence limited to a few years.

U43 – Rock glacier and unvegetated ice-dominated moraine

[This habitat could not be formally defined in the expert system because it is not based on vegetation.]

Rock glaciers are a mixture of frozen rock detritus and ice of glacial or periglacial origin, forming a tongue-like mass which can flow very slowly under gravity found in regions extreme cold at high latitudes and altitudes in Europe. Ice-dominated moraines are masses of unconsolidated mineral debris found in the vicinity of retreating glaciers. Few organisms have the ability to colonize these particular habitats, because of the low temperatures and the mobility of the substrate so the flora is limited to pioneer plants and lichens, occurring principally on the lateral and terminal borders of the detritus. Invertebrates increase with the developing vegetation cover. Miscellaneous bare habitats, including glacial moraines, freeze-thaw features, inland sand dunes, burnt ground and trampled areas. Vegetation, if present, is dominated by algae, lichens or bryophytes, with vascular plants absent or very sparse.

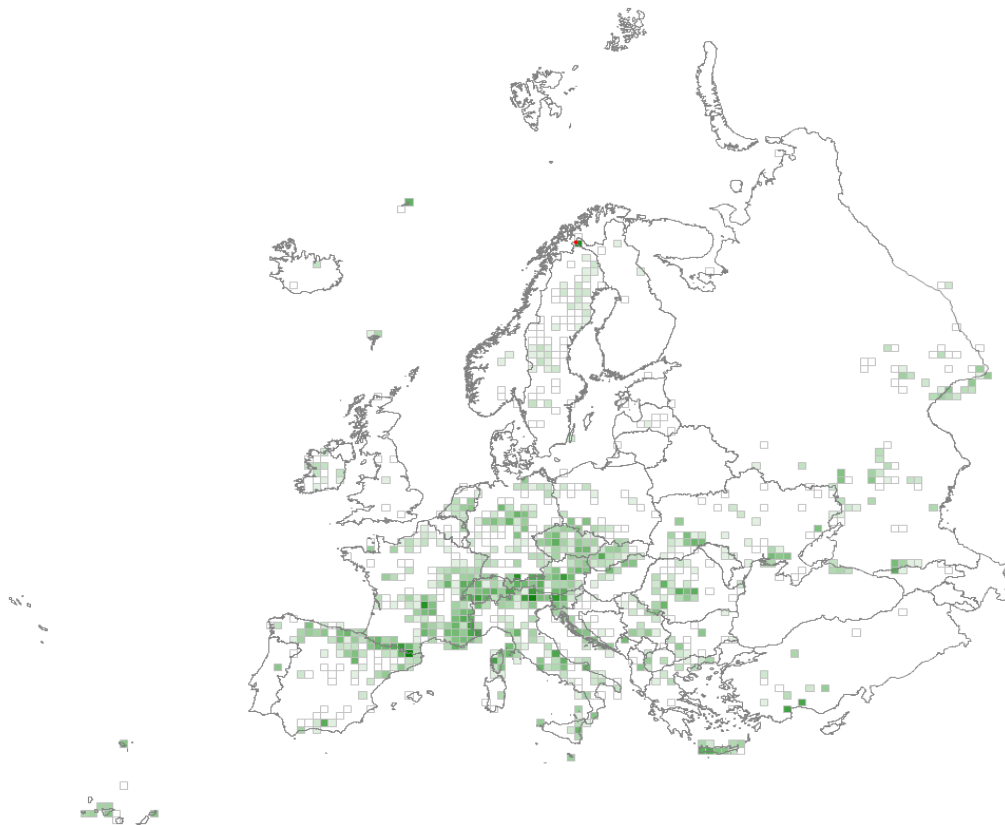
U51 – Fjell field

[This habitat could not be formally defined in the expert system because it is not based on vegetation.]

Fjell field occurs on very exposed summits, ridges and slopes of mountains in the boreal and arctic zones, blown clear of snow in winter and with shallow stony soils, nutrient-poor and usually acidic, that are susceptible to freeze-thaw and sorting. The vegetation is determined by the strong winds and cold and dominated by bryophytes and fruticose lichens. The habitat is generally beyond the limit of pastoral farming but can be grazed by wild herbivores.

U52 – Polar desert

Polar desert is characterized by extreme low summer temperatures, low precipitation and shallow, usually base-rich, soils over permafrost and flat or low undulating relief. The habitat is often totally bare or has at most a very sparse low cover of rosette plants growing among bryophytes and lichens. A light snow cover can encourage somewhat more extensive growth and areas with higher precipitation where reindeer graze and defaecate benefit from more moisture and nutrients.



Corresponding alliances in EuroVegChecklist 2016

= PAP-01A Papaverion dahliani Hofmann ex Daniëls, Elvebakk et Matveyeva in Daniëls et al. 2016

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Luzula confusa</i>	90
<i>Hierochloe alpina</i>	42
<i>Cassiope tetragona</i>	41
<i>Juncus trifidus</i>	34
<i>Carex bigelowii</i>	32
<i>Cardamine bellidifolia</i>	31

<i>Festuca ovina</i>	23
<i>Agrostis mertensii</i>	21
<i>Cassiope hypnoides</i>	20
<i>Antennaria alpina</i>	18
<i>Sibbaldia procumbens</i>	15

Constant species (percentage frequencies)

<i>Luzula confusa</i>	100
<i>Festuca ovina</i>	80
<i>Vaccinium vitis-idaea</i>	60
<i>Juncus trifidus</i>	60
<i>Carex bigelowii</i>	60
<i>Cassiope tetragona</i>	40
<i>Veronica alpina</i>	20
<i>Sibbaldia procumbens</i>	20
<i>Lycopodium annotinum</i>	20
<i>Hierochloe alpina</i>	20
<i>Hieracium lachenalii</i>	20
<i>Gnaphalium supinum</i>	20
<i>Cassiope hypnoides</i>	20
<i>Cardamine bellidifolia</i>	20
<i>Bistorta vivipara</i>	20
<i>Betula nana</i>	20
<i>Antennaria alpina</i>	20
<i>Agrostis mertensii</i>	20

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Vaccinium vitis-idaea</i>	60
<i>Luzula confusa</i>	40
<i>Carex bigelowii</i>	40

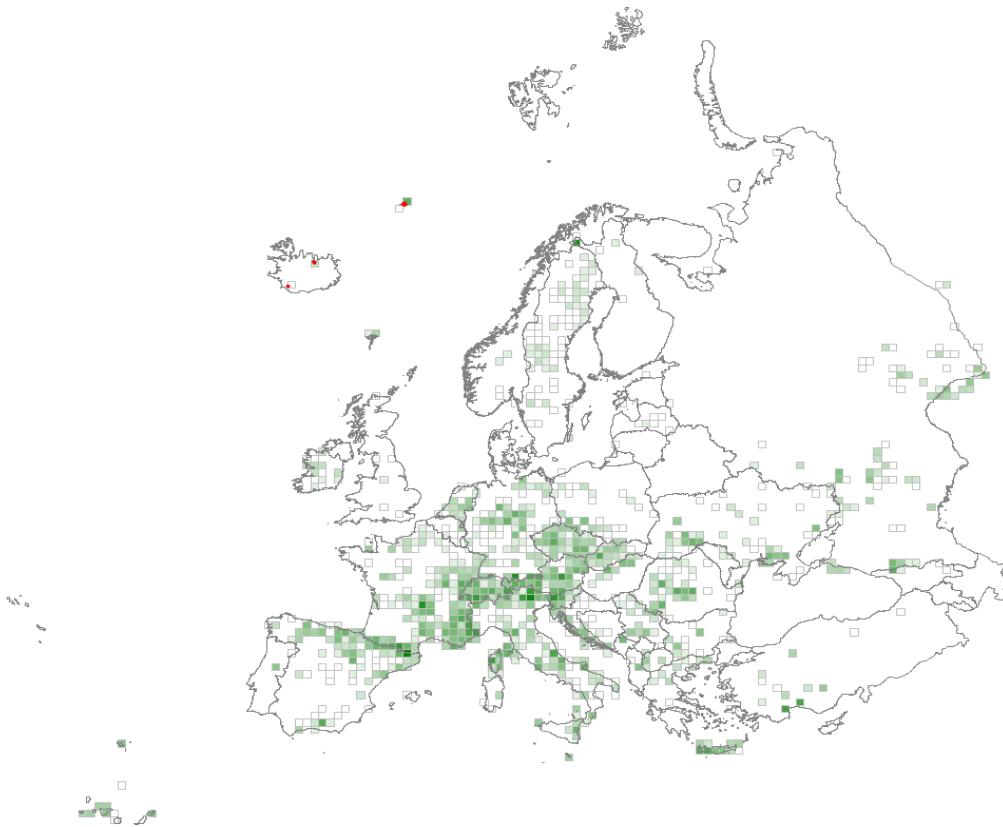
U53 – Glacial moraine with very sparse or no vegetation

[This habitat could not be formally defined in the expert system because it is not based on vegetation.]

Glacial moraines that have lost their ice and which have not yet revegetated. Excludes moraines where ice is still dominant (U4-3). Hard rock surfaces, rock jumbles, loose material deposits, soils, water bodies resulting from recent or present volcanic activity, unvegetated, occupied by lichens or mosses, or colonized by specialised, relatively sparse herb or shrub-dominated communities.

U61 – Subarctic volcanic field

This habitat comprises sparsely vegetated volcanic features such as active volcanos, recently formed lava streams, and older lava fields and rocks, as well as volcanic slopes and plains in the subarctic and arctic regions of Europe, mostly on Iceland and parts of Jan Mayen. The rock surfaces and volcanic soils are only slowly colonised, are nutrient-poor and subject to continuing effects of wind erosion and desiccation. Vascular plants and few and cryptogams are generally sparse but accumulating soil and depressions benefiting from snow-lie may sustain more extensive vegetation.



Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Galium normanii</i>	44
<i>Salix herbacea</i>	39
<i>Saxifraga oppositifolia</i>	26
<i>Salix lanata</i>	26
<i>Poa glauca</i>	21
<i>Alchemilla alpina</i>	20
<i>Silene uniflora</i>	17
<i>Arabidopsis petraea</i>	16
<i>Festuca vivipara</i>	15

Constant species (percentage frequencies)

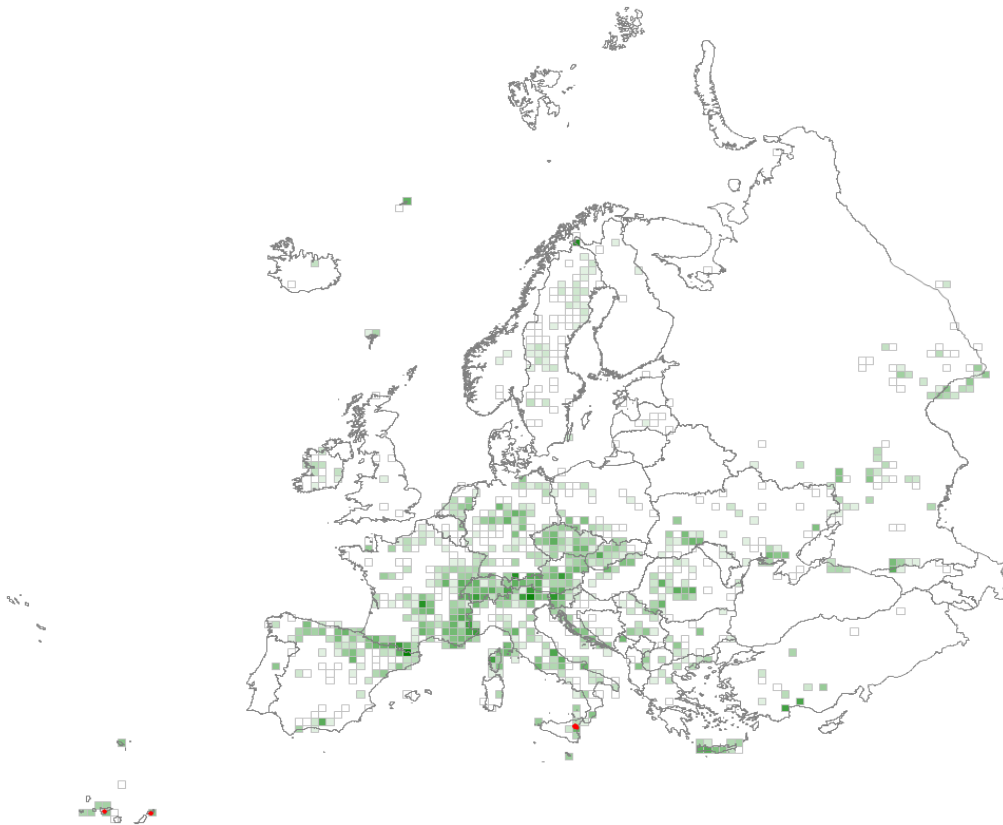
<i>Salix herbacea</i>	73
<i>Saxifraga oppositifolia</i>	33
<i>Carex bigelowii</i>	27
<i>Thymus serpyllum</i>	20
<i>Silene uniflora</i>	20
<i>Galium normanii</i>	20
<i>Empetrum nigrum</i> aggr.	20
<i>Betula pubescens</i>	20
<i>Arctostaphylos uva-ursi</i>	20
<i>Alchemilla alpina</i>	20
<i>Silene acaulis</i>	13
<i>Salix lanata</i>	13
<i>Festuca vivipara</i>	13
<i>Festuca rubra</i> aggr.	13
<i>Equisetum pratense</i>	13
<i>Bistorta vivipara</i>	13
<i>Avenella flexuosa</i>	13

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Salix herbacea</i>	67
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U62 – Mediterranean, Macaronesian and temperate volcanic field

Sparsely vegetated volcanic areas of Mediterranean and Macaronesian regions, comprising mostly recently deposited volcanic scoriae (tephra), lava flows or orifices in volcanic areas emitting hot gases and vapours in Italy and the Canary Islands. Intense solar radiation, remarkable daily temperature variations, long lasting snow-cover and mechanical disturbances caused by strong winds are usual conditions for this habitat type. Large areas are completely unvegetated or only covered by some lichens and mosses or a scattered and, on fragmentary soils, a discontinuous cover of a few, relic vascular plants.



Corresponding alliances in EuroVegChecklist 2016

- ◊ RUM-01A Rumici-Astragalion siculi Poli 1965
- ◊ RUM-01A Rumici-Astragalion siculi Poli 1965
- ◊ VIO-01A Violion cheiranthifoliae Voggenreiter ex Martín Osorio, Wildpret et Rivas-Mart. in Martín Osorio et al. 2007
- ◊ VIO-01A Violion cheiranthifoliae Voggenreiter ex Martín Osorio, Wildpret et Rivas-Mart. in Martín Osorio et al. 2007

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Anthemis aetnensis</i>	71
<i>Rumex aetnensis</i>	70
<i>Scleranthus perennis</i> subsp. <i>vulcanicus</i>	60
<i>Senecio squalidus</i> subsp. <i>aethnensis</i>	59
<i>Viola cheiranthifolia</i>	51
<i>Silene nocteolens</i>	33
<i>Hypochaeris robertia</i>	33
<i>Argyranthemum tenerifae</i>	31
<i>Descurainia bourgaeana</i>	27
<i>Erysimum scoparium</i>	27
<i>Echium auberianum</i>	25
<i>Cardamine glauca</i>	21
<i>Viola aetnensis</i>	20
<i>Saponaria sicula</i>	17
<i>Rhaponticum centauroides</i>	16

Constant species (percentage frequencies)

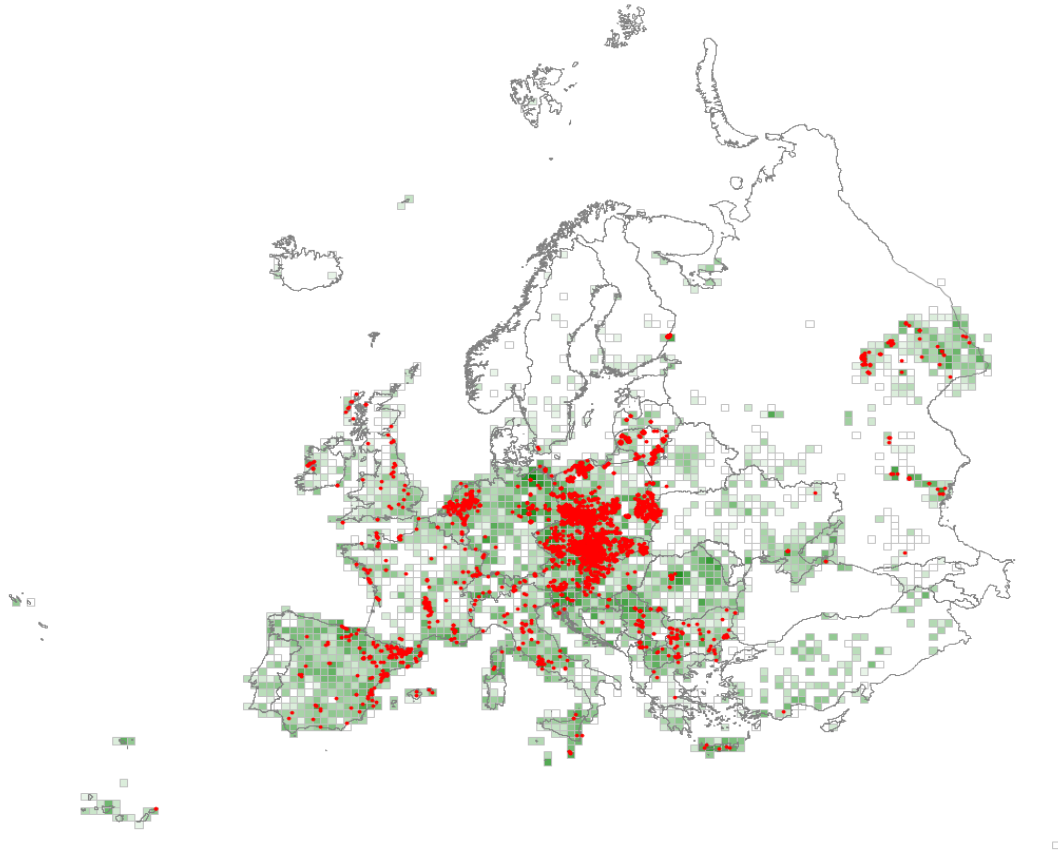
<i>Rumex aetnensis</i>	60
<i>Anthemis aetnensis</i>	57
<i>Senecio squalidus</i> subsp. <i>aethnensis</i>	48
<i>Hypochaeris robertia</i>	48
<i>Scleranthus perennis</i> subsp. <i>vulcanicus</i>	36
<i>Viola cheiranthifolia</i>	29
<i>Erysimum scoparium</i>	26
<i>Argyranthemum tenerifae</i>	24
<i>Descurainia bourgaeana</i>	22
<i>Festuca circummediterranea</i>	17
<i>Silene nocteolens</i>	14
<i>Viola aetnensis</i>	12
<i>Bellardiochloa variegata</i>	12

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Rumex aetnensis</i>	40
<i>Anthemis aetnensis</i>	36

V11 – Intensive unmixed crops

Cereal and other non-woody crops grown on large, unbroken surfaces in open field landscapes.



Corresponding alliances in EuroVegChecklist 2016

- ◊ ART-03E *Trifolio-Medicaginion sativae* Balázs 1944
- ◊ DIG-01A *Spergulo arvensis-Erodion cicutariae* J.Tx. in Passarge 1964
- ◊ DIG-01B *Eragrostion* Tx. in Oberd. 1954
- ◊ PAR-01A *Scleranthion annui* (Kruseman et Vlieger 1939) Sissingh in Westhoff et al. 1946
- ◊ PAR-01B *Oxalidion europeae* Passarge 1978
- ◊ PAR-01C *Galeopsion bifidae* Abramova in Mirkin et al. 1985
- ◊ PAR-02A *Caucalidion lappulae* von Rochow 1951
- ◊ PAR-02C *Veronico-Euphorbion* Sissingh in Passarge 1964
- ◊ PAR-02E *Anthemido ruthenicae-Sisymbrium orientalis* V. Solomakha 1990
- ◊ PAR-02G *Chenopodio albi-Descurainion sophiae* V. Solomakha et al. in V. Solomakha 1988
- ◊ PAR-02H *Erysimo repandi-Lycopsion orientalis* V. Solomakha 1996
- ◊ PAR-02I *Lactucion tataricae* Rudakov in Mirkin et al. 1985

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Viola arvensis</i>	29
<i>Fallopia convolvulus</i>	28
<i>Triticum aestivum</i>	26
<i>Secale cereale</i>	26
<i>Chenopodium album</i> aggr.	24
<i>Spergula arvensis</i>	24
<i>Cyanus segetum</i>	23
<i>Apera spica-venti</i>	23
<i>Myosotis arvensis</i>	22
<i>Solanum tuberosum</i>	22
<i>Hordeum vulgare</i>	21
<i>Tripleurospermum maritimum</i> aggr.	20
<i>Persicaria lapathifolia</i>	20
<i>Stellaria media</i>	20
<i>Thlaspi arvense</i>	19
<i>Veronica persica</i>	18
<i>Avena sativa</i>	18
<i>Capsella bursa-pastoris</i>	18
<i>Cirsium arvense</i>	18
<i>Brassica napus</i>	17
<i>Scleranthus annuus</i>	17
<i>Equisetum arvense</i>	16
<i>Sinapis arvensis</i>	16
<i>Polygonum aviculare</i> aggr.	16
<i>Vicia hirsuta</i>	16
<i>Galinsoga parviflora</i>	15

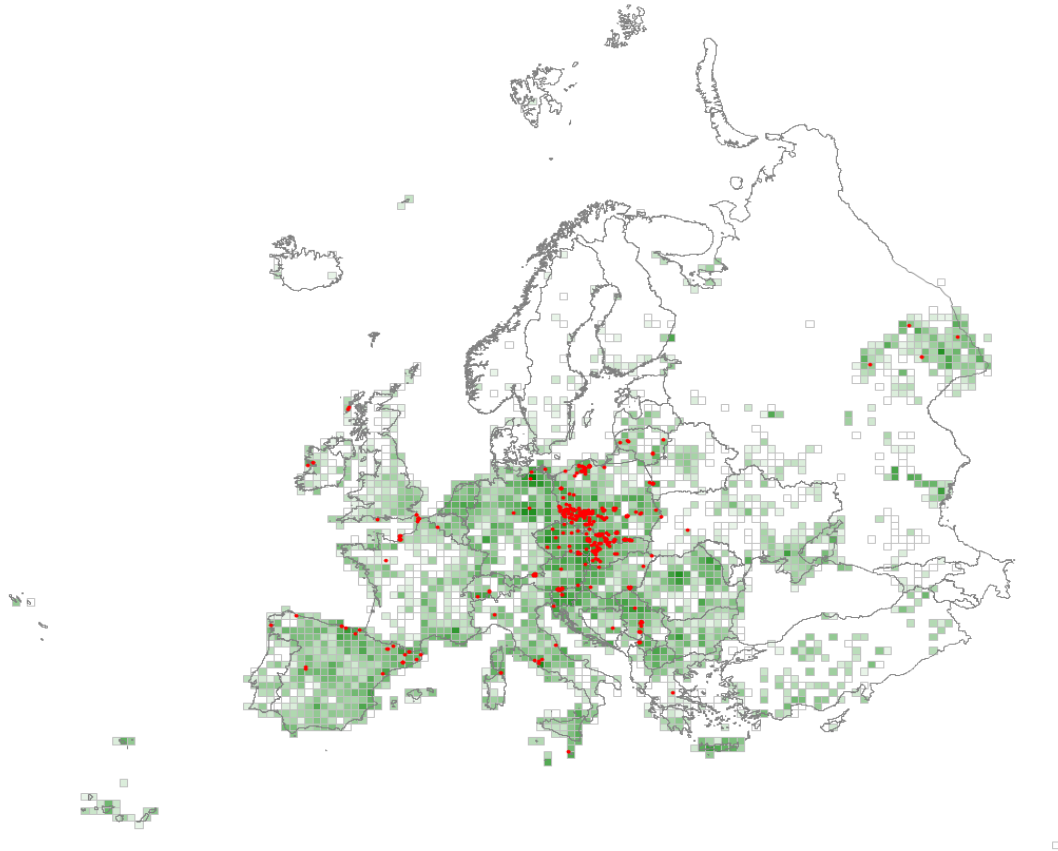
Constant species (percentage frequencies)

<i>Chenopodium album</i> aggr.	54
<i>Fallopia convolvulus</i>	50
<i>Viola arvensis</i>	48
<i>Stellaria media</i>	46
<i>Elytrigia repens</i> aggr.	46
<i>Cirsium arvense</i>	45
<i>Tripleurospermum maritimum</i> aggr.	39
<i>Polygonum aviculare</i> aggr.	39
<i>Equisetum arvense</i>	36
<i>Capsella bursa-pastoris</i>	35
<i>Myosotis arvensis</i>	31
<i>Convolvulus arvensis</i>	31
<i>Cyanus segetum</i>	29
<i>Apera spica-venti</i>	28
<i>Persicaria lapathifolia</i>	27
<i>Galium aparine</i>	25
<i>Spergula arvensis</i>	24
<i>Achillea millefolium</i> aggr.	24
<i>Secale cereale</i>	23
<i>Galeopsis tetrahit</i> aggr.	23
<i>Veronica persica</i>	22
<i>Vicia hirsuta</i>	21
<i>Vicia sativa</i>	20
<i>Taraxacum</i> sect. <i>Taraxacum</i>	20

<i>Solanum tuberosum</i>	20
<i>Scleranthus annuus</i>	20
<i>Rumex acetosella</i>	20
<i>Veronica arvensis</i>	19
<i>Triticum aestivum</i>	19
<i>Sonchus arvensis</i>	19
<i>Anagallis arvensis</i>	19
<i>Persicaria maculosa</i>	18
<i>Echinochloa crus-galli</i>	18
<i>Thlaspi arvense</i>	17
<i>Sinapis arvensis</i>	17
<i>Plantago major</i>	17
<i>Lamium purpureum</i>	16
<i>Raphanus raphanistrum</i>	15
<i>Mentha arvensis</i>	15
<i>Galinsoga parviflora</i>	15
<i>Stachys palustris</i>	14
<i>Papaver rhoeas</i>	14
<i>Euphorbia helioscopia</i>	14
<i>Artemisia vulgaris</i>	14
<i>Setaria pumila</i>	13
<i>Ranunculus repens</i>	13
<i>Ochlopoa annua</i>	13
<i>Trifolium repens</i>	12
<i>Hordeum vulgare</i>	12
<i>Gnaphalium uliginosum</i>	12
<i>Erodium cicutarium</i>	12
<i>Lapsana communis</i>	11
<i>Avena sativa</i>	11

V12 – Mixed crops of market gardens and horticulture

Intensive cultivation of vegetables, flowers, small fruits, usually in alternating strips of different crops. Includes allotments and small-scale market gardens.



Corresponding alliances in EuroVegChecklist 2016

- ◊ DIG-01A *Spergulo arvensis-Erodion cicutariae* J.Tx. in Passarge 1964
- ◊ DIG-01B *Eragrostion Tx.* in Oberd. 1954
- ◊ PAR-01A *Scleranthion annui* (Kruseman et Vlieger 1939) Sissingh in Westhoff et al. 1946
- ◊ PAR-01B *Oxalidion europeae* Passarge 1978
- ◊ PAR-01C *Galeopsion bifidae* Abramova in Mirkin et al. 1985
- ◊ PAR-02C *Veronico-Euphorbion* Sissingh in Passarge 1964
- ◊ PAR-02D *Matricario chamomillae-Chenopodion albi* Timár 1954
- ◊ PAR-03A *Ridolfion segeti* Nègre ex Rivas-Mart. et al. 1999
- ◊ PAR-03B *Roemerion hybridae* Rivas-Mart., Fernández-González et Loidi in Loidi et al. 1997
- ◊ PAR-03C *Rumicion bucephalophori* Nežadal 1989
- ◊ PAR-03D *Fumarion wirtgenii-agrarariae* S. Brullo in S. Brullo et Marcenò 1985

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Solanum tuberosum</i>	51
<i>Galinsoga parviflora</i>	37
<i>Chenopodium album</i> aggr.	34
<i>Zea mays</i>	34
<i>Beta vulgaris</i> subsp. <i>vulgaris</i>	33
<i>Persicaria lapathifolia</i>	33
<i>Armoracia rusticana</i>	33
<i>Galinsoga quadriradiata</i>	32
<i>Persicaria maculosa</i>	29
<i>Veronica persica</i>	28
<i>Cucurbita pepo</i>	28
<i>Papaver somniferum</i>	26
<i>Fallopia convolvulus</i>	26
<i>Lamium purpureum</i>	25
<i>Brassica rapa</i>	25
<i>Stellaria media</i>	25
<i>Euphorbia helioscopia</i>	25
<i>Setaria pumila</i>	23
<i>Echinochloa crus-galli</i>	23
<i>Capsella bursa-pastoris</i>	22
<i>Viola arvensis</i>	22
<i>Myosotis arvensis</i>	22
<i>Anethum graveolens</i>	21
<i>Brassica oleracea</i>	21
<i>Lipandra polysperma</i>	21
<i>Thlaspi arvense</i>	20
<i>Tripleurospermum maritimum</i> aggr.	20
<i>Cirsium arvense</i>	20
<i>Raphanus sativus</i>	19
<i>Sonchus arvensis</i>	19
<i>Mentha arvensis</i>	19
<i>Gnaphalium uliginosum</i>	19
<i>Sinapis arvensis</i>	18
<i>Helianthus annuus</i>	18
<i>Erysimum cheiranthoides</i>	18
<i>Setaria viridis</i>	18
<i>Amaranthus retroflexus</i>	18
<i>Spergula arvensis</i>	18
<i>Phaseolus vulgaris</i>	18
<i>Equisetum arvense</i>	17
<i>Oxalis stricta</i>	16
<i>Polygonum aviculare</i> aggr.	16
<i>Atriplex patula</i>	16
<i>Lactuca sativa</i>	15

Constant species (percentage frequencies)

<i>Chenopodium album</i> aggr.	77
<i>Stellaria media</i>	56
<i>Cirsium arvense</i>	50
<i>Fallopia convolvulus</i>	47
<i>Solanum tuberosum</i>	45
<i>Elytrigia repens</i> aggr.	45

<i>Capsella bursa-pastoris</i>	44
<i>Persicaria lapathifolia</i>	43
<i>Daucus carota</i>	42
<i>Convolvulus arvensis</i>	40
<i>Polygonum aviculare</i> aggr.	39
<i>Tripleurospermum maritimum</i> aggr.	38
<i>Equisetum arvense</i>	38
<i>Viola arvensis</i>	36
<i>Echinochloa crus-galli</i>	36
<i>Persicaria maculosa</i>	35
<i>Galinsoga parviflora</i>	35
<i>Veronica persica</i>	33
<i>Myosotis arvensis</i>	30
<i>Sonchus arvensis</i>	29
<i>Galeopsis tetrahit</i> aggr.	28
<i>Euphorbia helioscopia</i>	28
<i>Achillea millefolium</i> aggr.	28
<i>Plantago major</i>	27
<i>Lamium purpureum</i>	27
<i>Taraxacum</i> sect. <i>Taraxacum</i>	25
<i>Setaria pumila</i>	24
<i>Sonchus oleraceus</i>	23
<i>Ranunculus repens</i>	23
<i>Mentha arvensis</i>	23
<i>Galium aparine</i>	23
<i>Beta vulgaris</i> subsp. <i>vulgaris</i>	23
<i>Sonchus asper</i>	21
<i>Galinsoga quadriradiata</i>	21
<i>Vicia hirsuta</i>	20
<i>Sinapis arvensis</i>	20
<i>Anagallis arvensis</i>	20
<i>Stachys palustris</i>	19
<i>Setaria viridis</i>	19
<i>Thlaspi arvense</i>	18
<i>Spergula arvensis</i>	18
<i>Amaranthus retroflexus</i>	18
<i>Ochlopoa annua</i>	17
<i>Cyanus segetum</i>	17
<i>Artemisia vulgaris</i>	17
<i>Zea mays</i>	16
<i>Armoracia rusticana</i>	16
<i>Trifolium repens</i>	15
<i>Raphanus raphanistrum</i>	15
<i>Lipandra polysperma</i>	15
<i>Gnaphalium uliginosum</i>	15
<i>Vicia sativa</i>	14
<i>Veronica arvensis</i>	14
<i>Lapsana communis</i>	14
<i>Atriplex patula</i>	14
<i>Silene latifolia</i>	13
<i>Rumex crispus</i>	13
<i>Rumex acetosella</i>	13
<i>Plantago lanceolata</i>	13
<i>Erysimum cheiranthoides</i>	13
<i>Erodium cicutarium</i>	13

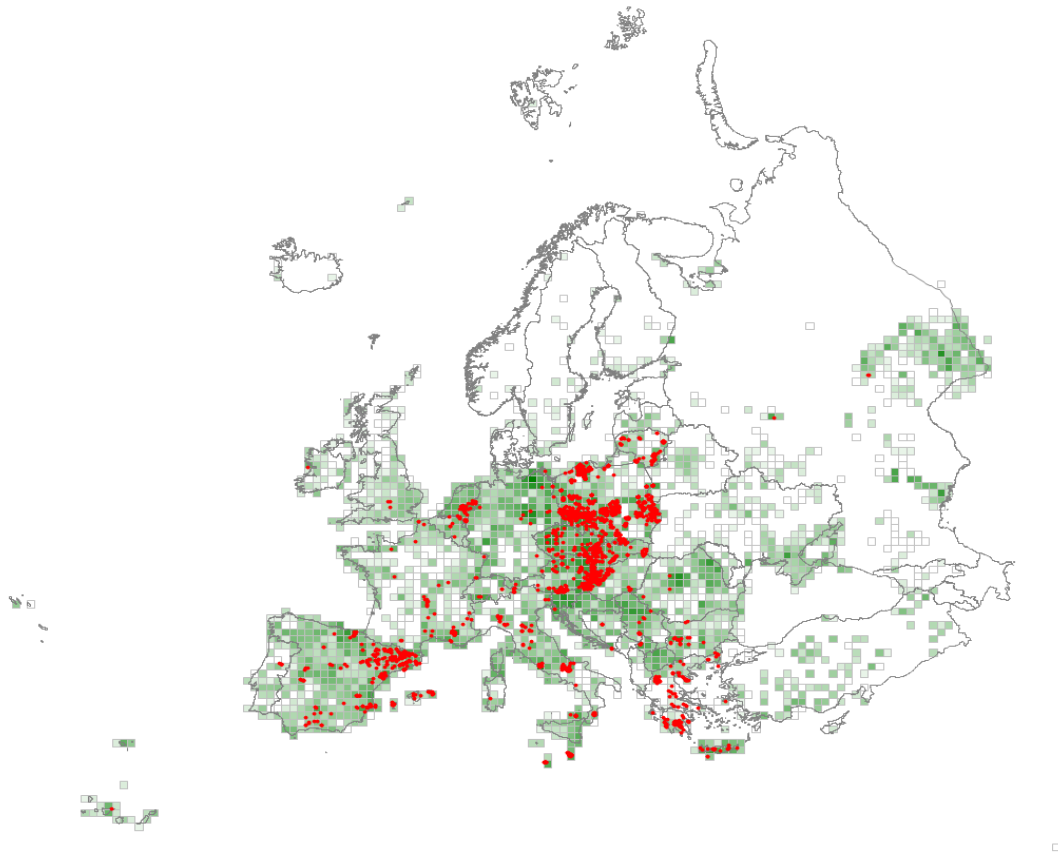
<i>Persicaria hydropiper</i>	12
<i>Oxalis stricta</i>	12
<i>Geranium pusillum</i>	12
<i>Argentina anserina</i>	12
<i>Papaver rhoeas</i>	11
<i>Brassica oleracea</i>	11
<i>Anthemis arvensis</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Solanum tuberosum</i>	29
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V13 – Arable land with unmixed crops grown by low-intensity agricultural methods

Traditionally and extensively cultivated crops, in particular, of cereals, harbouring a rich and threatened flora of field weeds including *Agrostemma githago*, *Calendula arvensis*, *Cyanus segetum*, *Glebionis segetum*, *Legousia speculum-veneris*, *Adonis* spp., *Consolida* spp., *Nigella* spp. and *Papaver* spp.



Corresponding alliances in EuroVegChecklist 2016

- <> ART-03E Trifolio-Medicaginion sativae Balázs 1944
- <> ART-03F Achilleion millefolii Abramova et Rudakov in Mirkin et al. 1985
- <> DIG-01A Spergulo arvensis-Erodion cicutariae J.Tx. in Passarge 1964
- <> DIG-01B Eragrostion Tx. in Oberd. 1954
- <> DIG-01C Consolido-Eragrostion poidis Soó et Timár in Timár 1957
- <> DIG-01D Diplotaxidion eruroidis Br.-Bl. in Br.-Bl. et al. 1936
- <> DIG-01E Chenopodion botryos S. Brullo et Marcenò 1980
- <> PAR-01A Scleranthion annui (Kruseman et Vlieger 1939) Sissingh in Westhoff et al. 1946
- <> PAR-01B Oxalidion europeae Passarge 1978
- <> PAR-01C Galeopsion bifidae Abramova in Mirkin et al. 1985
- <> PAR-02A Caucalidion lappulae von Rochow 1951
- <> PAR-02B Linion Rothmaler 1944
- <> PAR-02C Veronico-Euphorbion Sissingh in Passarge 1964

- <> PAR-02D Matricario chamomillae-Chenopodion albi Timár 1954
- <> PAR-02E Anthemido ruthenicae-Sisymbrium orientalis V. Solomakha 1990
- <> PAR-02F Lamio amplexicaule-Calepinion irregularis Bagrikova 1996
- <> PAR-02G Chenopodio albi-Descurainion sophiae V. Solomakha et al. in V. Solomakha 1988
- <> PAR-02H Erysimo repandi-Lycopsion orientalis V. Solomakha 1996
- <> PAR-02I Lactucion tataricae Rudakov in Mirkin et al. 1985
- <> PAR-03A Ridolfion segeti Nègre ex Rivas-Mart. et al. 1999
- <> PAR-03B Roemerion hybridae Rivas-Mart., Fernández-González et Loidi in Loidi et al. 1997
- <> PAR-03C Rumicion bucephalophori Nežadal 1989
- <> PAR-03D Fumarion wirtgenii-agrariae S. Brullo in S. Brullo et Marcenò 1985

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Cyanus segetum</i>	55
<i>Secale cereale</i>	51
<i>Viola arvensis</i>	39
<i>Scleranthus annuus</i>	35
<i>Apera spica-venti</i>	35
<i>Agrostemma githago</i>	33
<i>Fallopia convolvulus</i>	33
<i>Papaver argemone</i>	32
<i>Triticum aestivum</i>	30
<i>Raphanus raphanistrum</i>	29
<i>Papaver rhoeas</i>	29
<i>Anthemis arvensis</i>	28
<i>Myosotis arvensis</i>	28
<i>Vicia hirsuta</i>	27
<i>Aphanes arvensis</i>	26
<i>Buglossoides arvensis</i>	26
<i>Neslia paniculata</i>	24
<i>Spergula arvensis</i>	24
<i>Vicia sativa</i>	23
<i>Hordeum vulgare</i>	23
<i>Avena sativa</i>	22
<i>Ranunculus arvensis</i>	21
<i>Veronica arvensis</i>	20
<i>Bromus secalinus</i>	19
<i>Capsella bursa-pastoris</i>	19
<i>Stellaria media</i>	19
<i>Thlaspi arvense</i>	19
<i>Convolvulus arvensis</i>	19
<i>Cirsium arvense</i>	19
<i>Galium tricornutum</i>	18
<i>Consolida regalis</i>	18
<i>Vicia tetrasperma</i>	18
<i>Veronica persica</i>	18
<i>Chenopodium album</i> aggr.	18
<i>Valerianella dentata</i>	18
<i>Polygonum aviculare</i> aggr.	18
<i>Sinapis arvensis</i>	17
<i>Veronica triphyllos</i>	17

<i>Veronica hederifolia</i>	17
<i>Arnoseris minima</i>	17
<i>Equisetum arvense</i>	17
<i>Mentha arvensis</i>	16
<i>Arabidopsis thaliana</i>	16
<i>Vicia villosa</i>	16
<i>Anagallis arvensis</i>	16
<i>Tripleurospermum maritimum</i> aggr.	15

Constant species (percentage frequencies)

<i>Cyanus segetum</i>	66
<i>Viola arvensis</i>	65
<i>Fallopia convolvulus</i>	58
<i>Convolvulus arvensis</i>	50
<i>Cirsium arvense</i>	48
<i>Secale cereale</i>	46
<i>Polygonum aviculare</i> aggr.	44
<i>Stellaria media</i>	43
<i>Apera spica-venti</i>	42
<i>Scleranthus annuus</i>	41
<i>Chenopodium album</i> aggr.	41
<i>Vicia sativa</i>	40
<i>Myosotis arvensis</i>	39
<i>Anthemis arvensis</i>	39
<i>Capsella bursa-pastoris</i>	38
<i>Papaver rhoeas</i>	37
<i>Equisetum arvense</i>	37
<i>Elytrigia repens</i> aggr.	37
<i>Vicia hirsuta</i>	36
<i>Veronica arvensis</i>	34
<i>Anagallis arvensis</i>	34
<i>Raphanus raphanistrum</i>	33
<i>Tripleurospermum maritimum</i> aggr.	30
<i>Achillea millefolium</i> aggr.	30
<i>Rumex acetosella</i>	29
<i>Galium aparine</i>	27
<i>Buglossoides arvensis</i>	27
<i>Aphanes arvensis</i>	25
<i>Spergula arvensis</i>	24
<i>Galeopsis tetrahit</i> aggr.	23
<i>Arenaria serpyllifolia</i>	23
<i>Triticum aestivum</i>	22
<i>Veronica persica</i>	21
<i>Mentha arvensis</i>	20
<i>Sonchus arvensis</i>	19
<i>Sinapis arvensis</i>	19
<i>Arabidopsis thaliana</i>	19
<i>Persicaria lapathifolia</i>	18
<i>Papaver argemone</i>	18
<i>Consolida regalis</i>	18
<i>Vicia villosa</i>	17
<i>Vicia tetrasperma</i>	17
<i>Thlaspi arvense</i>	17
<i>Lamium amplexicaule</i>	17
<i>Agrostemma githago</i>	17

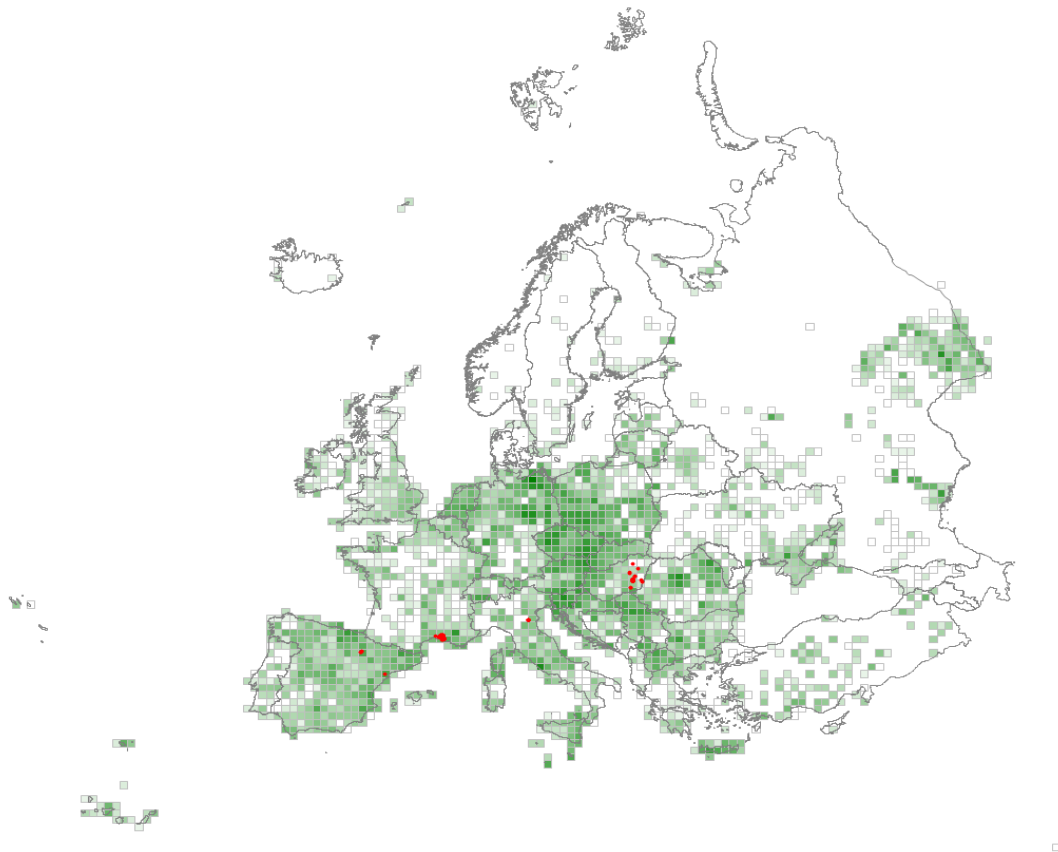
<i>Veronica hederifolia</i>	16
<i>Taraxacum</i> sect. <i>Taraxacum</i>	16
<i>Ranunculus repens</i>	16
<i>Euphorbia helioscopia</i>	16
<i>Rumex crispus</i>	14
<i>Persicaria maculosa</i>	14
<i>Medicago lupulina</i>	14
<i>Erodium cicutarium</i>	14
<i>Avena sativa</i>	14
<i>Veronica triphyllos</i>	13
<i>Plantago major</i>	13
<i>Hordeum vulgare</i>	13
<i>Artemisia vulgaris</i>	13
<i>Arnoseris minima</i>	13
<i>Trifolium repens</i>	12
<i>Stachys palustris</i>	12
<i>Sonchus asper</i>	12
<i>Sherardia arvensis</i>	12
<i>Ranunculus arvensis</i>	12
<i>Neslia paniculata</i>	12
<i>Myosotis stricta</i>	12
<i>Lamium purpureum</i>	12
<i>Lapsana communis</i>	11
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Secale cereale</i>	39
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V14 – Inundated or inundatable cropland, including rice fields

Inundated or inundatable fields used for the cultivation of rice (*Oryza sativa*) and more rarely for other crops. When not too heavily treated, they may provide substitution habitats for some wetland faunal elements, in particular, birds, including ducks, rails and herons.



Corresponding alliances in EuroVegChecklist 2016

= ORY-01A *Oryza sativae*-*Echinochloion oryzoidis* O. de Bolòs et Masclans 1955

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Oryza sativa</i>	100
<i>Schoenoplectus mucronatus</i>	72
<i>Echinochloa oryzoides</i>	60
<i>Echinochloa crus-galli</i>	56
<i>Najas minor</i>	53
<i>Elatine triandra</i>	53
<i>Cyperus difformis</i>	52
<i>Schoenoplectus supinus</i>	51
<i>Typha angustifolia</i>	51

<i>Lindernia dubia</i>	51
<i>Elatine hungarica</i>	47
<i>Alisma lanceolatum</i>	45
<i>Chara globularis</i>	45
<i>Elatine alsinastrum</i>	42
<i>Lindernia procumbens</i>	41
<i>Alisma plantago-aquatica</i>	39
<i>Lemna minor</i>	38
<i>Limnophila indica</i>	37
<i>Eleocharis acicularis</i>	36
<i>Cladophora fracta</i>	36
<i>Chara braunii</i>	36
<i>Utricularia vulgaris</i>	36
<i>Alisma gramineum</i>	33
<i>Typha latifolia</i>	32
<i>Marsilea quadrifolia</i>	32
<i>Lythrum portula</i>	28
<i>Zannichellia pedunculata</i>	27
<i>Paspalum distichum</i>	26
<i>Salvinia natans</i>	24
<i>Spirodela polyrhiza</i>	23
<i>Bolboschoenus maritimus</i>	22
<i>Typha laxmannii</i>	21
<i>Cyperus glomeratus</i>	21
<i>Butomus umbellatus</i>	21
<i>Limosella aquatica</i>	20
<i>Ammannia robusta</i>	19
<i>Potamogeton lucens</i>	17
<i>Eleocharis palustris</i>	17
<i>Heteranthera reniformis</i>	16
<i>Ammannia auriculata</i>	16
<i>Nitella mucronata</i>	16
<i>Lemna trisulca</i>	16
<i>Riccia fluitans</i>	16

Constant species (percentage frequencies)

<i>Oryza sativa</i>	100
<i>Echinochloa crus-galli</i>	86
<i>Typha angustifolia</i>	54
<i>Schoenoplectus mucronatus</i>	53
<i>Alisma plantago-aquatica</i>	46
<i>Lemna minor</i>	43
<i>Bolboschoenus maritimus</i>	39
<i>Echinochloa oryzoides</i>	36
<i>Typha latifolia</i>	32
<i>Alisma lanceolatum</i>	30
<i>Najas minor</i>	28
<i>Elatine triandra</i>	28
<i>Schoenoplectus supinus</i>	27
<i>Eleocharis palustris</i>	27
<i>Cyperus difformis</i>	27
<i>Lindernia dubia</i>	26
<i>Utricularia vulgaris</i>	22
<i>Elatine hungarica</i>	22
<i>Chara globularis</i>	22

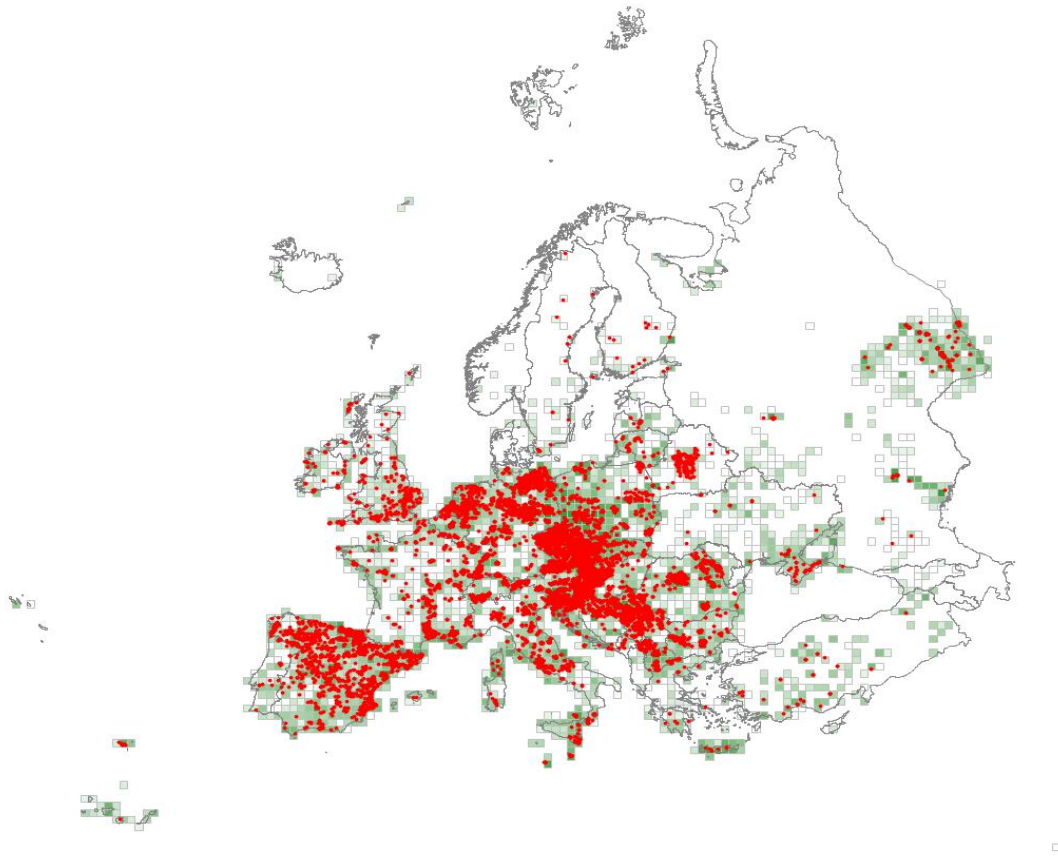
<i>Eleocharis acicularis</i>	20
<i>Elatine alsinastrum</i>	18
<i>Lindernia procumbens</i>	17
<i>Alisma gramineum</i>	16
<i>Spirodela polyrhiza</i>	14
<i>Phragmites australis</i>	14
<i>Limnophila indica</i>	14
<i>Paspalum distichum</i>	13
<i>Cladophora fracta</i>	13
<i>Chara braunii</i>	13
<i>Butomus umbellatus</i>	13
<i>Persicaria maculosa</i>	12
<i>Lythrum portula</i>	12
<i>Persicaria amphibia</i>	11
<i>Mentha pulegium</i>	11
<i>Marsilea quadrifolia</i>	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Oryza sativa</i>	100
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V15 – Bare tilled, fallow or recently abandoned arable land

Fields abandoned or left to rest, and other interstitial spaces on disturbed ground. Set-aside or abandoned arable land with forbs planted for purposes of soil protection, stabilisation, fertilisation or reclamation. Abandoned fields are colonised by numerous pioneer, introduced or nitrophilous plants. They provide habitats that can be used by animals of open spaces.



Corresponding alliances in EuroVegChecklist 2016

- ◁> PAR-01A *Scleranthion annui* (Kruseman et Vlieger 1939) Sissingh in Westhoff et al. 1946
- ◁> PAR-01B *Oxalidion europeae* Passarge 1978
- ◁> PAR-01C *Galeopsion bifidae* Abramova in Mirkin et al. 1985
- ◁> PAR-02C *Veronico-Euphorbion* Sissingh in Passarge 1964
- ◁> PAR-02D *Matricario chamomillae-Chenopodion albi* Timár 1954
- ◁> PAR-02F *Lamio amplexicaule-Calepinion irregularis* Bagrikova 1996
- ◁> SIS-01A *Atriplicion* Passarge 1978 nom. conserv. propos.
- ◁> SIS-01B *Cannabion sativae* Golub et al. 2012
- ◁> SIS-01D *Sisymbrium officinalis* Tx. et al. ex von Rochow 1951

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Viola arvensis</i>	29
<i>Fallopia convolvulus</i>	28
<i>Veronica persica</i>	25
<i>Stellaria media</i>	23
<i>Capsella bursa-pastoris</i>	23
<i>Myosotis arvensis</i>	22
<i>Chenopodium album</i> aggr.	22
<i>Papaver rhoeas</i>	20
<i>Cyanus segetum</i>	19
<i>Apera spica-venti</i>	19
<i>Polygonum aviculare</i> aggr.	19
<i>Veronica hederifolia</i>	18
<i>Lamium purpureum</i>	18
<i>Sinapis arvensis</i>	17
<i>Cirsium arvense</i>	17
<i>Euphorbia helioscopia</i>	17
<i>Aphanes arvensis</i>	17
<i>Thlaspi arvense</i>	16
<i>Convolvulus arvensis</i>	16
<i>Tripleurospermum maritimum</i> aggr.	16
<i>Veronica polita</i>	15
<i>Lamium amplexicaule</i>	15

Constant species (percentage frequencies)

<i>Stellaria media</i>	53
<i>Fallopia convolvulus</i>	50
<i>Chenopodium album</i> aggr.	50
<i>Viola arvensis</i>	48
<i>Polygonum aviculare</i> aggr.	47
<i>Capsella bursa-pastoris</i>	46
<i>Cirsium arvense</i>	45
<i>Convolvulus arvensis</i>	43
<i>Elytrigia repens</i> aggr.	36
<i>Myosotis arvensis</i>	31
<i>Tripleurospermum maritimum</i> aggr.	30
<i>Veronica persica</i>	29
<i>Galium aparine</i>	28
<i>Anagallis arvensis</i>	28
<i>Papaver rhoeas</i>	25
<i>Ochlopoa annua</i>	24
<i>Cyanus segetum</i>	24
<i>Apera spica-venti</i>	23
<i>Veronica arvensis</i>	22
<i>Equisetum arvense</i>	21
<i>Vicia sativa</i>	20
<i>Persicaria lapathifolia</i>	20
<i>Taraxacum</i> sect. <i>Taraxacum</i>	19
<i>Plantago major</i>	19
<i>Lamium purpureum</i>	19
<i>Euphorbia helioscopia</i>	19
<i>Vicia hirsuta</i>	18
<i>Sinapis arvensis</i>	18

<i>Lamium amplexicaule</i>	18
<i>Veronica hederifolia</i>	17
<i>Sonchus arvensis</i>	17
<i>Persicaria maculosa</i>	17
<i>Aphanes arvensis</i>	16
<i>Thlaspi arvense</i>	15
<i>Sonchus oleraceus</i>	15
<i>Sonchus asper</i>	15
<i>Scleranthus annuus</i>	15
<i>Raphanus raphanistrum</i>	15
<i>Galeopsis tetrahit</i> aggr.	15
<i>Anthemis arvensis</i>	15
<i>Spergula arvensis</i>	14
<i>Senecio vulgaris</i>	14
<i>Echinochloa crus-galli</i>	14
<i>Consolida regalis</i>	14
<i>Setaria pumila</i>	13
<i>Ranunculus repens</i>	13
<i>Mentha arvensis</i>	13
<i>Galinsoga parviflora</i>	13
<i>Arenaria serpyllifolia</i>	13
<i>Achillea millefolium</i> aggr.	13
<i>Rumex acetosella</i>	12
<i>Matricaria chamomilla</i>	12
<i>Trifolium repens</i>	11
<i>Erodium cicutarium</i>	11
<i>Arabidopsis thaliana</i>	11
<i>Amaranthus retroflexus</i>	11

V21 – Large-scale ornamental garden area

[None of the habitats within group V2 could be formally defined in the expert system because cultivated areas in gardens or parks cannot be distinguished from various man-made habitats based on the vegetation-plot data.]

Cultivated areas of large-scale recreational gardens. The vegetation, usually composed mainly of introduced species or cultivars, can nevertheless include many native plants and supports a varied fauna when not intensively managed. Large-scale gardens are treated as habitat complexes (X23).

V22 – Small-scale ornamental and domestic garden area

Cultivated areas of ornamental gardens and small parks beside houses or in city squares. Kitchen gardens in the immediate vicinity of dwelling places. Excludes allotment gardens (V12). Small gardens are treated as habitat complexes (X22, X24, X25).

V23 – Recently abandoned garden area

Abandoned flowerbeds and vegetable plots in gardens are rapidly colonised by abundant weeds.

V31 – Agriculturally-improved, re-seeded and heavily fertilised grassland, including sports fields and grass lawns

[This habitat could not be formally defined in the expert system because these grasslands cannot be distinguished from other some other grassland habitats based on the vegetation-plot data.]

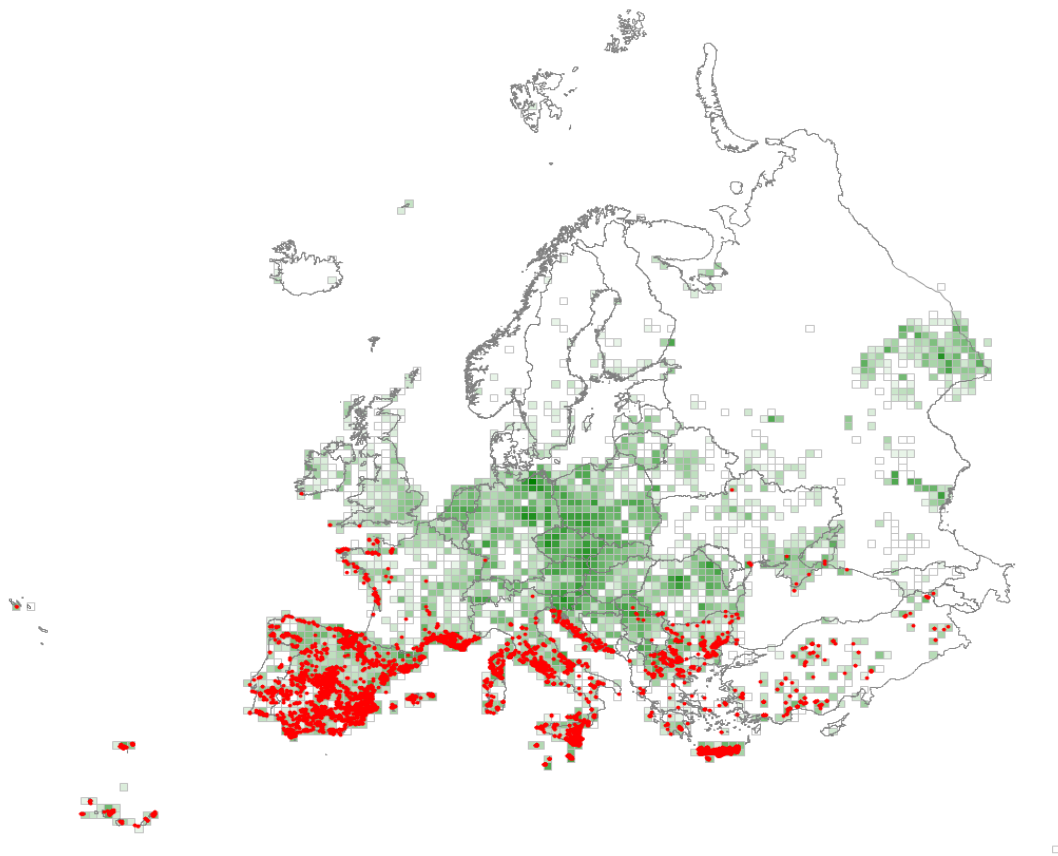
Land occupied by heavily fertilised or re-seeded permanent grassland, sometimes treated by selective herbicides, with very impoverished flora and fauna, used for grazing, soil protection and stabilisation, landscaping or recreation.

Corresponding alliances in EuroVegChecklist 2016

- <> MOL-01C Cynosurion cristati Tx. 1947
- <> MOL-10A Potentillion anserinae Tx. 1947

V32 – Mediterranean subnitrophilous annual grassland

Land dominated by annual grasses and herbs, on soils slightly enriched in nitrates, in the meso- and thermo-Mediterranean zones. Characteristic are annual species of *Aegilops*, *Avena*, *Bromus*, *Vulpia*, crucifers and leguminous plants. These annuals occur as pioneers of bare soils slightly nitrified by aeration or organic addition, along roads, on land-fills and in interstitial spaces of cultivation. They also replace the oligotrophic annual vegetation of Mediterranean xeric grasslands (R1D, R1F) under the influence of pastoral activities. Subnitrophilous annual grassland is widespread as a successional stage after cultivation. Woody re-colonisation may lead to maquis (S5) or garrigue (S6).



Corresponding alliances in EuroVegChecklist 2016

- > CHE-01F *Hordeion murini* Br.-Bl. in Br.-Bl. et al. 1936
- > CHE-01H *Laguro ovati-Bromion rigidi* Géhu et Géhu-Franck 1985
- > CHE-01I *Linario polygalifoliae-Vulpion alopecuri* Br.-Bl., Rozeira et Silva in Br.-Bl. et al. 1972
- > CHE-01J *Taeniathero-Aegilopion geniculatae* Rivas-Mart. et Izco 1977
- <> CHE-01K *Laguro ovati-Vulpion fasciculatae* Géhu et Biondi 1994

Characteristic species combination

Diagnostic species (phi coefficient * 100)

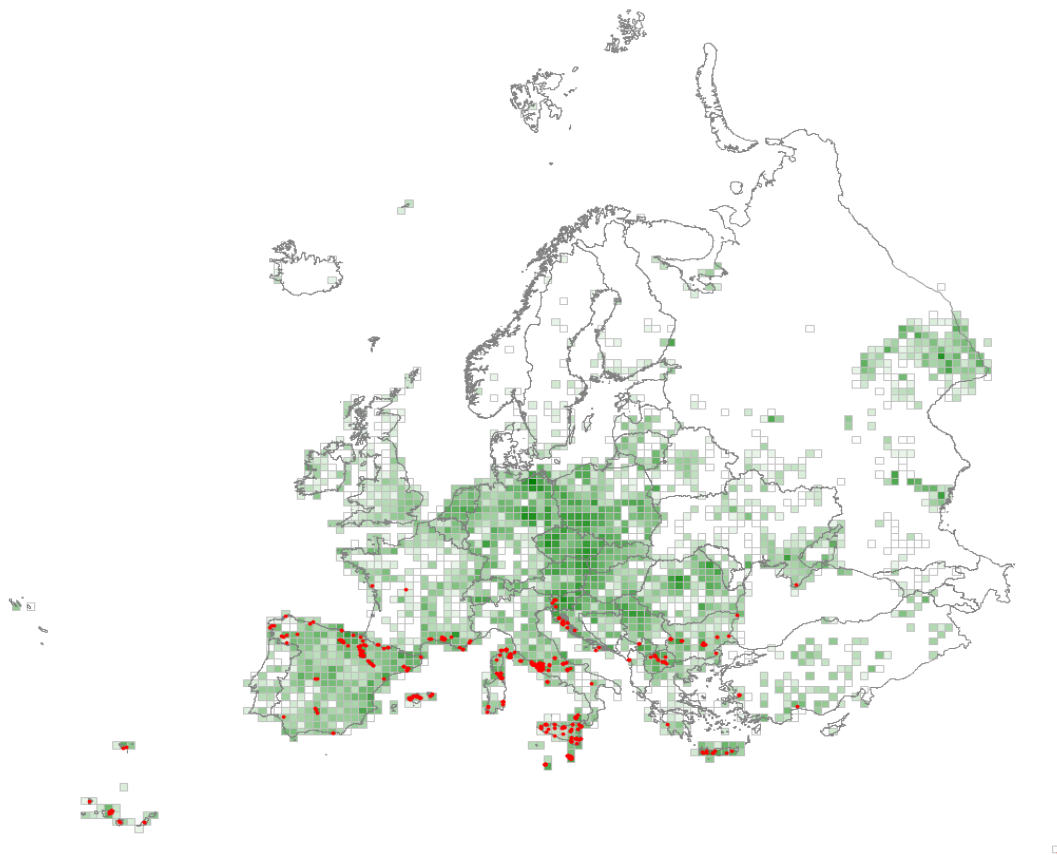
<i>Hordeum murinum</i>	22
<i>Anacyclus clavatus</i>	19
<i>Lolium rigidum</i>	19
<i>Anisantha madritensis</i>	18
<i>Calendula arvensis</i>	17
<i>Medicago polymorpha</i> aggr.	17
<i>Biscutella auriculata</i>	16
<i>Avena barbata</i>	16
<i>Echium plantagineum</i>	16
<i>Malva multiflora</i>	16
<i>Glebionis coronaria</i>	15

Constant species (percentage frequencies)

<i>Hordeum murinum</i>	30
<i>Avena barbata</i>	27
<i>Sonchus oleraceus</i>	21
<i>Lolium rigidum</i>	21
<i>Convolvulus arvensis</i>	21
<i>Anisantha madritensis</i>	21
<i>Dactylis glomerata</i>	18
<i>Anagallis arvensis</i>	18
<i>Trifolium campestre</i>	17
<i>Papaver rhoeas</i>	17
<i>Medicago polymorpha</i> aggr.	16
<i>Bromus hordeaceus</i>	16
<i>Vicia sativa</i>	15
<i>Sherardia arvensis</i>	15
<i>Plantago lanceolata</i>	15
<i>Geranium molle</i>	15
<i>Galactites tomentosus</i>	14
<i>Rostraria cristata</i>	13
<i>Catapodium rigidum</i>	13
<i>Calendula arvensis</i>	13
<i>Hedypnois rhagadioloides</i>	12
<i>Eryngium campestre</i>	12
<i>Daucus carota</i>	12
<i>Cynodon dactylon</i>	12
<i>Plantago lagopus</i>	11
<i>Avena sterilis</i>	11
<i>Anisantha sterilis</i>	11
<i>Anacyclus clavatus</i>	11

V33 – Dry Mediterranean lands with unpalatable non-vernal herbaceous vegetation

Drylands with shrub cover greater than 10%, and with a large component of non-vernal unpalatable plants, including geophytes of the genera *Asphodelus* and *Drimia*, thistles such as *Carlina*, *Carthamus*, *Centaurea*, and *Onopordum*, and other plants such as *Ferula* and *Phlomis*, especially characteristic of the drier parts of the Mediterranean Basin but occurring elsewhere with suitable conditions such as the dry continental valleys of Switzerland. These habitats usually result from over-grazing of garrigue, which eliminates the shrubs.



Corresponding alliances in EuroVegChecklist 2016

- <> ART-04A *Silybo mariani-Urticion piluliferae* Sissingh ex Br.-Bl. et O. de Bolòs 1958
- <> ART-04B *Onopordion castellani* Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart. et al. 2001
- <> ART-04C *Onopordion illyrici* Oberd. 1954
- <> ART-04D *Scolymion hispanici* Morariu 1967
- <> ART-05A *Inulo viscosae-Agropyron repentis* Biondi et Allegrezza 1996
- <> ART-05B *Arundion collinae* S. Brullo, Giusso, Guarino et Sciandello in S. Brullo et al. 2010
- <> ART-05C *Bromo-Oryzopsision miliaceae* O. de Bolòs 1970
- <> ART-05D *Hyperico perforati-Ferulion communis* Vicente Orellana et Galán de Mera
- <> CHE-01A *Alyso granatensis-Brassicion barrelieri* Rivas-Mart. et Izco 1977
- <> CHE-01B *Resedo lanceolatae-Moricandion* Fernández Casas et M.E. Sánchez 1972

- <> CHE-01C Cerintho majoris-Fedion cornucopiae Rivas-Mart. et Izco ex Peinado et al. 1986
- <> CHE-01D Echio-Galactition tomentosae O. de Bolòs et Molinier 1969
- <> CHE-01E Fedio-Convolvulion cupaniani S. Brullo et Spampinato 1986
- <> CHE-01L Securigero securidacae-Dasypyrrion villosi Cano-Ortiz, Biondi et Cano in Cano-Ortiz et al. ex Di Pietro in Di Pietro et al. 2015

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Silybum marianum</i>	40
<i>Galactites tomentosus</i>	27
<i>Cynara cardunculus</i>	24
<i>Foeniculum vulgare</i>	23
<i>Echium plantagineum</i>	19
<i>Onopordum illyricum</i>	18
<i>Coleostephus myconis</i>	18
<i>Carduus pycnocephalus</i>	17
<i>Glebionis coronaria</i>	17
<i>Avena sterilis</i>	17
<i>Centaurea calcitrapa</i>	17
<i>Carthamus lanatus</i>	17
<i>Hordeum murinum</i>	16
<i>Avena barbata</i>	16

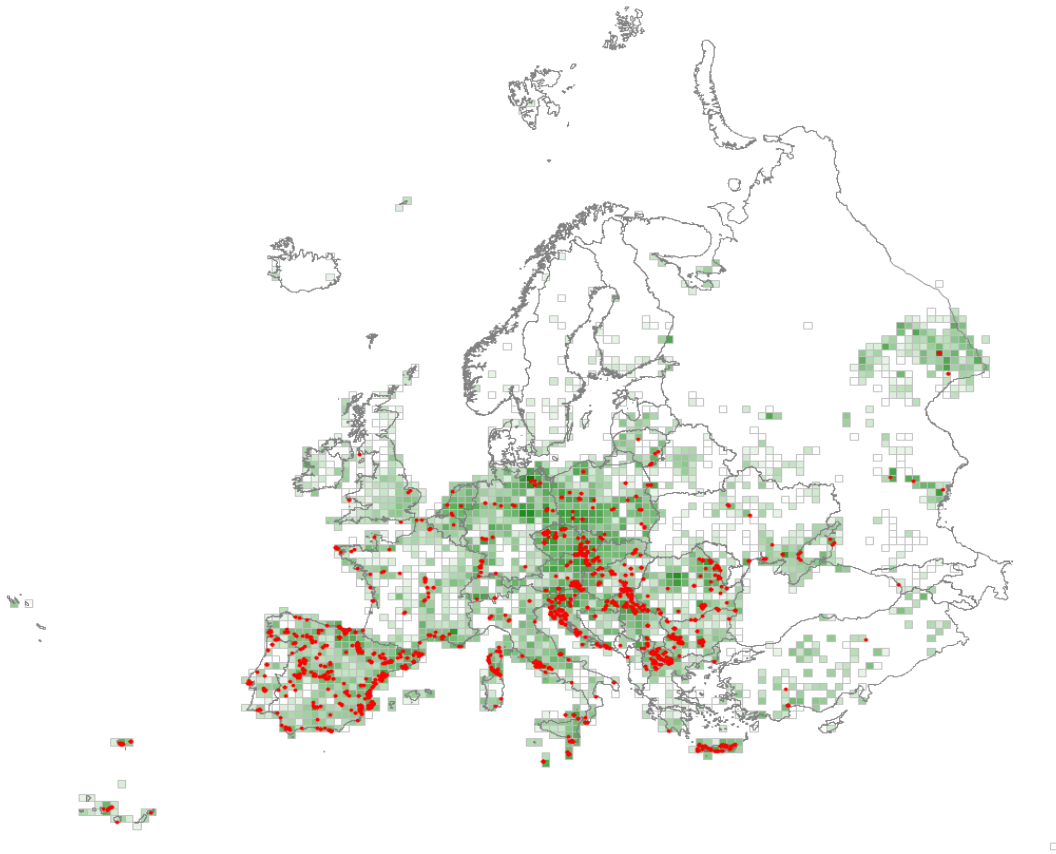
Constant species (percentage frequencies)

<i>Dactylis glomerata</i>	34
<i>Galactites tomentosus</i>	29
<i>Avena barbata</i>	27
<i>Foeniculum vulgare</i>	26
<i>Silybum marianum</i>	24
<i>Hordeum murinum</i>	23
<i>Daucus carota</i>	22
<i>Asphodelus ramosus</i>	20
<i>Sonchus oleraceus</i>	17
<i>Convolvulus arvensis</i>	17
<i>Reichardia picroides</i>	16
<i>Plantago lanceolata</i>	16
<i>Pallenis spinosa</i>	16
<i>Carlina corymbosa</i> aggr.	16
<i>Carduus pycnocephalus</i>	16
<i>Dittrichia viscosa</i>	14
<i>Convolvulus althaeoides</i>	14
<i>Avena sterilis</i>	14
<i>Anisantha madritensis</i>	14
<i>Trifolium campestre</i>	13
<i>Sherardia arvensis</i>	13
<i>Eryngium campestre</i>	13
<i>Carthamus lanatus</i>	13
<i>Malva sylvestris</i>	12
<i>Galium aparine</i>	12
<i>Echium plantagineum</i>	12
<i>Anisantha sterilis</i>	12
<i>Rumex pulcher</i>	11

<i>Medicago polymorpha</i> aggr.	11
<i>Dasypyrum villosum</i>	11
<i>Anagallis arvensis</i>	11

V34 – Trampled xeric grassland with annuals

Low annual grassland on dry and warm trampled localities, for example, the communities of the alliance *Polygono-Coronopodion* with *Cynodon dactylon*, *Eragrostis minor*, *Herniaria glabra*, *Herniaria hirsuta*, *Juncus tenuis*, *Lepidium coronopus*, *Lepidium ruderale*, *Lolium perenne*, *Matricaria discoidea*, *Plantago lanceolata*, *Plantago major*, *Poa annua* agg. and *Polygonum arenastrum*.



Corresponding alliances in EuroVegChecklist 2016

- > DIG-02A Euphorbion prostratae Rivas-Mart. 1976
- > DIG-02B Polycarpo-Eleusinion indicae Čarni et Mucina 1998
- > DIG-02C Eragrostio-Polygonion arenastrum Couderc et Izco ex Čarni et Mucina 1998
- > POL-01A Polygono-Coronopodion Sissingh 1969
- > POL-01B Polycarpion tetraphylli Rivas-Mart. 1975

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Digitaria sanguinalis</i>	39
<i>Portulaca oleracea</i>	36

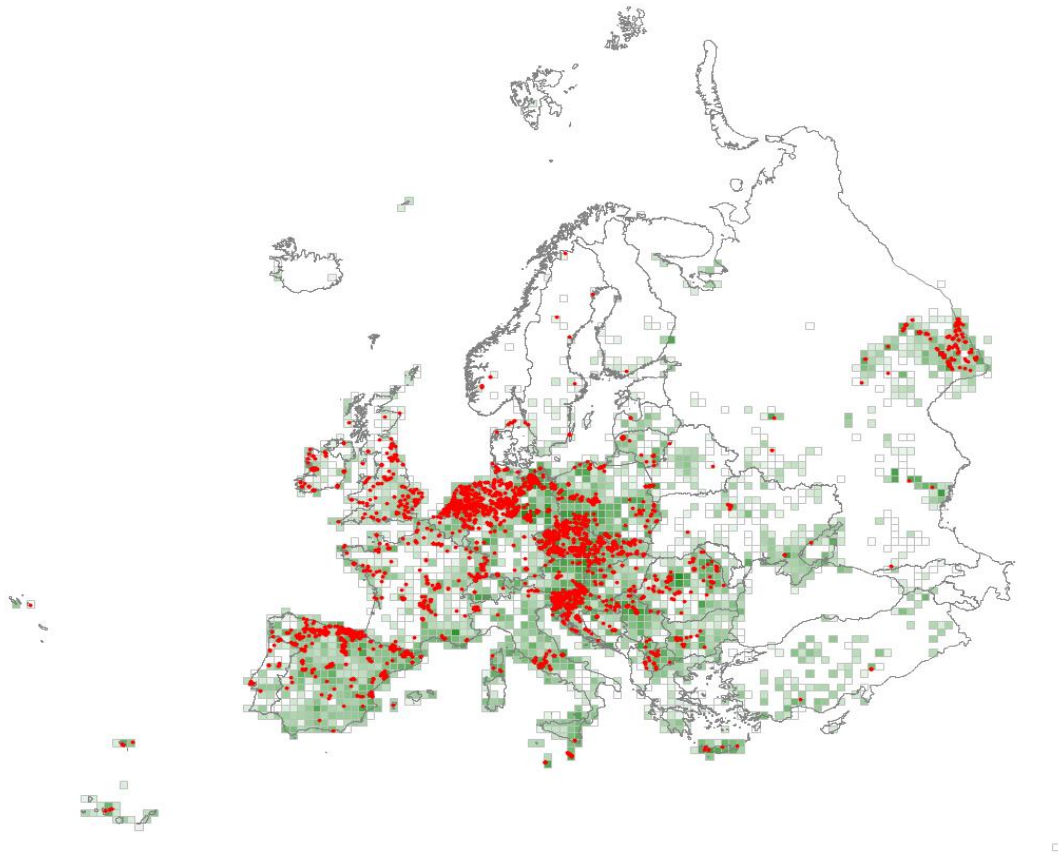
<i>Eragrostis minor</i>	35
<i>Setaria verticillata</i>	25
<i>Sclerochloa dura</i>	25
<i>Euphorbia maculata</i>	24
<i>Polygonum aviculare</i> aggr.	22
<i>Eleusine indica</i>	21
<i>Cynodon dactylon</i>	21
<i>Eragrostis cilianensis</i>	19
<i>Euphorbia prostrata</i>	18
<i>Heliotropium europaeum</i>	18
<i>Amaranthus retroflexus</i>	17
<i>Amaranthus deflexus</i>	16
<i>Amaranthus blitoides</i>	16
<i>Setaria viridis</i>	16
<i>Tribulus terrestris</i>	16

Constant species (percentage frequencies)

<i>Polygonum aviculare</i> aggr.	52
<i>Cynodon dactylon</i>	44
<i>Digitaria sanguinalis</i>	32
<i>Portulaca oleracea</i>	30
<i>Chenopodium album</i> aggr.	27
<i>Eragrostis minor</i>	23
<i>Ochlopoa annua</i>	22
<i>Convolvulus arvensis</i>	20
<i>Plantago coronopus</i> aggr.	19
<i>Erigeron canadensis</i>	19
<i>Setaria viridis</i>	17
<i>Amaranthus retroflexus</i>	17
<i>Plantago major</i>	16
<i>Lolium perenne</i>	16
<i>Taraxacum</i> sect. <i>Taraxacum</i>	14
<i>Capsella bursa-pastoris</i>	14
<i>Setaria verticillata</i>	13
<i>Setaria pumila</i>	13
<i>Plantago lanceolata</i>	13
<i>Hordeum murinum</i>	12
<i>Echinochloa crus-galli</i>	12
<i>Polycarpon tetraphyllum</i>	11

V35 – Trampled mesophilous grassland with annuals

Low annuals on mesic trampled localities, for example the communities of the alliance *Saginion procumbentis* with *Juncus bufonius*, *Poa annua* agg., *Poa supina*, *Sagina apetala*, *Sagina procumbens*, *Spergularia rubra* and *Veronica serpyllifolia*; in the submontane and montane belts, the vegetation may consist of *Poion supinae*.



Corresponding alliances in EuroVegChecklist 2016

- > MOL-01D Alchemillo-Ranunculion repentis Passarge 1979
- > POL-01C Saginion procumbentis Tx. et Ohba in Géhu et al. 1972
- > MOL-03C Poion supinae Rivas-Mart. et Géhu 1978

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Matricaria discoidea</i>	49
<i>Ochlopoa annua</i>	43
<i>Plantago major</i>	33
<i>Polygonum aviculare</i> aggr.	32
<i>Bryum argenteum</i>	20
<i>Lolium perenne</i>	19

<i>Lepidium coronopus</i>	19
<i>Sagina procumbens</i>	18
<i>Capsella bursa-pastoris</i>	18
<i>Lepidium ruderale</i>	16

Constant species (percentage frequencies)

<i>Ochlopoa annua</i>	83
<i>Polygonum aviculare</i> aggr.	77
<i>Plantago major</i>	72
<i>Matricaria discoidea</i>	46
<i>Lolium perenne</i>	40
<i>Capsella bursa-pastoris</i>	36
<i>Taraxacum</i> sect. <i>Taraxacum</i>	35
<i>Trifolium repens</i>	28
<i>Bryum argenteum</i>	17
<i>Sagina procumbens</i>	16
<i>Plantago lanceolata</i>	13
<i>Lepidium ruderale</i>	12
<i>Erigeron canadensis</i>	11
<i>Chenopodium album</i> aggr.	11

Dominant species (percentage frequencies of occurrences with cover > 25%)

<i>Polygonum aviculare</i> aggr.	37
<i>Ochlopoa annua</i>	33

V36 – Alpine and subalpine enriched grassland

[This habitat could not be formally defined in the expert system because these grasslands cannot be distinguished from other some other grassland habitats based on the vegetation-plot data.]

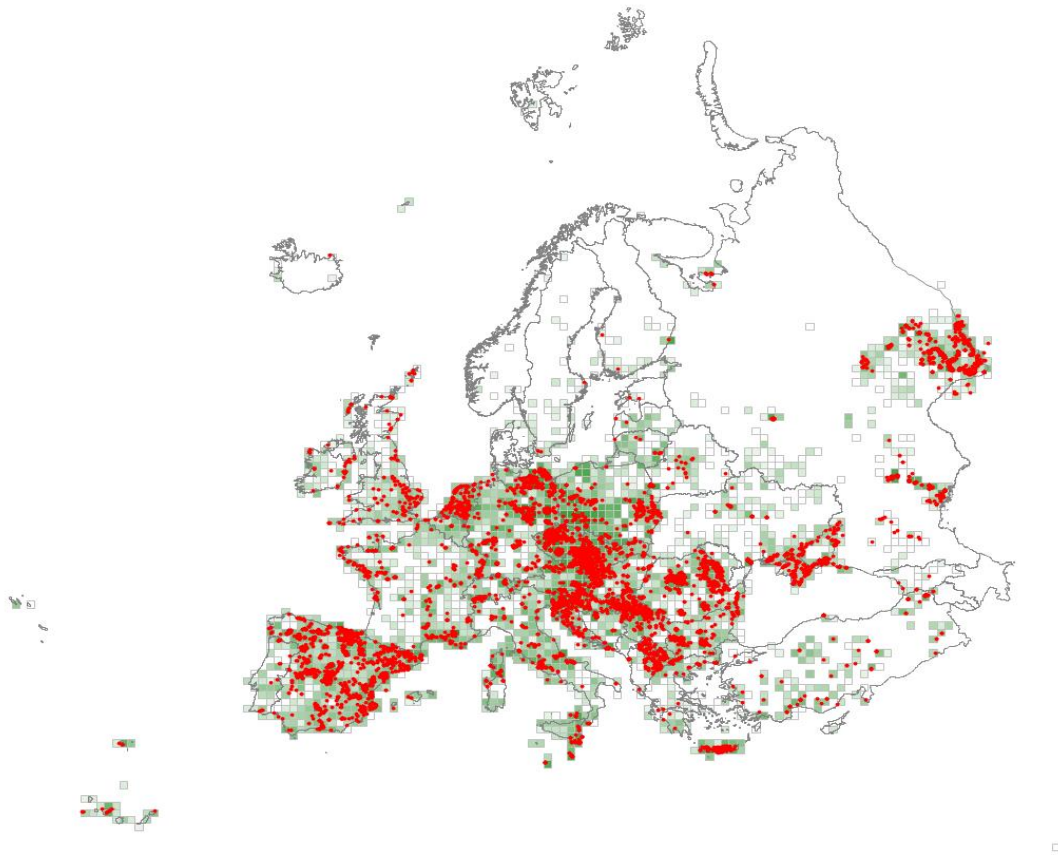
Enriched pastures of the subalpine and lower alpine levels of mountains with species such as *Phleum alpinum* and *Crepis aurea*. Enriched hay meadows are listed under R23.

Corresponding alliances in EuroVegChecklist 2016

- <> MOL-03A *Trisetum flavescens*-*Polygonum bistorta* Br.-Bl. et Tx. ex Marschall 1947
- <> MOL-03B *Poa alpina* Gams ex Oberd. 1950
- <> MOL-03C *Poa supina* Rivas-Mart. et Géhu 1978
- <> MOL-03D *Viola cornuta* Nègre 1972
- <> MOL-03E *Panicum serbicum* Lakušić 1966
- <> MOL-03F *Helictotrichum compressum*-*Bistortion officinalis* Didukh et Kuzemko 2009
- <> MOL-03G *Astragalus maximus* Korotkov 2013

V37 – Annual anthropogenic herbaceous vegetation

Stands dominated by annual herbaceous plants developing on recently abandoned urban or agricultural land, on land that has been reclaimed, on transport networks, or on land used for waste disposal, typically in places that are frequently disturbed or were affected by a recent severe disturbance event.



Corresponding alliances in EuroVegChecklist 2016

- > CHE-01G Bromo-Hirschfeldion incanae Lohmeyer 1975
- > CHE-02A Chenopodium muralis Br.-Bl. in Br.-Bl. et al. 1936
- > CHE-03A Geranio-Torilidion Lohmeyer et Trautmann 1970
- > CHE-03B Geranio pusilli-Anthriscion caucalidis Rivas-Mart. 1978
- > CHE-03C Allion triquetri O. de Bolòs 1967
- > CHE-03D Parietaron lusitanico-mauritanicae Rivas-Mart. et al. 2002
- > CHE-03E Valantio muralis-Galion muralis S. Brullo in S. Brullo et Marcenò 1985
- > CHE-03F Veronico-Urticion urentis S. Brullo in S. Brullo et Marcenò 1985
- > CHE-03G Cardaminion graecae Biondi, Pinzi et Gubellini in Biondi et al. 2013
- > CHE-03H Euphorbio taurinensis-Geranium lucidi Matevski et Čarni in Mucina et al. 2009

- <> DIG-01B Eragrostion Tx. in Oberd. 1954
- <> DIG-01C Consolido-Eragrostion poidis Soó et Timár in Timár 1957
- <> DIG-01D Diplotaxidion erucoidis Br.-Bl. in Br.-Bl. et al. 1936
- > DIG-01F Salsolion ruthenicae Philippi ex Oberd. 1983

- <> DIG-01G Tamarici ramosissimae-Salsolion australis Golub 1994
- <> SIS-01A Atriplicion Passarge 1978 nom. conserv. propos.
- <> SIS-01B Cannabion sativae Golub et al. 2012
- > SIS-01C Malvion neglectae (Gutte 1972) Hejný 1978
- <> SIS-01D Sisymbrium officinalis Tx. et al. ex von Rochow 1951
- > SIS-02A Erysimio wittmannii-Hackelion Bernátová 1986

Characteristic species combination

Diagnostic species (phi coefficient * 100)

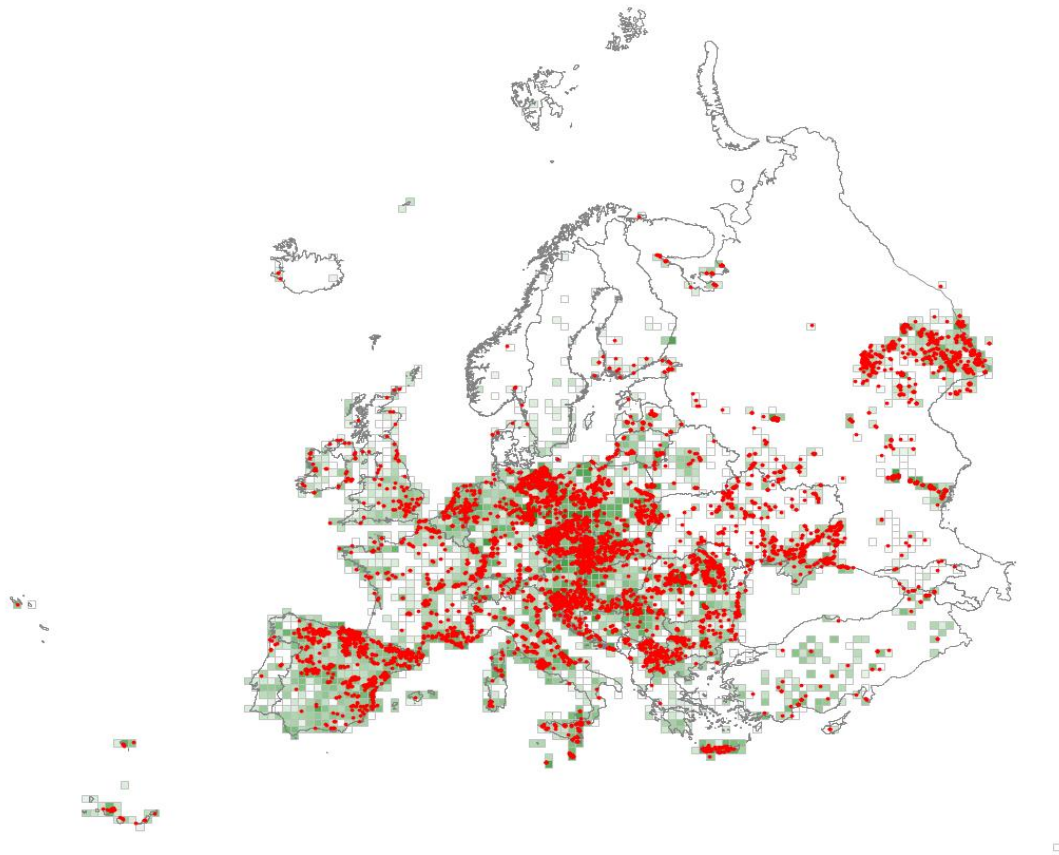
<i>Amaranthus retroflexus</i>	27
<i>Chenopodium album</i> aggr.	24
<i>Malva neglecta</i>	17
<i>Lactuca serriola</i>	16
<i>Capsella bursa-pastoris</i>	15

Constant species (percentage frequencies)

<i>Chenopodium album</i> aggr.	54
<i>Convolvulus arvensis</i>	39
<i>Polygonum aviculare</i> aggr.	34
<i>Capsella bursa-pastoris</i>	30
<i>Amaranthus retroflexus</i>	27
<i>Cirsium arvense</i>	23
<i>Lactuca serriola</i>	22
<i>Elytrigia repens</i> aggr.	22
<i>Erigeron canadensis</i>	21
<i>Tripleurospermum maritimum</i> aggr.	20
<i>Taraxacum</i> sect. <i>Taraxacum</i>	20
<i>Stellaria media</i>	19
<i>Sonchus oleraceus</i>	17
<i>Hordeum murinum</i>	17
<i>Echinochloa crus-galli</i>	17
<i>Ochlopoa annua</i>	16
<i>Lolium perenne</i>	16
<i>Artemisia vulgaris</i>	16
<i>Solanum nigrum</i>	14
<i>Plantago major</i>	14
<i>Anisantha sterilis</i>	14
<i>Sisymbrium officinale</i>	13
<i>Urtica dioica</i>	12
<i>Setaria viridis</i>	11
<i>Setaria pumila</i>	11
<i>Senecio vulgaris</i>	11
<i>Descurainia sophia</i>	11
<i>Cynodon dactylon</i>	11
<i>Atriplex patula</i>	11

V38 – Dry perennial anthropogenic herbaceous vegetation

Stands dominated by perennial herbaceous plants, frequently ruderals, developing on dry abandoned urban or agricultural land, on land that has been reclaimed, on transport networks, or on land used for waste disposal. These stands often replace annual anthropogenic herbaceous vegetation in the course of secondary succession.



Corresponding alliances in EuroVegChecklist 2016

- > ART-01A *Onopordion acanthii* Br.-Bl. et al. 1936
- > ART-01B *Dauco-Melilotion* Görs ex Rostański et Gutte 1971
- > ART-01C *Cirsion richterano-chodati* (Rivas-Mart. in Rivas-Mart. et al. 1984) Rivas-Mart. et al. 1991
- > ART-01D *Carduo carpetani-Cirsion odontolepidis* Rivas-Mart. et al. 1986
- > ART-01E *Medicagini falcatae-Diplotaxidion tenuifoliae* Levon 1997
- <> ART-02A *Bassio-Artemision austriacae* Solomeshch in A. Ishbirdin et al. 1988
- <> ART-03A *Convolvulo arvensis-Agropyron repentis* Görs 1967
- > ART-03B *Artemisio absinthii-Agropyron intermedii* T. Müller et Görs 1969
- <> ART-03C *Artemisio marschallianae-Elytrigion intermedii* Korotchenko et Didukh 1997
- > ART-03D *Rorippo austriacae-Falcarion vulgaris* Levon 1997
- <> ART-04A *Silybo mariani-Urticion piluliferae* Sissingh ex Br.-Bl. et O. de Bolòs 1958
- <> ART-04B *Onopordion castellani* Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart. et al. 2001
- <> ART-04C *Onopordion illyrici* Oberd. 1954
- <> ART-04D *Scolymion hispanici* Morariu 1967

- <> ART-05A Inulo viscosae-Agropyrion repentis Biondi et Allegrizza 1996
- <> ART-05B Arundion collinae S. Brullo, Giusso, Guarino et Sciandello in S. Brullo et al.
- <> ART-05C Bromo-Oryzopsis miliaceae O. de Bolòs 1970
- <> ART-05D Hyperico perforati-Ferulion communis Vicente Orellana et Galán de Mera

Characteristic species combination

Diagnostic species (phi coefficient * 100)

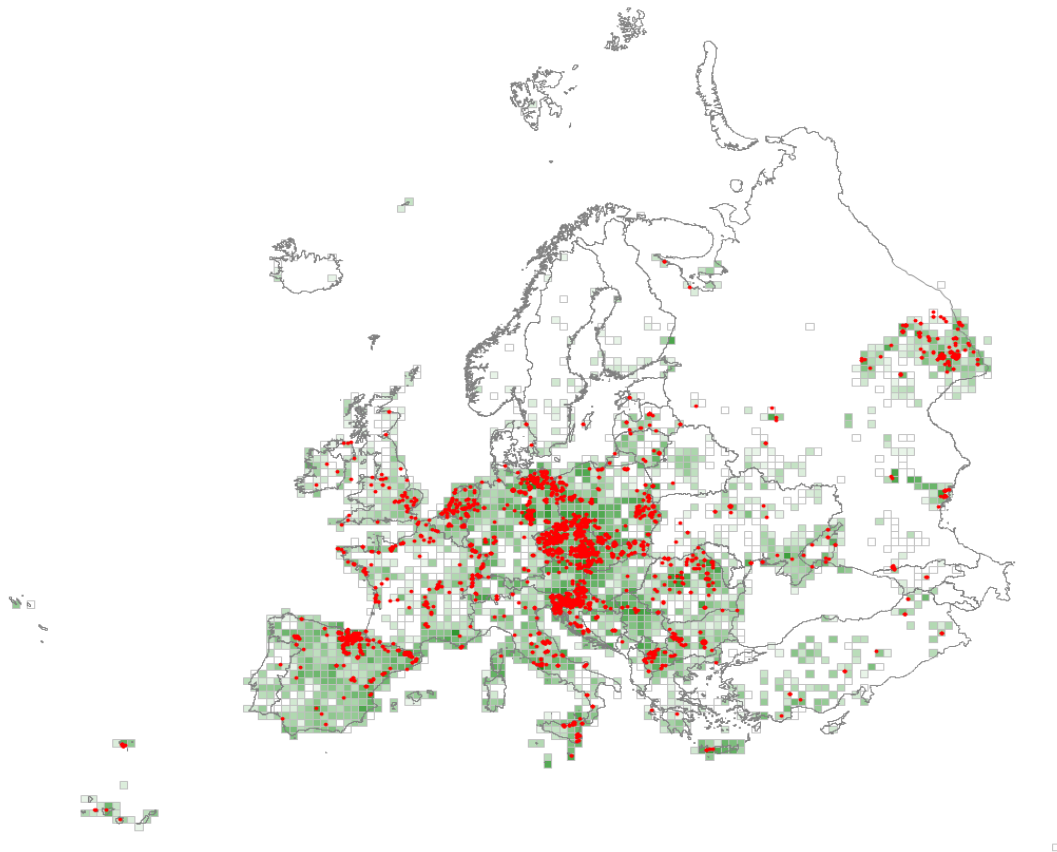
<i>Artemisia vulgaris</i>	23
<i>Artemisia absinthium</i>	18
<i>Carduus acanthoides</i>	16
<i>Tanacetum vulgare</i>	15

Constant species (percentage frequencies)

<i>Elytrigia repens</i> aggr.	44
<i>Artemisia vulgaris</i>	38
<i>Convolvulus arvensis</i>	32
<i>Achillea millefolium</i> aggr.	29
<i>Cirsium arvense</i>	26
<i>Poa pratensis</i> aggr.	23
<i>Taraxacum</i> sect. <i>Taraxacum</i>	22
<i>Dactylis glomerata</i>	22
<i>Urtica dioica</i>	20
<i>Daucus carota</i>	20
<i>Erigeron canadensis</i>	19
<i>Cichorium intybus</i>	18
<i>Tripleurospermum maritimum</i> aggr.	17
<i>Plantago lanceolata</i>	17
<i>Echium vulgare</i>	17
<i>Calamagrostis epigejos</i>	17
<i>Tanacetum vulgare</i>	16
<i>Medicago lupulina</i>	16
<i>Bromopsis inermis</i>	16
<i>Artemisia absinthium</i>	16
<i>Lactuca serriola</i>	15
<i>Carduus acanthoides</i>	15
<i>Silene latifolia</i>	14
<i>Chenopodium album</i> aggr.	14
<i>Linaria vulgaris</i>	13
<i>Tussilago farfara</i>	12
<i>Polygonum aviculare</i> aggr.	12
<i>Plantago major</i>	12
<i>Melilotus officinalis</i>	12
<i>Melilotus albus</i>	12
<i>Hypericum perforatum</i>	12
<i>Berteroa incana</i>	12
<i>Picris hieracioides</i>	11
<i>Lolium perenne</i>	11
<i>Euphorbia esula</i>	11
<i>Ballota nigra</i>	11

V39 – Mesic perennial anthropogenic herbaceous vegetation

Stands dominated by perennial herbaceous plants, frequently ruderals, developing on mesic to slightly wet abandoned urban or agricultural land, on land that has been reclaimed, on transport networks, or on land used for waste disposal. These stands often replace annual anthropogenic herbaceous vegetation in the course of secondary succession.



Corresponding alliances in EuroVegChecklist 2016

- <> EPI-02C Aegopodion podagrariae Tx. 1967 nom. conserv. propos.
- > EPI-03A Arction lappae Tx. 1937
- > EPI-03B Balloto-Conion maculati S. Brullo et Marcenò 1985
- > EPI-04A Geo urbani-Alliarion officinalis Lohmeyer et Oberd. in Görs et T. Müller 1969
- > EPI-04B Anthriscion nemorosae S. Brullo in S. Brullo et Marcenò 1985

Characteristic species combination

Diagnostic species (phi coefficient * 100)

<i>Ballota nigra</i>	22
<i>Urtica dioica</i>	21
<i>Lamium album</i>	20
<i>Chelidonium majus</i>	19
<i>Reynoutria japonica</i>	19

<i>Helianthus tuberosus</i>	17
<i>Artemisia vulgaris</i>	17
<i>Chaerophyllum bulbosum</i>	16

Constant species (percentage frequencies)

<i>Urtica dioica</i>	72
<i>Galium aparine</i>	43
<i>Dactylis glomerata</i>	30
<i>Elytrigia repens</i> aggr.	28
<i>Artemisia vulgaris</i>	28
<i>Aegopodium podagraria</i>	24
<i>Ballota nigra</i>	22
<i>Geum urbanum</i>	21
<i>Cirsium arvense</i>	21
<i>Taraxacum</i> sect. <i>Taraxacum</i>	20
<i>Calystegia sepium</i>	20
<i>Anthriscus sylvestris</i>	20
<i>Chelidonium majus</i>	19
<i>Poa trivialis</i>	18
<i>Heracleum sphondylium</i>	18
<i>Glechoma hederacea</i>	18
<i>Alliaria petiolata</i>	14
<i>Rumex obtusifolius</i>	13
<i>Ranunculus repens</i>	13
<i>Lamium album</i>	13
<i>Arrhenatherum elatius</i>	13
<i>Rubus caesius</i>	12
<i>Lamium maculatum</i>	12
<i>Achillea millefolium</i> aggr.	12
<i>Stellaria media</i>	11
<i>Silene latifolia</i>	11
<i>Lapsana communis</i>	11
<i>Galium mollugo</i> aggr.	11
<i>Convolvulus arvensis</i>	11

V41 – Hedgerow of non-native species

[None of the habitats within group V4 could be formally defined in the expert system because hedgerows cannot be distinguished from shrubland habitats based on the vegetation-plot data.]

Hedges planted with species not native in the vicinity. They may be exotics such as *Ligustrum ovalifolium* or European species outside their native range.

V42 – Highly-managed hedgerow of native species

Regularly clipped hedges composed of native species that were planted as a hedge.

V43 – Species-rich hedgerow of native species

Hedgerows composed mainly of native species, with on average at least five native woody species per 25 m length, excluding undershrubs such as *Rubus* sect. *Rubus* or climbers such as *Clematis vitalba* or *Hedera helix*. In Western Europe, many such hedges are thought to be medieval in origin.

V44 – Species-poor hedgerow of native species

Hedgerows composed mainly of native species, not neatly clipped or obviously planted as a hedge, with on average less than five woody species per 25 m length, excluding undershrubs such as *Rubus* sect. *Rubus* or climbers such as *Clematis vitalba* or *Hedera helix*.

V51 – Shrub plantation for whole-plant harvesting

[None of the habitats within group V5 could be formally defined in the expert system because some shrub plantations cannot be distinguished from spontaneously developed shrubland habitats based on the vegetation-plot data, whereas in other shrub plantations, only the herbaceous vegetation between the rows of planted shrubs is usually sampled in vegetation plots.]

Includes shrub nurseries and plantations for biomass production. Excludes tree nurseries and plantations of Christmas trees (T42).

V52 – Shrub plantation for leaf or branch harvest

Includes tea (*Camellia sinensis*) plantations, and osier (*Salix viminalis*) beds grown for basket-making.

V53 – Shrub plantation for ornamental purposes or for fruit, other than vineyards

Plantations of dwarf trees, shrubs, espaliers or perennial woody climbers other than grapevines, cultivated for fruit or flower production. They include, among others, berry-bearing bushes of *Ribes* and *Rubus*.

V54 – Vineyard

Plantations of grapevine *Vitis vinifera*.

V61 – Broadleaved fruit and nut tree orchard

[None of the habitats within group V6 could be formally defined in the expert system because some tree-dominated man-made habitats cannot be distinguished from spontaneously developed tree-dominated habitats based on the vegetation-plot data, whereas in orchards, only the herbaceous vegetation between trees is usually sampled in vegetation plots.]

Stands of deciduous trees cultivated for fruit or flower production, providing permanent tree cover once mature. Extensively cultivated and old orchards are habitats supporting rich flora and fauna.

V62 – Evergreen orchard and grove

Stands of broadleaved evergreen trees cultivated for fruit, mostly olive and citrus fruits, providing permanent tree cover once mature. Extensively cultivated and old groves are habitats supporting rich flora and fauna.

V63 – Line of planted trees

More or less continuous lines of trees forming strips within a matrix of grassy or cultivated land or along roads, typically used for shelter or shading. Lines of trees differ from hedgerows (V4) in being composed of species that can grow to at least 5 m in height and are not regularly cut down to a height below 5 m.

V64 – Small deciduous broadleaved planted other wooded land

Small plantations and intensively-managed woodland dominated by deciduous broadleaved trees less than 0.5 ha in area. If evergreen broadleaved species are present, they have a lower canopy cover than deciduous species.

V65 – Small evergreen broadleaved planted other wooded land

Small plantations and intensively-managed woodland dominated by broadleaved evergreen trees less than 0.5 ha in area. If deciduous broadleaved species are present, they have a lower canopy cover than evergreen species.

V66 – Small coniferous planted other wooded land

Small plantations and intensively-managed woodlands dominated by coniferous trees less than 0.5 ha in area. If broadleaved species are present, they have canopy cover less than 50%.